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Audrey-Rose Menard

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*ÉCOLE DOCTORALE AUGUSTIN COURNOT*  
BETA (UMR 7522)

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**Audrey-Rose MENARD**

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Discipline/ Spécialité : Economie

**Essais sur l'aide au développement**

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# List of Abbreviations and Acronyms

|       |                                                                |
|-------|----------------------------------------------------------------|
| AEO   | African Economic Outlook                                       |
| Afr.  | Africa                                                         |
| Bil.  | Bilateral                                                      |
| BERI  | Business Environmental Risk Intelligence                       |
| CEPII | Centre d'Études Prospectives et d'Informations Internationales |
| CPI   | Corruption Perception Index                                    |
| DAC   | Development Assistance Committee                               |
| DEA   | Data Envelopment Analysis                                      |
| Dem.  | Democratic                                                     |
| DRC   | Democratic Republic of the Congo                               |
| EC    | European Commission                                            |
| EDA   | Effective Development Assistance                               |
| EITI  | Extractive Industries Transparency Initiative                  |
| ELF   | Ethno-Linguistic Fractionalization                             |
| EPL   | Employment Protection Legislation                              |
| FR    | Fragmentation Ratio                                            |
| GDP   | Gross Domestic Product                                         |
| GDPPC | GDP per capita                                                 |
| GLS   | Generalized Least Squares                                      |
| GMM   | General Method of Moments                                      |
| GNI   | Gross National Income                                          |
| Gov.  | Governance                                                     |
| GLS   | Generalized Least Squares                                      |
| IBRD  | International Bank for Reconstruction and Development          |
| ICRG  | International Country Risk Guide                               |
| IDA   | International Development Association                          |
| IMD   | International Migration database                               |

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|           |                                                       |
|-----------|-------------------------------------------------------|
| IMF       | International Monetary Fund                           |
| Instr.    | Instruments                                           |
| IV        | Instrumental Variable                                 |
| LA        | Latin America                                         |
| Max.      | Maximum                                               |
| MENA      | Middle East and North Africa                          |
| MDGs      | Millennium Development Goals                          |
| Min.      | Minimum                                               |
| Mul.      | Multilateral                                          |
| Mult.     | Multilateral                                          |
| NATO      | North Atlantic Treaty Organization                    |
| NEPAD     | New Partnership for Africa's Development              |
| OA        | Official Aid                                          |
| Obs.      | Observation                                           |
| ODA       | Official Development Assistance                       |
| OECD      | Organization for Economic Cooperation and Development |
| OLS       | Ordinary Least Squares                                |
| Pop.      | Population                                            |
| PPP       | Purchasing Power Parity                               |
| Prob.     | Probability                                           |
| PRSG      | Political Risk Service Group                          |
| Rep.      | Republic                                              |
| Res.      | Resources                                             |
| Resp.     | Respectively                                          |
| QoG       | Quality of Governance                                 |
| SA        | South Asia                                            |
| SFA       | Stochastic Frontier Approach                          |
| SSA       | Sub-Saharan Africa                                    |
| Std. Dev. | Standard Deviation                                    |
| TA        | Technical Assistance                                  |
| TFP       | Total Factor Productivity                             |
| TI        | Transparency International                            |
| UK        | United Kingdom                                        |
| UN        | United Nations                                        |
| UNGA      | United Nations General Assembly                       |

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|       |                                                    |
|-------|----------------------------------------------------|
| UNSC  | United Nations Security Council                    |
| UNSD  | United Nations Statistics Division                 |
| US    | United States                                      |
| USA   | United States of America                           |
| USAID | United States Agency for International Development |
| USD   | United States Dollar                               |
| WB    | World Bank                                         |
| WBI   | World Bank Institute                               |
| WDI   | World Development Indicators                       |
| WGI   | Worldwide Governance Indicators                    |
| 2SLS  | Two-Stage Least Squares                            |
| 3SLS  | Three-Stage Least Squares                          |

A Nicolas.

*“Le monde a besoin d’une croissance soutenue. Sans elle, le rééquilibrage des finances publiques sera plus douloureux et il sera plus difficile d’en gérer les aspects politiques. Ce à quoi nous assistons ne se limite pas au “deuxième épisode de la crise financière” : il s’agit aussi du “premier épisode du défi de la croissance durable”. (...) Le G-20 doit promouvoir un programme axé sur la croissance des pays en développement, Les pays en développement jouent un rôle moteur de plus en plus important dans l’économie mondiale.”*<sup>1</sup>

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<sup>1</sup>Communiqué de presse Numéro : 2010/495/EXT de la Banque mondiale.

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*“Foreign aid has at times been a spectacular success. (...) Foreign aid has also been, at times, an unmitigated failure.”*

World Bank (1998), p. 1



# General Introduction

Why does studying foreign aid matter? Aiming at supporting development foreign assistance is intrinsically laudable.<sup>2</sup> However, owing to lack of coordination, challenging or even unworkable aims and intertwined interests, aid has not been as effective as expected.<sup>3</sup> The aim of this dissertation is to expound specific patterns of foreign aid making it as operative as possible, with particular emphasis on its connections with aid recipients' governance and efficiency, and with aid donor countries' policies. The dissertation's original contribution to the otherwise voluminous aid allocation literature is founded on three grounds. First, it provides intuitions on the shape of the aid-governance relationship, a foremost matter since donors' attention has been paid toward governance improvements. We address (i) particular circumstances under which aid may be efficient at strengthening the quality of governance in aid recipient countries (Chapter 1) and (ii) the potential for direct causalities between the two dimensions alone (Chapter 2). Second, we bring to the aid-growth literature a new sight by evaluating the effect of foreign assistance on the recipient's efficiency to produce (Chapter 3). Finally, we analyze the interaction between aid and other donors' policies to better understand the stakes lying behind donors' decisions to allocate foreign assistance (Chapter 4).

Affiliated to international finance, foreign aid gathers all financial contributions provided to developing countries through bilateral and multilateral funds, technical assistance and transfers of technologies. As a vector of income redistribution at the worldwide level, foreign assistance has been supposed to be a leverage reconciling development and prospects of growth. Foreign aid has originally been assigned to cope with the lacks of investment and savings in developing countries ([Rosenstein-Rodan, 1961](#); [Chenery and Strout, 1966](#); [Griffin and Enos, 1970](#)). The aid literature has therefore traditionally related the purpose of aid allocation to economic growth. Initially, the two-gap model of

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<sup>2</sup>Throughout the dissertation, *foreign aid* and *foreign assistance* will be used as synonymous.

<sup>3</sup>Appendix C presents an insight into the literature investigating why aid may not lead to development.

Chenery and Strout (1966) has provided a broadly accepted view for low growth rates in developing countries and was the standard to explain aid allocations. One of the two gaps refers to the difference between the current level of domestic savings and the amount of investment required to reach a certain level of economic growth. The other gap refers to the difference between the foreign exchange earnings and the level of imports required to reach a certain level of production. Foreign aid was supposed to fill these gaps in order to let the recipient country become a self-sustained growth economy. Specifically, aid funds have made a connection – since the end of World War II and the beginning of decolonization – between the developing world and industrialized countries, with the aim of alleviating income differences and poverty.

Thereafter, beyond ethical principles, foreign aid has also related to the development of an economic, political, financial and environmental stability at the worldwide level (Chao and Yu, 1999; Kaul et al., 1999; Sandler and Arce, 2007). In particular, as global public goods, climate protection, resources preservation, water conservation, and food and health security are a prerequisite for the durability of economic relationships, and even more for the safety of all populations (Rands et al., 2010; Sumner and Tiwari, 2011; Abul Naga and Jones, 2013; Miller, 2014). Eradicating extreme poverty and underdevelopment are not only noble in themselves, but above all are a requirement for integrating developing countries in a joint management of global issues and concerns.

To these ends, foreign aid has been the most important source of external finance for developing countries until the nineties. African countries alone have received the equivalent of ten Marshall Plan since the sixties.<sup>4</sup> In 1990, a reduction by North Atlantic Treaty Organization (NATO) members of ten percent of the military expenditures adjoining the Cold War would even have released enough resources to almost double aid allocations.<sup>5</sup> Though the international community continues to ask for increasing (and even doubling) aid allocations, in particular to achieve the Millennium Development Goals (Anderson and Waddington, 2007), citizens and policy makers of donor countries have been facing a growing “aid fatigue” that questions the value of increasing aid inflows (see, for instance, Bauhr et al. (2013)). Actually, despite all aid transfers, the overall effect of aid in recipient countries remains ambiguous. On average, over the period 1960-2000, the annual growth

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<sup>4</sup>This equivalence operates if we assume all flows of money as received in 2011. Africa has received 1.35 trillions of dollars (in constant 2011 US Dollars) between 1960 and 2011. Data are available online at: [databank.worldbank.org/data/](http://databank.worldbank.org/data/). The Marshall Plan represented 13 billion US dollars (USD) in 1947, which is almost equivalent to 130 billion USD in 2011.

<sup>5</sup>Foreign aid allocated in 1990 has reached 99 billion dollars (in 2011 USD) while the NATO members’ military expenditures in 1990 were equal to 858 billion dollars (in 2011 USD). Data are available online at: [databank.worldbank.org/data/](http://databank.worldbank.org/data/) and [www.sipri.org/research/armaments/milex/milex\\_database](http://www.sipri.org/research/armaments/milex/milex_database), respectively.

rate of GDP per capita of Africa was only 0.1%, while other developing regions (much less aid-dependent) have experienced rapid economic growth rates (Collier, 2008). Why many poor countries were making very little progress despite amounts of foreign aid? Do countries receive foreign aid because they are developing or do they remain developing because they receive foreign aid? These questions have been central for past decades of research.

The nexus between aid flows and development is much trickier in practice than in theory. The aid architecture and donors' decisions to allocate aid lie on delicate interactions between aims, expectations and strategic interests. Resulting in a complex interplay between national, multilateral and non-governmental policies, and arbitrations, foreign aid remains one of the most controversial and discussed subject in the academic sphere of macroeconomics. This dissertation takes its roots in this fertile ground.<sup>6</sup> There is a large body of literature that documents the aid (in)effectiveness, in particular at promoting economic development. Evidence is polemic (McGillivray et al., 2006; Doucouliagos and Paldam, 2009). Aid may accelerate economic growth by increasing savings, investment and capital formation (Papanek, 1973; Fayissa and El-Kaissy, 1999; Hansen and Tarp, 2000; Gomane et al., 2005; Karras, 2006; Economides et al., 2008; Minoiu and Reddy, 2010; Clemens et al., 2012) as well as hamper or not affect at all economic development (Mbaku, 1993; Boone, 1996; Ovaska, 2003; Jensen and Paldam, 2006; Roodman, 2007; Rajan and Subramanian, 2008), at least once aid reaches a certain amount (Durbarray et al., 1998; Hansen and Tarp, 2001; Lensink and White, 2001).<sup>7</sup> The empirical analysis of foreign aid has gained a renewed interest since the end of the nineties. It was undoubtedly inspired by the end of Cold War and the growing proliferation of international agreements and recommendations for improving aid allocations. Despite the new donors and international community attention toward aid effectiveness, foreign aid workability is still hugely controversial.

Afterwards, academic research has turned to design non-linear models able to find out a context in which aid would be undoubtedly efficient for developing countries. The debate on aid effectiveness has specifically targeted the issue of public policies arguing that the success of donors' aid programs was depending on the economic policy and the institutional quality of the recipient state (Burnside and Dollar, 2000). Burnside and Dollar (1997, 2000) and then Collier and Gunning (1999) and Collier (2001) in particular asserted that aid should be conditioned on the quality of recipients' public policies

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<sup>6</sup>Appendices A, B and C provide details on the definition, history and trends of foreign aid and an overview of this aid literature.

<sup>7</sup>Hadjimichael (1995) reported that aid turns to be adverse to economic growth once the GDP share received as foreign aid reaches 25 percent.

– evaluated with an indicator of control over inflation, trade openness, budget surplus, and institutional quality – to be beneficial for economic growth. In other words, donors should pay attention to the recipient characteristics before their own interests when allocating foreign aid. Instead of promoting their commercial, military, political support and security interests, donors should be tightly focused on the recipients’ will and effort to develop, which would help the development role of foreign aid to exert its influence. These works, at the heart of the World Bank report *Assessing Aid* published in 1998, have encouraged what [Hansen and Tarp \(2001\)](#) have called the “third generation” of aid effectiveness studies. As soon as propounded, the argument of conditioning aid on the recipients’ policies was as much supported as disparaged throughout manifold empirical analyses, depending on the definition of “good policies”, the data, and the complexity to implement a conditional allocation (see, for illustration, [Guillaumont and Chauvet \(2001\)](#) and [Easterly et al. \(2003\)](#)).

Although empirical evidence is again doubtful on the effectiveness of an assistance conditioned on the quality of domestic policies and institutions, it still influence donors’ aid allocations ([Dollar and Levin, 2006](#); [Claessens et al., 2009](#)). The focus on the quality of governance in aid recipient countries has even gained in importance since the seminal work of [Alesina and Weder \(2002\)](#). Institutions – as a synonym of governance thereafter – are more than a potential channel to condition the aid-growth relationship (see, for example, the discussion of [Wright and Winters \(2010\)](#)). Accordingly, more and more interest has been displayed for exploring the direct effect of foreign aid on the quality of governance in recipient countries ([Knack, 2001](#); [Tavares, 2003](#); [Bräutigam and Knack, 2004](#); [Dunning, 2004](#); [Rajan and Subramanian, 2007](#); [Busse and Gröning, 2009](#); [Charron, 2011](#)). The role of the first two Chapters is precisely to extend this growing literature by investigating the consequences of aid on the quality of governance and specifically on corruption in developing economies.

In Chapter 1, we aim at bringing a new outlook on the current picture of the aid-governance relationship by considering the dependence of recipient countries on their natural resources, a dependence commonly found to be detrimental to the growth of developing countries ([Jensen and Wantchekon, 2004](#); [Dalgaard and Olsson, 2008](#); [Vicente, 2010](#); [Bhattacharyya and Hodler, 2010](#)). While the direct causation between aid and governance has been so far questioned, we investigate the possible linkage between aid and governance under specific circumstances.

Assuming that the recipient dependence on domestic natural resources rents may alter the effect of aid on governance, we examine whether aid allocated to natural resources rich

countries is less efficient than otherwise. We also introduce a distinction between the type of donor: bilateral donors' aid and multilateral donors' aid are drawn by different aspirations, going from self-interest to pure developmental aims (see, for example, [Dollar and Levin \(2006\)](#)). If aid donors have such different motives in providing their assistance, then we should observe that the macroeconomic effect of aid differ according to the proportion of bilateral versus multilateral aid received in developing countries. There is, nonetheless, few empirical studies that address this issue in the context of a governance or a corruption focus ([Alesina and Weder, 2002](#); [Charron, 2011](#)). However, if bilateral aid is less tied to governance concerns, a related empirical study should support the idea of not choosing bilateral assistance to improve the quality of institutions.

We particularly focus on the African continent, which gathers most of major aid-dependent countries, since 1997. Since the mid-nineties and the end of Cold War, improving the quality of governance in developing countries has indeed become an official aim for foreign assistance. Using dynamic panel data techniques and controlling for possible reverse causation between aid and governance, we corroborate [Charron \(2011\)](#)'s findings: aid allocations provided by multilateral institutions helps to build better governance while bilateral aid seems to be, at best, inefficient. We originally contribute to the literature by showing that the favorable effect of aid on governance is emphasized in countries that do not rely on rents derived from oil resources. This outcome holds for a larger sample (in time and space) and for diverse specifications, suggesting the importance to account for the source of aid for developing countries and for the influence of local conditions. Even before donors' commitments on strengthening good governance (in the end of the nineties) and in highly oil-dependent countries (located in the Middle East and North Africa region), multilateral aid is found to be able to support sound institutional reforms.

In Chapter 2, we extend our interest over the aid-governance relationship. We explore the possible causal linkages between aid and corruption as a particular aspect of the quality of governance. More precisely, we wonder whether aid alone indeed helps to fight corruption and whether donors allocate more aid to lower corrupt countries. We aspire to dispel doubts on the aid-corruption nexus, where corruption is a specific institutional feature that has caught most of scholars' attention (as detailed in [Charron \(2011\)](#) for example). Without considering any other recipient or donor characteristic, our objective is to determine whether aid, by itself, causes changes in corruption and vice versa. Some empirical findings support that foreign assistance can reduce corruption ([Goldsmith, 2001](#); [Tavares, 2003](#); [Dunning, 2004](#); [Okada and Samreth, 2012](#)) as it can help increasing salaries of civil servants and can help recipient countries to implement institutional reforms. On another hand, aid can turn away the recipient government accountability and responsibil-

ities towards its citizens because aid reduces the need for governments to collect taxes (as claimed by [Knack \(2001\)](#) and [Bräutigam and Knack \(2004\)](#)). Conversely, the level of corruption observed in the recipient country can condition donors' decisions to allocate their funds. Since the end of the nineties, eradicating corruption in the developing world has been a key challenge for the aid community. Donors may have increased their aid inflows toward countries willing to improve their institutions quality ([Santiso, 2001](#)), though this behavior has been questioned by [Alesina and Weder \(2002\)](#) among others.

Despite all these studies, no one has devoted its interest in analyzing the possible reverse causation. [Alesina and Weder \(2002\)](#) and [Svensson \(2000\)](#) have brought a first look at both aid and corruption but without questioning a reverse causation. We open this door by performing for the first time in the aid-corruption literature Granger-causality tests with the aim of evaluating the sign(s) and direction(s) of causality(ies) between aid and corruption. In other words, instead of analyzing the contemporaneous correlation, we test whether the current level of corruption is better explained with the past amount of foreign assistance when we already controlled for past levels of corruption and vice versa. Our available panel data, covering 71 developing countries from all regions over the 1996-2009 period, reveal that there is no significant causal relation between aid and corruption running in both directions. These findings support the view that aid alone (without accounting for any other donor or recipient characteristic) does not influence corruption in its current design, while corruption level does not play a significant role in incentives of donor countries to allocate aid funds. We also fail to encounter any difference between types of donor, time periods and world regions. Aid alone is not sufficient enough to explain the evolution of corruption and reciprocally.

In Chapter 3, we turn back to the economic growth effect of foreign assistance. This Chapter is designed to deepen and enlighten the debated aid-growth literature by focusing on the technical efficiency of production as a specific component of growth. This component measures how well a country is using its resources. While investment, the other main source of growth, has been at the core of academic investigations (see [Levy \(1987\)](#), [Hansen and Tarp \(2001\)](#) and [Arndt et al. \(2011\)](#) among others), efficiency (and, to a wider extent, productivity) has not attracted such similar attention. For this reason, we extend the original work of [Alvi and Senbeta \(2012a\)](#) that investigated the aid-productivity nexus, by using an alternative measure of productivity, named macroeconomic efficiency. While gains in productivity (namely innovation and technological progress) are less likely to occur in developing countries, gains in efficiency may more easily be promoted [Christopoulos et al. \(2010\)](#). Our aim is to determine whether foreign assistance is able to reduce the gap between a developing country's actual production and the optimal production it could

reach using the same bundle of inputs.

We estimate macroeconomic efficiency scores for 67 developing countries for which data are available using a stochastic frontier approach. We obtain the relative efficiency score for each country, which enables us to compare all countries of our sample to the best-practice economy. If the computed score is close to one hundred percent, the country is amongst the most efficient in production within our sample. The farthest a country is from its frontier, the biggest the room for improvements, without altering the set of inputs employed in production and without any technological progress. We then use General Method of Moments dynamic panel data techniques to analyze the relation between foreign aid and this macroeconomic efficiency between 1985 and 2010. Our results reveal that foreign assistance is able to enhance technical efficiency. In particular, both bilateral aid and multilateral aid are prone to reduce the gap between the current country's efficiency to produce and its maximal potential. We also are interested in diverse conditional effects of aid on efficiency, through the political environment, the financial system and the macroeconomic stability. Such recipient characteristics are decisive to improve aid effectiveness. We indeed observe that the extent of democracy and the macroeconomic stability of recipient countries strengthen the aid-efficiency nexus.

Political and economic conditions in recipient countries, under which aid should be more efficient, have been appreciated (Burnside and Dollar, 2000; Chauvet and Guillaume, 2003). Some bilateral donors and international agencies have already changed part of their allocations in accordance with recipient countries' will and efforts to implement appropriate policies (Dollar and Levin, 2006). But gains in foreign assistance effectiveness may be moderated because aid allocations can also be dependent on donors' characteristics and policies (as suggested by Lundsgaarde et al. (2007), Berthélemy et al. (2009) and Tingley (2010) for example). Donors' policies coherence and interests are possibly decisive concern to understand foreign aid and are presumably relevant for determining the shape of bilateral assistance. This is precisely the role of our investigation in our last Chapter, which refers to the connection between OECD countries' aid policies and their migration and unemployment policies. In Chapter 4 we indeed turn our attention on the donor side trying to understand how donors' aid policies are dependent on donors' domestic policies rather than on recipients characteristics. In particular, we are interested in determining how bilateral aid and migration policies in developed nations are simultaneously determined and how they are dependent on unemployment policies. We do not only aspire to focus on the determinants of aid in the donor country (already underscored in Maizels and Nissanke (1984), Alesina and Dollar (2000), Berthélemy and Tichit (2004) and Hoefler and Outram (2011) among others) but we precisely wonder whether unemployment is

another domestic source supporting aid allocations.

Based on a sample of 22 OECD economies and 153 recipient countries from 2000 to 2010, five main concerns are discussed. First, we observe that aid and migration are positively correlated. Our results are consistent with the “lobbying activities” and the “networking effect” highlighted in [Lahiri and Raimondos-Møller \(2000\)](#) and [Berthélemy et al. \(2009\)](#). The stock of migrants in a donor country is likely to upward influence the amount of aid provided to countries from which migrants originate. In addition, donor countries tend to attract more migrants all else equal, supporting the “attractiveness effect” emphasized by [Berthélemy et al. \(2009\)](#). Financial aid flows and contact networks may ease migration between a donor and a recipient country, in particular for skilled migrants ([Berthélemy et al., 2009](#)).

Second, we confirm that commercial interests of donors guide a part of aid allocation: aid flows may be designed to create new trade and market opportunities. Besides, we corroborate the displacement effect found by [Lundsgaarde et al. \(2007\)](#). Bilateral trade deficits in OECD countries reduce the amount of aid allocated. When donors have a positive trade balance with a potential recipient country, they tend to increase their aid allocation toward this country, to a larger extent if this country increases its imports from the donor country. Third, we obtain two opposite effects when looking at the migration-trade trade off. We explain this result based on [Berthélemy et al. \(2009\)](#). Trade increases migration when skilled migrants can fill employment gaps in technological sectors. Trade with partner countries turns to decrease migration from partner countries when migrants are unskilled. These opposed effects can be due to the matching between migrants’ skills and the needs of exporting sectors in OECD countries. Fourth, we find that higher unemployment rates in donor countries can discourage potential migrants since they have fewer job opportunities. Owing to deteriorating job market conditions, citizens in developing countries are less likely to migrate. Fifth, a rise in unemployment in OECD countries is positively associated with higher aid amounts.

Starting from these findings on aid and migration determinants, we derive several policy implications for OECD countries’ policies. Higher unemployment rates can encourage policy makers to harden their migration policies in order to protect their job market from foreign competition, which appears to be not necessary due to lower incentives for potential migrants to migrate when the labor market deteriorates. Fighting the rise in unemployment in OECD countries should be at odd with restrictive migration policies if OECD countries want to maintain a constant inflow of migrants (as supposed in [Pedersen et al. \(2008\)](#)). Indeed lower unemployment rates are likely to increase incentives for migration.

Furthermore, a rise in unemployment may encourage donor countries to increase their

aid allocations, aiming at improving developing countries' conditions in order to hold in migration. However, more aid increases incentives to migrate, which in turn affect the amount of aid allocated owing to lobbying activities from the migrants already present in the developed country. As a consequence, donors should also adjust their migration policy if they want to keep constant the entry of migrants. All in all, each of these political decisions will affect the others. The aid-migration-unemployment policies nexus is intricate because aid amounts, migrants and unemployment rates can affect each other. It is therefore important to consider these domestic determinants of the policy of aid to be coherent when implementing migration or unemployment policies.

Finally, the General Conclusion draws conclusions from the whole dissertation and provides policy suggestions inferred from the key findings of Chapter 1 to Chapter 4. It also outlines the thread of the future research we plan based on the particular environmental target of foreign assistance.

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*“Good governance is the single most important way to end poverty and support development.”*

Kofi Annan

**Chapter 1 | Do Natural Resources  
Condition the  
Aid – Governance  
Relationship?**

## Chapter Abstract

The low quality of governance is specifically claimed to be one of the most important challenges for majority of African countries ([Asongu, 2013](#)). These countries are additionally those receiving substantial assistance. Chapter 1 offers to explain why the governance effect of foreign aid may be nebulous in African countries. It relates to a strand of the aid literature that examines the consequences of foreign assistance on recipient countries, in particular on the quality of their governance. *Governance* broadly stands for “the manner in which power is exercised in the management of a country’s economic and social resources for development” ([World Bank \(1992\)](#), p. 1). The quality of governance in aid recipient countries may be an intermediate channel between aid and economic growth explaining why aid may or not promote economic development: aid may also affect economic growth through its effects on the quality of governance.

To assess this concern and contribute to the existing literature ([Alesina and Weder \(2002\)](#) and [Charron \(2011\)](#) in particular), we examine the consequences of foreign aid on the quality of governance in recipient countries using data from African countries for the period 1997-2008. We apply General Method of Moments estimation techniques on a dynamic panel data model, which enables us to investigate the exogenous effect of aid on governance. Our findings suggest that the aid-governance linkage can be evident if the type of aid is differentiated between bilateral and multilateral aid and if the governance effect of aid is conditioned on the size of natural resources rents held by the recipient country. Our data analysis reveals that (i) the quality of governance improves if and only if aid is multilateral and (ii) the recipient country’s dependence on rents derived from natural resources lessens the benefits of aid. These results imply that aid policies in Africa might be reconsidered to be more effective, in particular for resources rents dependent countries.

## 1.1 Introduction

Nine of the fifteen poorest governed countries in the world are located in Africa.<sup>1</sup> The substantial empirical evidence shows that poor governance – namely corruption, political instability, non-accountability or rent-seeking – may root underdevelopment and make low income persist (see, for example, [Hall and Jones \(1999\)](#), [Mauro \(1995\)](#), and [Sachs and Warner \(1997\)](#)). If governance could be improved, the well-being of poor people in poor countries would also ameliorate. A potential mechanism for improving governance is the allocation of foreign aid.

Surprisingly, the relationship between foreign aid and domestic governance has not received more systematic attention. Empirical studies investigating the effect(s) of aid on governance have recently been growing. But still, it seems unclear whether providing foreign assistance would even be counterproductive. A part of the literature indicates that the effect is negative ([Bräutigam and Botchwey \(1999\)](#), [Knack \(2001\)](#), [Bräutigam and Knack \(2004\)](#), [Knack and Rahman \(2007\)](#) and [Rajan and Subramanian \(2007\)](#)) while another stipulates that the aid–governance linkage is positive, albeit little, and strengthens after the end of Cold War ([Goldsmith \(2001\)](#), [Tavares \(2003\)](#), [Dunning \(2004\)](#) and [Jensen and Wantchekon \(2004\)](#)). The question of how aid is delivered has largely been ignored but can shed light on the paradox raised by academic research. Our first investigation is aiming at filling this gap in the literature on aid effectiveness.

Chapter 1 proposes to explain why the governance effect of foreign aid has been ambiguous, in particular in African countries. Our findings suggest that the governance effect of aid can be robust if we account for the type of aid donors (either bilateral or multilateral) and if we condition the aid-governance relationship on the size of natural resources rents held by the recipient country. A dynamic panel data analysis over the period 1997-2008 reveals that (i) foreign aid improves governance if and only if aid is allocated by multilateral agencies and (ii) the effect of multilateral aid is the stronger the less the recipient country is dependent on natural resources, in particular on oil resources. Multilateral aid and oil rents independence together seem to contribute to the development of good governance in Africa.

The remainder of this Chapter is organized as follows. Section 1.2 presents the literature and details our two hypotheses: (i) aid allocated by multilateral donors is prone to improve the quality of governance while bilateral aid is not; (ii) the recipient country's dependence on natural resources reduces aid effectiveness. Section 1.3 presents the

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<sup>1</sup>Somalia, Zimbabwe, Democratic Republic of Congo, Sudan, Chad, Eritrea, Guinea, Eritrea, Central African Republic, Equatorial Guinea. According to the Control of Corruption indicator in 2009. Data are available on line at: [databank.worldbank.org/data/](http://databank.worldbank.org/data/).

data. Section 1.4 outlines the econometric procedure. Section 1.5 reports and discusses the results. Section 1.6 examines the robustness of these empirical results. Section 1.7 concludes.

## 1.2 Literature and hypotheses

### 1.2.1 The misty governance effect of foreign aid

There is a recent but fast-growing body of the aid literature that documents the effect of foreign aid on different aspects of governance since the end of the nineties. Theoretically, foreign aid can both help and hinder governance. Empirically, there is yet no consistent evidence or at least few agreements on how foreign aid affects the quality of governance. Critics argue that aid has been counterproductive in that it has supported governments that were hostile to economic growth and poverty reduction. Pros sustain that aid has fomented or at least accelerated the building of an improved governance oriented to growth and social development. In practice, different forces may condition the governance effect of foreign assistance. First, donors may affect the quality of governance in both a positive and a negative direction depending on their own behaviors. Second, even if donors have good designs, aid – or certain types of aid – can possibly undermine the long-term development of governance depending on recipients' characteristics.

Some scholars, supported by [Knack and Rahman \(2007\)](#) and [Busse and Gröning \(2009\)](#), have upheld that foreign aid is adverse to good governance. [Knack \(2001\)](#), for example, found that foreign aid undermines the rule of law and the quality of bureaucracy, both measured by International Country Risk Guide (ICRG) indicators. Controlling for aid endogeneity – in the sense that well-governed countries tend also to attract more aid – [Knack \(2004\)](#) showed that the quality of institutions decreases in countries receiving high aid inflows. [Bräutigam and Knack \(2004\)](#) used an aggregated measure of governance provided by the ICRG data set to confirm that African aid dependent countries have a poor quality of governance. They expounded that aid dependent countries rely more on foreign assistance than on their own citizen's taxation, which lowers pressure for accountability.<sup>2</sup> Foreign aid may also attract greed over aid funds and postpone necessary reforms by making it easier to bear the cost of non-reforming. [Rajan and Subramanian \(2007\)](#) supported these results. They assumed that the manufacturing sector is dependent on good governance —

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<sup>2</sup>[Bräutigam et al. \(2008\)](#) explained that states in the medieval Europe (in particular in England and the Netherlands) emerged because of the need of autocratic governments to raise taxes in order to survive internal conflicts. In exchange of being taxed, citizens have asked for greater state accountability and representative government. Aid, as an unearned public revenue, can delay the need for taxation ([Bermeo, 2011](#)).

as contracts enforcement and investment protection. Since they found that foreign aid is associated with a decrease in the share of manufacturing in GDP, they concluded that aid lowers the quality of governance (and the need to improve it). Djankov et al. (2008) corroborated the “curse” of aid in recipient countries, no matter how governance is measured. They used a model based on a wide panel of 108 countries between 1960 and 1999 to show that the adverse effect of aid is even stronger than is the relationship between governance and oil.

On another hand, there are several studies arguing that foreign aid is beneficial for governance. An argument for a positive channel is aid conditionality, which requires that institutional reforms are undertaken by the current recipient country in order to be eligible again as an aid recipient country. Chauvet and Guillaumont (2003) denoted that foreign assistance, which enlarges public projects expenditures, is able to improve the quality of governance if aid allocations are conditioned on reforms commitments. Another argument is the matter of the new aid architecture. The Cold War era has not encouraged the development of good governance in Africa owing to donors’ political and strategic interests (Claessens et al., 2009). Once Cold War ended however, aid became more targeted towards governance issues (Charron, 2011). Focusing on African countries, Goldsmith (2001) claimed that political institutions, measured by Freedom House indicators, rely on foreign assistance to keep operating public services and reforms. Dunning (2004) confirmed the benefits of aid on good governance and showed that this connection strengthens in the post-Cold War period. Finally, Tavares (2003) found that foreign aid also decreases corruption thanks to higher public salaries and transfers of knowledge.

The aid-governance literature does not point out a clear agreement on the effects of aid on the quality of governance. This essay is interlinked to this literature. It provides a new contribution that may explain why foreign aid does or does not improve the quality of governance. The central contribution of this essay is the hypotheses that both the dependence of a country on natural resources and the type of aid donors matter in determining the relationship between foreign aid and governance.

### 1.2.2 The role of natural resources

Our first hypothesis is that the country’s dependence on natural resources conditions the influence of foreign aid on the quality of its governance. Foreign aid is probably prone to maintain a low quality of governance in resources dependent countries.

**Hypothesis 1.1** *The dependence of a recipient government on rents generated from natural resources extraction harms the positive effects of aid on the quality of governance.*

We base our assumption on the following reasons. First, revenues from natural resources, at least some of them, tend to increase rent-seeking problems, to weaken the quality of governance and to create political instability (Ades and Di Tella, 1999; Jensen and Wantchekon, 2004; Collier and Hoeffler, 2005; Collier, 2006b; Dalgaard and Olsson, 2008; Vicente, 2010; Bhattacharyya and Hodler, 2010). Papyrakis and Gerlagh (2004) confirmed that the corruption effect of natural resources neutralizes more than 40 % of the beneficial effect of natural resources on economic growth. Producing high rents, natural resources activities are a honey pot, which increases patronage politics, corruption and high inequalities between those who hold these rents (namely the oligarchy) and the others (Collier and Hoeffler, 2009; Morrison, 2007). Oligarchies are able to avoid taxation and to resist the adoption of institutional reforms that would limit their choices and force them to be more responsible (see, for example, Djankov et al. (2008)). In turn, we assume that aid allocated to dependent countries would be less prompt to foment institutional reforms.

Second, in resource-rich countries, investment in extractive industries is immediately more profitable than in productive industries. Natural resources enable the domestic country to derive large rents from their extraction, without any consequent investment of time and money (Leite and Weidmann, 1999). Rents on natural resources in turn may finance and support the existing government. The government, which otherwise would have collapsed, hoards the benefits of resources flows to stay in place and finance its own activity. Besides, the immediate economic benefit derived from the abundance of natural resources is partly offset by the adverse effects of high commodity prices on the domestic exchange rate, which impedes the development of exports of local manufactures. Yet, as shown by Rajan and Subramanian (2011), extractive industries do not require as sound institutions as manufactures do, which may also hamper the development of good governance. As a consequence, aid in hands of a government that holds rents from natural resources is expected to be diverted toward extractive industries instead of productive activities.<sup>3</sup> Aid is presumably less preferable in a country that derives substantial rents from its natural resources because the recipient government would have no incentives enough to allocate aid funds towards institutional reforms.

### **1.2.3 The role of bilateral versus multilateral donors**

Our second hypothesis (portrayed in Appendix C) is that aggregating different types of aid may hide intrinsic variations derived from donors' aid motives. The mechanism to

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<sup>3</sup>Easterly and Levine (1997) recorded that Nigeria has benefited from increasing rents on oil resources in the nineties, making its public budget increase by 50 %. In parallel, the budget allocated to the educational sector has decreased and has been diverted towards the extractive sector, which is immediately more profitable.

successfully improve governance is assumed to have something to do with the way in which aid is allocated.

**Hypothesis 1.2** *Multilateral aid, more opted for the development of good governance than bilateral aid, bears the beneficial effect of aid on the quality of governance.*

The recent literature agrees on the necessity to consider that the effect of foreign aid is different before and after Cold War, partly because of geopolitical interests (see [Dunning \(2004\)](#)). Though containing the communist expansion during Cold War was not the only and main preoccupation for all the donor community, the end of Cold War has presumably changed some of donors' views and strategies. But even in the post-Cold War period, empirical studies did not agree on the effect of aid on governance. Perhaps because an aggregated measure of aid blurs the picture. The growing debate on the fact that different types of donors may behave differently has led to the conclusion that bilateral and multilateral donors have different motives when allocating foreign assistance ([Neumayer, 2003b](#); [Dollar and Levin, 2006](#)).

Our prior is that bilateral aid may affect differently governance than multilateral aid because of the motives underlying aid allocations. A related extended literature has enhanced the differences in these types of donors' behaviors. According to [Acharya et al. \(2006\)](#), foreign aid would be more effective if allocated by multilateral agencies due to less donors proliferation.<sup>4</sup> The success of the Marshall Plan (1947) is often attributed to the fact that the United States were the only donor responsible for the program ([Knack and Rahman, 2007](#)). Besides, multilateral agencies appear generally to have a greater developmental focus than bilateral donors do ([Burnside and Dollar, 2000](#); [Alesina and Dollar, 2000](#); [Neumayer, 2003c](#)). Though multilateral institutions are not totally preserved from political influence ([Frey and Schneider, 1986](#)), bilateral donors are less likely to pressure on multilateral funds than on their own allocations. Multilateral aid is less tied to political interests because individual donors' interests are diluted. Finally, there is a consensus among multilateral agencies to be more explicitly attentive to the concern of governance since the end of the nineties, in particular thanks to conditions over aid allocations ([Dollar and Levin, 2006](#)).<sup>5</sup> Allocating aid to countries that commit on political reforms – aid conditionality – means that recipient countries either fulfill minimal reforms to increase their governance quality or receive lower aid funds. [Alesina and Dollar \(2000\)](#) found that bilateral donors do not only target poor countries but also countries with whom they have

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<sup>4</sup>Section C.2 in Appendix C provides details over donors proliferation.

<sup>5</sup>See Table A.1 in Appendix A for an insight into the new aid architecture drawn in the nineties.

close commercial, political and historical ties. These connections may affect the aid effectiveness because close ties between donors and recipients give to recipient countries the possibility to resist institutional reforms asked by donors (Ram, 2003; Headey, 2008).

All these studies have shown that bilateral aid and multilateral aid have different motives. However, this concern has been largely omitted from the academic discussion of the effect of aid on governance. We enter into the debate by considering the distinction between both types of donors to analyze the effects of bilateral and multilateral aid on the quality of governance. Alesina and Weder (2002) opened this branch by investigating the effect of aid on corruption in an OLS estimation. However, they found no significant difference between bilateral and multilateral donors in reducing corruption between 1975 and 1995. Charron (2011) nuanced this result showing that the difference between both types of donors becomes significant only after the end of Cold War. Specifically, after 1997 and international commitments on a governance focus, multilateral aid succeeds in reducing corruption while bilateral does not, no matter the time period. Charron (2011) applied the “difference” General Method of Moments (GMM) estimator on dynamic panel data covering 82 recipient countries to avoid a possible simultaneity bias between aid and governance, a specific econometric issues that will be discussed in Section 1.4. The potential for a reverse causation, not taken into account in Alesina and Weder (2002), may also explain the difference recorded between the two studies findings.

### 1.3 The data and the variables

In order to investigate whether rents on natural resources affect both bilateral and multilateral aid effects on governance, we use annual available data for 52 African aid recipient countries, from 1997 to 2008 (see Table 1.8 for the list of countries). Our panel data is unbalanced (data are not available each year for all countries). Following Busse and Gröning (2009), we average the data over three years to flatten out cyclical fluctuations.<sup>6</sup> The sources and definitions of the variables are reported in Table 1.11. Descriptive statistics for the variables are provided in Table 1.1 and depicted in details in Appendix 1.A.3.

#### 1.3.1 Variables of interest

Our dependent variable is a proxy for the quality of governance. There are many sources that produce ratings on the quality of governance.<sup>7</sup> The most frequent measure in academic research (as Knack (2001) and Bräutigam and Knack (2004)) is that compiled from

<sup>6</sup>Using time averages also enables us to assume that time is needed to build better institutions.

<sup>7</sup>Appendix 1.A.1 provides details on the definitions and measures of the quality of governance.

Table 1.1: Summary statistics for the 52 African countries

| Variable (3-year average) | Mean  | Standard Deviation | Minimum | Maximum | N   |
|---------------------------|-------|--------------------|---------|---------|-----|
| Multilateral aid (%)      | 5.06  | 5.81               | -0.22   | 41.38   | 251 |
| Bilateral aid (%)         | 7.03  | 7.71               | 0       | 52.96   | 251 |
| DAC aid (%)               | 6.92  | 7.60               | 0       | 51.47   | 251 |
| Governance                | 0.41  | 0.14               | 0.08    | 0.87    | 185 |
| Control of Corruption     | -0.63 | 0.62               | -2.22   | 1.07    | 238 |
| Economic growth (%)       | 4.68  | 5.79               | -8.52   | 52.97   | 250 |
| Deaths in conflicts       | 0.48  | 2.41               | 0       | 24.90   | 250 |
| ELF                       | 0.62  | 0.27               | 0,03    | 0.92    | 250 |
| Oil (%)                   | 6.83  | 16.51              | 0       | 76.54   | 260 |
| Gas (%)                   | 0.64  | 2.50               | 0       | 21.12   | 260 |
| Mineral (%)               | 0.82  | 2.94               | 0       | 29      | 260 |
| Resources (%)             | 7.40  | 17.03              | 0       | 76.53   | 260 |
| Tropical location         | 0.77  | 0.42               | 0       | 1       | 260 |
| Rural population          | 61.40 | 17.54              | 13.1    | 92.79   | 260 |
| English law               | 0.33  | 0.47               | 0       | 1       | 255 |
| Catholic share            | 24.51 | 27.06              | 0       | 95.90   | 260 |
| Muslim share              | 35.33 | 37.68              | 0       | 99.80   | 260 |

the International Country Risk Guide (ICRG), a commercial service providing information on governance for investors and lenders. The ICRG quality of governance is the mean value of the ICRG measures of corruption, law and order, and bureaucracy quality (source: the Quality of Governance Institute). Corruption stands for the efficiency of government (whether positions are assumed through nepotism or ability) and its stability. Law and order stands for the impartiality of the legal system and the enforcement of law. Bureaucracy quality stands for the quality in public services. The ICRG indicator is scaled from 0 to 1. Higher scores indicate higher quality of governance. The lowest value of the quality of governance within the sample is 0.083 for Somalia in 2008 and the highest value is 0.875 for Namibia in 1997.

To account for foreign aid we use the Net Official Development Assistance (ODA), which refers to the disbursement of aid granted and to loans with a grant proportion of at least 25 percent. Among aid measures used in the empirical analysis, aid intensity (or aid dependence) scales ODA by the recipient’s GNI. This measure accounts for the dependence of a country on foreign aid (Bräutigam and Knack, 2004). Multilateral ODA is ODA allocated by an international agency, institution, or organization to an aid recipient country. Bilateral ODA is ODA allocated directly by one donor to one aid recipient country. Annual data of bilateral ODA and of multilateral ODA are available from the World Development Indicators (WDI) and from the Organization for Economic Cooperation and

Development (OECD) databases. The average recipient country of our sample receives 12.7 percent of total ODA in GNI (among which 40 percent is allocated by multilateral agencies). The highest allocation (144 percent of total aid in GNI) was directed to Liberia in 2008.

About a third of African countries are rich in natural resources, particularly in gold, diamonds, platinum (namely minerals), oil and gas (see Table 1.B.1 in Appendix 1.A.3). To assess the influence of natural resources on African countries' governance, we use three distinct measures, denoted *Oil*, *Gas*, and *Min*, appraised in percentage of GDP, and an aggregate, denoted *Nat*, where  $Nat = Oil + Gas + Min$  (source: WDI). These measures provide the share of oil, gas, and minerals in the GDP of the recipient country. In other words, they capture a country's dependence on natural resources.

### 1.3.2 Control variables

Following the existing literature, control variables are used to capture the determinants of the quality of governance and recipients' characteristics. Indeed, although African countries are (in average) major aid recipient countries, these countries still have (in average) poor institutional quality. However, it cannot be claimed that aid is directly responsible for the entire shape of governance in Africa. We need to control for all the determinants of governance in order to measure the net effect of aid on governance only. We give an example. In time of conflict, a country may attract more humanitarian aid and assistance to help for reconstruction. More aid may be associated to lower governance just because countries tend to have a lower quality of governance during the time of conflict. Do not control for the determinants of governance when estimating the aid-governance nexus may produce a false or biased correlation between high levels of aid and the worsening of the quality of governance in recipient countries. The literature on the determinants of governance usually imposes economic growth, social development, conflicts, ethnic heterogeneity, natural resources, history, and geographical location as determinants of governance.

We follow [Busse and Gröning \(2009\)](#) by using the economic growth rate (source: WDI) to capture the extent of the influence of economic growth on governance, and the share of rural population (source: WDI) to proxy for social development. [Busse and Gröning \(2009\)](#) argued that greater revenues support institutional reforms. [Gundlach and Paldam \(2009\)](#) found that income explains the long term quality of institutions because economic growth can lead citizens to ask for institutional changes suitable for investments. Rural countries have been shown to leave aside the available human capital ([Lucas, 2004](#)) and the development of manufacture, which requires strong institutional rules ([Rajan and Subramanian, 2011](#)).

We use the ethno-linguistic fractionalization index, which measures the probability that two citizens in a country belong to the same ethnic or linguistic group (source: [Alesina et al., 2003](#)) and the number of deaths occurred in an internal or external conflict<sup>8</sup> (source: WDI) to control for conflict and ethnic heterogeneity (see [La Porta et al. \(1999\)](#) and [Collier \(2001\)](#)). The degree of fractionalization, say the degree of heterogeneity among citizens, reflects the number of groups in competition. In heterogeneous countries, public resources tend to be diverted towards military, non-productive or rent-seeking sectors ([Aghion et al., 2004](#)), and governance presumably weakens ([Alesina et al., 1999](#)). Similarly, because conflicts need more public resources dedicated to the military sector, conflicts presumably decrease the quality of governance ([Addison et al., 2001](#); [Busse and Gröning, 2009](#)).

We use a dummy that equals unity for tropical countries (source: CIA Factbook) to point out that tropical weather has hampered the development of sound institutions ([Sachs and Warner, 1997](#); [La Porta et al., 1999](#); [Easterly and Levine, 2003](#); [Rodrik et al., 2004](#)). According to [Acemoglu et al. \(2001\)](#), a potential explanation is the inheritance of colonial history. Settlers were not able to build metropolitan institutions where they could not permanently settle. Instead, in areas where they had to face tropical diseases and mortality, they have built extractive institutions, which persist even after colonial independence.

Historical and religion characteristics are also common determinants of the current shape of governance ([La Porta et al., 1999](#); [Goldsmith, 2001](#); [Treisman, 2000](#); [Alesina and Dollar, 2000](#)). Aside our tropical dummy, we consider three other variables designed to capture (i) the legal system legacy, (ii) the religious legacy and (iii) the institutional legacy. To proxy for these variables, we use a dummy that takes one for English common law countries (source: [La Porta et al., 1999](#)); the shares of Catholic and Muslim populations in countries in 2007 (source: CIA Factbook) and the degree of political freedom (source: Freedom House). First, cultural beliefs and religious traditions shape the citizens incentives to ask for changes in terms of institutions. On the report of [La Porta et al. \(1999\)](#) and [Treisman \(2000\)](#), citizens from Catholic and Muslim countries are less likely to confront the existing government because of the hierarchic social construction. Second, the English common law – inherited from the 17<sup>th</sup> century with the Parliament to control the political power and protect individual rights – is associated to a lower weight of the government over the society, which decreases opportunities for corruption ([La Porta et al., 1999](#)). The recent and rapid creation of African states since the end of the colonial period has often be built over the colonial institutions inheritance ([Bloom et al., 1998](#); [Engerman and Sokoloff, 2002](#)). African countries have inherited from their former institutions that might be more

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<sup>8</sup>Internal or external conflicts involve at least one government and causes at least 25 deaths per year.

or less similar to the European institutions depending on the colonial environment and endowment. During the colonial period, extractive institutions have been developed in resources rich countries while in non-tropical countries, settlers may have exported their institutional outlines and experiences as well as their language and others specific ties. These schemes persist, at least in part, to the present ([Acemoglu et al., 2001](#)).

## 1.4 Estimation procedure

### 1.4.1 The model

We explore the causal relationship between aid and governance in aid recipient countries using dynamic panel data and accounting for the persistent nature of domestic institutions. We estimate the following benchmark equation:

$$\begin{aligned} gov_{it} = & \alpha_i + \rho gov_{it-1} + \beta_1 maid_{it} + \beta_2 baid_{it} + \gamma_1 nat_{it} + \\ & \gamma_2 maid_{it} \times nat_{it} + \gamma_3 baid_{it} \times nat_{it} + \phi' X_{it} + \lambda_t + \varepsilon_{it} \end{aligned} \quad (1.1)$$

where  $gov_{it}$  indicates the measure of the quality of governance for the country  $i$  at time  $t$ ;  $\alpha_i$  indicates the fixed individual effects on each country;  $gov_{it-1}$  is the lagged value of the dependent variable;  $maid_{it}$  and  $baid_{it}$  are respectively multilateral and bilateral aid flows divided by GNI;  $nat_{it}$  is the share of natural resources rents in GDP;  $maid_{it} \times nat_{it}$  and  $baid_{it} \times nat_{it}$  are interaction terms;  $X_{it}$  is a vector of control variables;  $\lambda_t$  indicates temporal dummies, and  $\varepsilon_{it}$  is the error term.<sup>9</sup>

Econometric problems may arise when estimating equation (1.1) with the Ordinary Least Squares estimator. First, the causality between foreign aid and governance may run in both directions, making foreign aid and the error term not independent. Second, the lagged value of the governance term in the right-hand side causes a problem of auto-correlation. Third, fixed-country effects (as the size of the country or its location) may be correlated with regressors while they are part of the error term. While a fixed effects instrumental variables estimation may cope with these issues, good instruments (highly correlated with the endogenous regressor but uncorrelated with the dependent variable) are difficult to find.<sup>10</sup> Another way to cope with these issues is to draw instruments from within the panel dataset itself. To estimate equation (1.1), we therefore use the [Blundell and Bond \(1998\)](#) estimator (hereafter the “system” GMM estimator), designed for dynamic

<sup>9</sup>Preliminary results show that (i) the coefficients of lagged values of aid are not significant and (ii) the aggregated effect of aid is statistically not significant. Table 1.C.1 in Appendix 1.C reports the GMM estimates of equation (1.1) using total ODA instead of bilateral and multilateral ODA.

<sup>10</sup>Section 3.3 in Chapter 3 discusses instrumentation variable techniques.

panel data.<sup>11</sup> It estimates simultaneously equation (1.1) written in levels and equation (1.1) written in first differences.

The system GMM estimator performs better than the “difference” GMM estimator proposed by [Arellano and Bond \(1991\)](#) (and used in [Charron \(2011\)](#)) as it uses additional moment conditions.<sup>12</sup> Precisely, estimations are much more efficient in small samples in time when applying the system GMM estimator. While we have to keep the limitations of using GMM estimators in mind – regarding the choice and quantity of instruments in particular –, the system GMM estimator is able to provide consistent results for such models. Besides, we run robustness checks using alternative estimators.

### 1.4.2 The treatment of endogeneity

We now comment on the issue of endogeneity took up in Subsection 1.4.1. First, using dynamics to capture the effect of lagged *Gov* on current *Gov* makes the lagged dependent variable inherently correlated with the error term. Second, aid donors’ allocations may be conditioned on the recipient’s quality of governance ([Burnside and Dollar, 2000](#); [Alesina and Dollar, 2000](#); [Svensson, 2000](#); [McGillivray, 2005](#); [Younas, 2008](#)).<sup>13</sup> Aid is potentially endogenous to governance and correlated with the residuals. Third, the quality of governance may explain parts of economic growth ([Knack and Keefer, 1995](#)). [Mauro \(1995\)](#) showed that corruption decreases economic growth, either directly or through political instability. Finally, according to [Le Billon \(2003\)](#), a change in corruption or political liberalization affects significantly the probability and duration of conflicts.

The two-step GMM estimator proposed by [Blundell and Bond \(1998\)](#) provides asymptotically efficient, robust and reliable results for such models when facing endogeneity, dynamic issues and heteroscedasticity ([Windmeijer, 2005](#)). The lags of endogenous variables are used as instruments for equation (1.1) written in first differences and the lagged differences of the endogenous variables are used as instruments for equation (1.1) written in level. We do not include additional (external) instruments. Specifically, the estimated aid coefficient is not biased by reverse causality and only measures the direct effect of aid on governance.

This estimation procedure assumes that there is no second-order autocorrelation in the error terms and that instrumentation is sound. Hence, for each regression, we test for autocorrelation and for the validity of the instruments (say that instruments are not correlated with residuals). The Hansen J test for overidentifying restrictions loses power

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<sup>11</sup>It also enables us to control for the possible bias due to unobserved country heterogeneity on estimated coefficients thanks to a first difference transformation.

<sup>12</sup>The [Arellano and Bond \(1991\)](#) estimator uses lagged values of variables in levels as instruments.

<sup>13</sup>Section C.1.3 in Appendix C presents an overview of the literature findings on donors’ motives.

when the number of instruments exceeds the cross section sample size (Roodman, 2009). When the ratio of countries to instruments is lower than one, the estimation procedure may be biased and coefficients may be significant even if there is no statistical association. This is precisely the problem faced when using as a dependent variable the ICRG quality of governance. For most of our regressions, the data are available only for 34 countries. To overcome a possible bias in the significance of results, we control for the relative number of instruments so that this number is never large relative to the number of countries.<sup>14</sup> For example, in the second regression reported in Table 1.2, 35 variables are used to instrument for endogenous variables. The ratio of countries to instruments (34/35) is lower than one so that we need to limit the number of instruments. Alternative estimating procedures are provided as robustness checks to prove that our results are not dependent on this choice.<sup>15</sup>

## 1.5 Benchmark regressions

Based on this instrumentation strategy, Section 1.5 presents our analysis. The empirical results for equation (1.1) are reported in Table 1.2. They are designed to answer the following questions:

- (a) Do multilateral and bilateral aid have a direct effect on governance?
- (b) Do natural resources undermine the positive effect of aid on governance?
- (c) Does the effect of aid on governance depend on the type of natural resources?

### 1.5.1 Do multilateral and bilateral aid have a direct effect on governance?

To answer this question we estimate equation (1.1) without interaction terms. The parameters of interest are  $\beta_1$  and  $\beta_2$ , the respective coefficients of multilateral and bilateral aid.  $\beta_1$  is positive and  $\beta_2$  is negative, both significant at the 5% level.<sup>16</sup> The results suggest that, all else equal, aid increases the quality of governance when allocated by multilateral agencies.

Let us look at two examples to illustrate the propitious effect of multilateral aid on governance. Consider two countries, the Republic of the Congo and the Democratic Republic

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<sup>14</sup>In the instrument matrix, each instrument generates one column for each time and each lag available to that time. Roodman (2009) suggested to collapse the set of instruments into one unique column in order to limit the number of instruments.

<sup>15</sup>The number of instruments is reduced to one lag per endogenous variables in order to minimize the ratio between the number of instruments and the number of countries. Estimation results are not sensitive to the lag reduction (see Table 1.7, which reports estimates of equation (1.1) with no lag restriction).

<sup>16</sup>GMM estimations are extensions of linear regressions, their interpretation is similar of that of OLS.

of the Congo (DRC). Their GNIs are comparable (a few more than 11,500 million current US dollars in 2008). The Republic of the Congo has received more than 5.67% of GNI in terms of multilateral aid and the DRC around 0.78% in 2008. The regression shows that an increase in multilateral aid from the amount received by the DRC to the amount received by the Republic of the Congo will increase the ICRG indicator (which is scaled from 0 to 1) by about 0.03 units, from 0.11 to 0.14 ( $\partial gov / \partial maid = 0.007 \times (5.67 - 0.78) \approx 0.035$ ), say by 27%. Consider now Burundi and Eritrea that also have comparable GNIs (about 1,500 million current US dollars in 2008) but have received extremely different multilateral aid amounts in 2008. Then, the regression shows that an increase in multilateral aid from the level of Eritrea (5.06% of its GNI) to the level of Burundi (21.73% of its GNI) will increase appreciably the quality of governance by 0.12 units ( $\partial gov / \partial maid = 0.007 \times (21.73 - 5.06) \approx 0.120$ ).

We now briefly move to the other variables. Tropical location has a predicted significant adverse effect on the quality of governance. The coefficients of the share of rural population and the shares of Muslim and Catholic populations are positive and significant. Though natural resources, the heritage of English common law, conflicts and economic growth are not statistically significant, they have the expected sign. The estimated coefficient of lagged quality of governance is positive, suggesting that current governance is positively correlated with future governance.

### 1.5.2 Do natural resources undermine the positive effect of aid on governance?

We presently estimate equation (1.1) with our two interaction terms,  $maid \times nat$  and  $baid \times nat$ . Now, the parameters of interests are  $\beta_1$ ,  $\beta_2$ ,  $\gamma_2$  and  $\gamma_3$ , where  $\gamma_2$  is the coefficient of  $maid \times nat$  and  $\gamma_3$  the coefficient of  $baid \times nat$ . As aid is assumed to be endogenous to governance, interactions terms including aid are also assumed to be endogenous to governance. The inclusion of these interaction terms therefore increases the number of instruments employed in the regressions. The ratio of countries to instruments becomes slightly lower than one. The hypotheses underlying the estimation procedure may be violated and the reliability of our empirical results may be weakened. As seen in Section 1.4, we restrict the number of instruments. All parameters of interests are significant at the 1% level, and the estimates of  $\beta_1$  and  $\beta_2$  are similar to those of the previous regression. Note that  $\beta_2$  and  $\gamma_1$  are negative, and  $\beta_1$  and  $\gamma_2$  positive, both significantly. This suggests that natural resources alter the relationship between multilateral aid and governance by diminishing the propitious effect of aid on governance, maybe because parts of aid can still be diverted from initial aid purposes in resources dependent countries. But surprisingly,

estimation results suggest as well that the negative effect of bilateral aid is reduced in resources-rich recipients. Bilateral aid tends (albeit slightly) to be less detrimental to the quality of governance in resources-rich countries.

Some bilateral donors might impose further constraints on aid in resource-rich countries implying more pressure on the recipient government that spends its rents with discretion (in this vein, see [Kolstad et al. \(2009\)](#) who discussed the Norwegian petroleum-related aid program designed to reduce corruption in oil rich countries). Another explanation might be that bilateral donors give less aid (in average) to resource-rich countries, which may reduce the harmful governance effect of bilateral aid. In average, a resource-rich country in our sample receives the quarter of the average amount received by an African country. Some of donor countries may condition their assistance on the governments' willingness to improve institutional reforms (as Australia and Denmark aid following [Berthélemy and Tichit \(2004\)](#)), which can weight on total bilateral aid. Aid may therefore be (in average) lower in resource-rich countries owing to weaker institutions than in other developing countries.

### 1.5.3 Does the effect of aid on governance depend on the type of natural resource?

Our measure  $Nat$ , the share of natural resources, adds the share of natural gas, minerals and oil resources in the aid recipient's GDP. According to [Boschini et al. \(2007\)](#), different natural resources do not affect similarly governance. For this reason, we disaggregate  $Nat$  into our three measures of natural resources. To investigate whether the type of natural resources is pertinent in determining the effect of aid on governance, we re-estimate equation (1.1) with our three measures of natural resources, the share of natural gas rents, the share of minerals rents and the share of oil rents in the aid recipient's GDP. Equation (1.1) becomes:

$$\begin{aligned}
 gov_{it} = & \alpha_i + \rho gov_{it-1} + \beta_1 maid_{it} + \beta_2 baid_{it} + \theta_1 oil_{it} + \theta_2 oil_{it} \times maid_{it} \\
 & + \theta_3 oil_{it} \times baid_{it} + \omega_1 gas_{it} + \omega_2 gas_{it} \times maid_{it} + \omega_3 gas_{it} \times baid_{it} \\
 & + \sigma_1 min_{it} + \sigma_2 min_{it} \times maid_{it} + \sigma_3 min_{it} \times baid_{it} + \phi' X_{it} + \lambda_t + \varepsilon_{it}
 \end{aligned} \tag{1.2}$$

where  $oil_{it}$  is the share of oil rents in GDP;  $gas_{it}$  is the share of natural gas rents in GDP;  $min_{it}$  is the share of minerals rents in GDP;  $maid_{it} \times oil_{it}$ ,  $baid_{it} \times oil_{it}$ ,  $maid_{it} \times gas_{it}$ ,  $baid_{it} \times gas_{it}$ ,  $maid_{it} \times min_{it}$ , and  $baid_{it} \times min_{it}$  are interaction terms.

As aid is endogenous to governance, interactions terms including aid are also endogenous to governance. Again, in equation (1.2), the number of necessary instruments used to

cope with regressors endogeneity is larger than the cross section sample size. We restrict the number of instruments so that the ratio of countries to instruments becomes equal or larger than one. To increase the reliability of our results, we estimate equation (1.2) following two specification types. First, we include separately interaction terms relative to each natural resource rents. Second, we include simultaneously all interaction terms. The number of lags of the endogenous variables used for instrumentation is restricted in all specifications.

Results reported in Table 1.2 show that the partial effect of aid on governance is different from one resource to another. In all the regressions, multilateral aid is propitious for governance while bilateral aid is not. Note that  $\theta_2$  is negative and  $\theta_3$  positive, both significantly. This suggests that oil resources affects the relationship between multilateral aid and governance by diminishing the positive effect of aid on governance. Again, estimation results show that the negative effect of bilateral aid is reduced in oil-rich recipient countries. Note that  $\omega_2$ ,  $\omega_3$ ,  $\sigma_2$ , and  $\sigma_3$  are either positive or negative but never significant across regressions, suggesting that neither natural gas nor mineral rents are altering the aid-governance relationship. Disaggregating natural resources into its components indicates that the type of natural resource rents is relevant for investigating the interaction effect of aid and resources on governance. The dependence of a country on the rents of its oil resources, which provides larger rents than other natural resources, is particularly adverse for an aid recipient country.

Table 1.2: The direct effect of aid and the interaction effect of aid and natural resources on governance

|                              | (1)                 | (2)                  | (3)                  | (4)                | (5)                  | (6)                  |
|------------------------------|---------------------|----------------------|----------------------|--------------------|----------------------|----------------------|
| Governance $_{t-1}$          | 0.469***<br>(3.34)  | 0.460***<br>(2.68)   | 0.621***<br>(6.30)   | 0.486***<br>(3.75) | 0.517***<br>(4.05)   | 0.363***<br>(2.14)   |
| Multilateral aid             | 0.007**<br>(2.50)   | 0.007***<br>(2.74)   | 0.010***<br>(3.81)   | 0.007***<br>(3.02) | 0.009***<br>(5.45)   | 0.013***<br>(2.80)   |
| Bilateral aid                | -0.005**<br>(-1.99) | -0.005**<br>(-2.38)  | -0.008***<br>(-3.39) | -0.003*<br>(-1.67) | -0.007***<br>(-4.02) | -0.009**<br>(-2.54)  |
| Multilateral aid × Resources |                     | -0.001***<br>(-2.76) |                      |                    |                      |                      |
| Bilateral aid × Resources    |                     | 0.000**<br>(2.50)    |                      |                    |                      |                      |
| Multilateral aid × Oil       |                     |                      | -0.001***<br>(-2.83) |                    |                      | -0.002***<br>(-6.35) |
| Bilateral aid × Oil          |                     |                      | 0.000*<br>(1.87)     |                    |                      | 0.000**<br>(2.54)    |
| Multilateral aid × Mineral   |                     |                      |                      | -0.003<br>(-1.22)  |                      | 0.002<br>(0.32)      |
| Bilateral aid × Mineral      |                     |                      |                      | -0.000<br>(-0.15)  |                      | -0.002<br>(-0.96)    |
| Multilateral aid × Gas       |                     |                      |                      |                    | -0.001<br>(-0.37)    | -0.003<br>(-0.85)    |
| Bilateral aid × Gas          |                     |                      |                      |                    | 0.001<br>(0.57)      | 0.003<br>(0.98)      |
| Oil                          |                     |                      | -0.000<br>(-0.68)    | -0.001<br>(-0.97)  | -0.000<br>(-0.85)    | -0.001<br>(-1.10)    |
| Mineral                      |                     |                      | 0.005**<br>(2.50)    | 0.015**<br>(2.51)  | 0.004**<br>(2.22)    | 0.016***<br>(3.46)   |
| Gas                          |                     |                      | -0.000<br>(-0.02)    | -0.003<br>(-0.91)  | -0.002<br>(-0.94)    | -0.003<br>(-0.85)    |
| Resources                    | -0.000<br>(-0.64)   | 0.000<br>(0.11)      |                      |                    |                      |                      |
| Rural population             | 0.002**<br>(2.34)   | 0.002*<br>(1.84)     | 0.001***<br>(2.98)   | 0.002**<br>(2.33)  | 0.002***<br>(3.13)   | 0.003**<br>(2.48)    |
| Tropical location            | -0.115**            | -0.116               | -0.054               | -0.127**           | -0.110**             | -0.167**             |

*Continued on next page*

Table 1.2 – Continued from previous page

|                                     | (1)                        | (2)                        | (3)                        | (4)                        | (5)                        | (6)                        |
|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| English law                         | (-2.04)<br>0.030<br>(1.02) | (-1.49)<br>0.039<br>(1.38) | (-1.35)<br>0.020<br>(1.03) | (-2.15)<br>0.030<br>(1.06) | (-2.47)<br>0.017<br>(0.92) | (-2.15)<br>0.028<br>(1.03) |
| Muslim share                        | 0.002**<br>(2.28)          | 0.003*<br>(1.94)           | 0.002**<br>(2.18)          | 0.003**<br>(2.46)          | 0.002**<br>(2.17)          | 0.004***<br>(3.73)         |
| Catholic share                      | 0.001**<br>(2.45)          | 0.002**<br>(2.25)          | 0.001**<br>(2.15)          | 0.002***<br>(2.96)         | 0.001**<br>(2.24)          | 0.002***<br>(3.43)         |
| Political freedom                   | 0.000<br>(0.05)            | -0.001<br>(-0.12)          | -0.001<br>(-0.17)          | 0.002<br>(0.33)            | 0.002<br>(0.29)            | 0.004<br>(0.42)            |
| ELF                                 | 0.076<br>(1.29)            | 0.079<br>(0.91)            | 0.012<br>(0.28)            | 0.070<br>(1.13)            | 0.079<br>(1.39)            | 0.095*<br>(1.95)           |
| Economic growth                     | 0.001<br>(0.37)            | 0.000<br>(0.05)            | 0.002<br>(0.97)            | 0.000<br>(0.47)            | 0.001<br>(0.31)            | -0.002<br>(-0.58)          |
| Deaths in conflicts                 | -0.002<br>(-0.78)          | -0.001<br>(-1.58)          | -0.001<br>(-0.86)          | -0.002<br>(-1.26)          | -0.003<br>(-1.42)          | -0.003**<br>(-2.16)        |
| Observations                        | 133                        | 133                        | 133                        | 133                        | 133                        | 133                        |
| Lag restriction?                    | No                         | Yes                        | Yes                        | Yes                        | Yes                        | Yes                        |
| Countries/Instruments               | 34/27                      | 34/33                      | 34/34                      | 34/34                      | 34/34                      | 34/34                      |
| Hansen J test (p-value)             | 0.750                      | 0.477                      | 0.636                      | 0.429                      | 0.486                      | 0.872                      |
| AR(1) test (p-value)                | 0.145                      | 0.269                      | 0.296                      | 0.132                      | 0.168                      | 0.076                      |
| AR(2) test (p-value)                | 0.641                      | 0.080                      | 0.813                      | 0.665                      | 0.601                      | 0.926                      |
| Difference-in-Hansen test (p-value) | 0.476                      | 0.128                      | 0.915                      | 0.671                      | 0.737                      | 0.267                      |

Notes: a. Table 1.2 reports the system GMM estimation results of equations (1.1) and (1.2). b. The ICRG QoG is the dependent variable. c. For Columns (2) to (6): the number of lags used to instrument the endogenous variables is restricted until the ratio is equal or higher than one. d. Column (1) reports the estimation results of equation (1.1) without interaction terms. Column (2) reports the estimation results of equation (1.1). Column (3) reports the estimation results of equation (1.2) including only interactions terms involving oil. Column (4) reports the estimation results of equation (1.2) including only interactions terms involving minerals. Column (5) reports the estimation results of equation (1.2) including only interactions terms involving gas. Column (6) reports the estimation results of equation (1.2) including all interactions terms. e. The null hypothesis of the Hansen J test is that the instruments are not correlated with the residuals. The null hypothesis of the AR(2) (respectively AR(1)) test is that the errors in the first difference regression exhibit no second (respectively first) order serial correlation. The null hypothesis of the difference-in-Hansen test of exogeneity of GMM instrument subsets is that instruments are exogenous. Robust standard errors in parentheses (namely robust to heteroskedasticity). The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

## 1.6 Robustness regressions

Results in Table 1.2 show a propitious effect of multilateral aid on governance, though reduced in resource-rich countries. In this section, we verify their robustness to specification or methodological choices. Alternative measures of the dependent and interest variables as well as alternative estimators and multiple sample selections are used as robustness checks. To keep the discussion focused we report a summary of the results in Tables 1.3, 1.4, 1.5 and 1.6.

### 1.6.1 Alternative measure of governance

Governance measures are available from various sources (see Appendix 1.A.1). Based on different definitions, they do not cover the same information. None of the measures of governance is perfect and each might produce different results. Therefore, it is possible that our results on aid are dependent on the governance measurement, even though indicators are highly correlated.<sup>17</sup> We consider an alternative measure compiled by the World Bank Institute, namely the control of corruption. This index, one of the six constructed by the World Bank Institute, has the advantage of measuring mainly government corruption, even if it has the drawback to be based on perception surveys. We do not aggregate the six available World Bank governance indicators for two reasons. First, we focus on this specific aspect of governance to fit most of the empirical literature (Alesina and Weder, 2002; Charron, 2011). Second, imposing an aggregated measure presupposes to know the weight of each indicator and presupposes that the effect of aid on each one has the same direction. The control of corruption, based on 25 data sources constructed by 18 different organizations, measures the control of the abuse of the public power to achieve self-interest and lucrative aims and to misappropriate public goods. The control of corruption is scaled -2.5 to 2.5. Recall that the ICRG indicator is scaled 0 to 1. Higher values indicate better quality of governance. The lowest value of the control of corruption is -2.22 for the Democratic Republic of the Congo in 1997. The highest value is 1.07 for Botswana in 2003.

We therefore test whether the aid-governance relationship resists the alternative coding of governance, where governance is only measured by the degree of control of corruption. We estimate equation (1.1) and equation (1.2) with all interactions terms. As the ratio of countries to instruments is above one when estimating equation (1.2), we restrict the number of lags used as instruments for regressions related to equation (1.2). The results are reported in Table 1.3. In all the regressions, results hold for  $\beta_1$ ,  $\beta_2$  (our aid coefficients),

<sup>17</sup>The correlation coefficient is 0.69 for the ICRG measure and the World Bank measure.

and  $\theta_2$  (the coefficient for the interaction term between multilateral aid and oil rents), but the significance drops for interaction terms between bilateral aid and natural resources. These results suggest that the positive effect of multilateral aid on governance is specifically reduced in oil-resource countries, while the fact that bilateral aid is less detrimental to governance depends on the governance measure.

### 1.6.2 Alternative estimators

As seen in Section 1.4, dynamic panel data models contain unobserved individual effects that are correlated with the lagged term of the dependent variable. Likewise, aid, growth and conflict are potentially endogenous. Both issues make standard estimators not consistent. Even though the assumption that aid is subject to reverse causality is reasonable, we first reassess this issue by applying an OLS estimation to have comparison with [Alesina and Weder \(2002\)](#) in particular, the first study opening the branch of literature investigating the disaggregated aid-governance nexus. OLS results of equation (1.1) and (1.2), and of equation (1.2) with only the terms involving oil resources are reported in Table 1.4 in Panel B. Results hold. The pooled OLS estimation provides similar estimates for the coefficients.

Second, we use an alternative to the system GMM estimator applied in [Charron \(2011\)](#). The difference GMM estimator takes the first difference of the data and uses as instruments lagged values of the endogenous variables. The difference estimator is shown to be less efficient than the system one and to use poorer instruments ([Blundell and Bond, 1998](#)). But it can produce different results. To confirm our system GMM results and have comparison with the results of [Charron \(2011\)](#), the difference GMM estimation results of equation (1.1) and (1.2), and of equation (1.2) with only the terms involving oil resources are reported in Table 1.4 in Panel A. Clearly,  $\beta_1$ ,  $\beta_2$ ,  $\gamma_2$ ,  $\gamma_3$ ,  $\theta_2$ , and  $\theta_3$  are robust across regressions: multilateral aid encourages good governance, in particular in low oil rents dependent countries while bilateral aid does not.

### 1.6.3 Sample selection

We now turn to examine the effect of aid on governance in sub-samples, listed in Tables 1.9 and 1.10. We run separate regressions for two different samples. While the effect of aid on governance may be lower in Sub-Saharan African countries because these countries are highly aid-dependent ([Bräutigam and Knack, 2004](#)), the aid-governance relationship may be improved in low or not resource-dependent countries. We replicate the estimation of equations (1.1) and (1.2), and of equation (1.2) with only the terms involving oil resources

on Sub-Saharan African countries and excluding all resource-rich countries. We exclude from the whole sample the countries whose rents derived from natural resources extraction exceed 10 percent of their GDP (on average over the whole period). The results are reported in Table 1.4, respectively in Panel C and in Panel D. Again, multilateral aid is positively associated with governance in all the regressions but specifically reduced in oil-rich countries. The results do no longer hold when highly resource-dependent countries are excluded from the sample. This suggests that the positive aid effect is not reduced in less resource-dependent countries. Non-linearities in the aid-governance relationship are more likely to occur in heavily resources-dependent countries.

#### 1.6.4 Alternative measure of bilateral aid

Another concern is related to bilateral aid. Bilateral aid gathers all individual donor countries. Though “old” donors distribute the major part of aid allocations, we can wonder whether our estimates are driven by “new” donors (as China), less attentive to the quality of political institutions (see [Dreher and Fuchs \(2011\)](#)) but also less likely to allocate aid explicitly toward bad governed countries ([Dreher et al., 2011](#)). To verify whether our results on bilateral aid are affected by new donors, we focus on a measure for bilateral assistance provided by the OECD that gathers the main twenty-four Development Assistance Committee (DAC) donors in charge of aid purpose (source: OECD). Results reported in Table 1.4 in Panel E show that the results do not change when considering only DAC donors. Though these “old” countries target officially developmental and institutional issues, the coefficient of DAC donors’ aid,  $\beta_3$ , remains significantly negative. Again, this adverse effect is statistically significant across regressions, though lower in resource-rich countries.<sup>18</sup>

#### 1.6.5 Time fixed effects

Another interesting question is whether time influences the regression results. To control for time fixed effects, we include in the benchmark regression time dummies. Including time dummies may also alleviate the possible biases in estimation due to aid volatility. The results displayed in Table 1.4 in Panel F show that the change in specification does not affect the propitious effect of multilateral aid on governance. The results show that the parameters of interest are significant and clearly robust, no matter the type of aid and the interaction term.

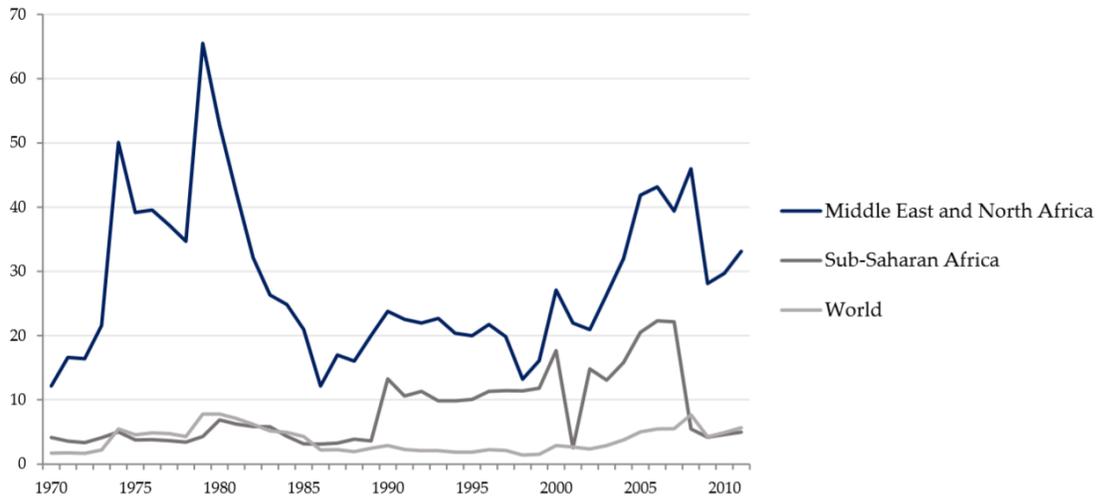
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<sup>18</sup>The correlation coefficient between DAC aid and bilateral aid is 0.98.

### 1.6.6 Extended sample

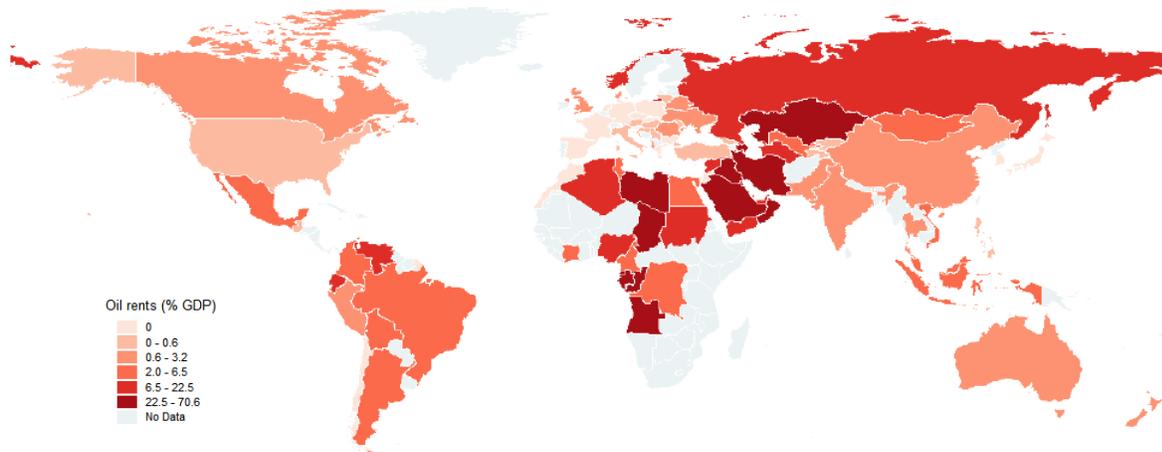
The last concern in checking the robustness of the core result is whether our findings hold for a larger time period and additional countries. First, it is possible that our results are driven by the growing donors' awareness of the need to promote good governance in the developing world. Aid became more selective on good governance and increasingly conditioned on institutional improvements starting from the end of the nineties (Dunning, 2004). Charron (2011) evidenced that multilateral aid (but not bilateral aid) has become effective only after 1997, partly because donors' commitments have been adjusted to the development of sound institutions in recipient countries. To verify this assessment, we extend our initial time period (1997-2008) by including data available since 1984. Second, we also extend our sample of countries by including the remaining of Middle East and North African (MENA) countries that receive foreign assistance, namely Bahrain, Iran, Lebanon, Kuwait, Jordan, Saudi Arabia, Syria and Yemen. The MENA region gathers majority of the most oil dependent countries in the world (see Figure 1.2 and Figure 1.1). Recipient Middle East countries derive in average 33.17 per cent of their revenues from their rents on natural resources (six times more than the average for African countries). Countries belonging to the MENA region also receive in average 1.66 per cent aid from multilateral agencies (half less for the Middle East countries alone) and 3.52 per cent from bilateral donors.

We run 24 regressions over four time-periods (1984-2008; 1987-2008; 1990-2008 and 1993-2008) for African countries and for the extended sample, which includes the remaining of the MENA countries. Results, reported in Tables 1.5 and 1.6, are all robust to the sample extension and to the sample selection. The coefficient of multilateral aid,  $\beta_2$ , is always positive while the coefficient of bilateral aid,  $\beta_3$  is always negative. Considering African countries alone, the results show that the time period does not clearly matter. Since the end of the eighties, the quality of governance in Africa is improved by multilateral aid but decreased by bilateral aid. The beneficial effect of multilateral aid on the quality of governance in Africa is not driven by the change in the global aid allocation criteria. Rents on natural resources are also still decreasing the positive effect of multilateral aid. When we consider African and MENA countries together, the positive effect of multilateral becomes strongly significant only since the beginning of the nineties, which leads support to the conclusion brought by Charron (2011).



Note: Data on natural resources, as a percentage of GDP, are available on line at: [databank.worldbank.org/data/](http://databank.worldbank.org/data/).

Figure 1.1: Rents on natural resources in Sub-Saharan Africa and the MENA region (1970-2012)



Note: Data on oil rents, as a percentage of GDP, are available on line at: [databank.worldbank.org/data/](http://databank.worldbank.org/data/).

Figure 1.2: Rents on oil resources in 2010

## **1.7 Conclusion**

This Chapter has displayed an empirical examination of the effect of foreign aid on the quality of domestic governance. The governance effect of aid is not straightforward. Most analyses of the aid-governance relationship have focused upon total foreign aid, aggregating different types of foreign aid across different types of donors, ignoring hence very important variations due to the different motives of each type of donors. Not all foreign aid is allocated toward the same developing aim. This topic has been, however, largely omitted from the academic discussion of the effect of aid on the quality of governance. Moreover, domestic conditions, in particular the size and type of natural resources rents, can affect the aid-governance relationship(s) because a resource-rich country may manage foreign aid inflows as it manages rents derived from natural resources. We argued that if one wants to know whether foreign aid affects the quality of governance in a recipient country, one should differentiate between bilateral and multilateral donors and investigate the conditional effect of aid, based on natural resources rents importance.

Our data covering African countries over the 1997-2008 period have revealed a strong empirical support for a propitious effect of aid allocated by multilateral agencies on the recipients' quality of governance. The effects of both bilateral and multilateral aid are conditioned on the dependence of the recipient country on its natural resources. The evidence has strongly indicated that multilateral aid is much more effective at improving governance in non-major oil producing countries. Both oil and aid resources are money or transfers managed by the government. Then, the difference in their consequences presumably results from how aid funds are allocated. Precisely, the type of donors may matter in determining how foreign aid is allocated. Multilateral agencies are assumed to pay greater attention to institutional quality and consequently to be more selective if the recipient country does no effort to improve its governance quality.

There is scope for innovations. Foreign donors could support a strategy that has so far been questioned: a big push concentrating large resources allocated by multilateral agencies in a promising environment, namely in oil-poor countries. Evaluating what exactly makes multilateral aid works better than bilateral aid would inform about complementary policies that would enhance the multilateral aid effects on governance in recipient countries.

Table 1.3: Robustness regressions (1) – Alternative measure of governance

|                                      | (1)                | (2)                 | (3)                  |
|--------------------------------------|--------------------|---------------------|----------------------|
| Control of Corruption <sub>t-1</sub> | 0.270<br>(0.60)    | 0.436***<br>(3.23)  | 0.413***<br>(3.22)   |
| Multilateral aid                     | 0.040**<br>(2.00)  | 0.038***<br>(3.54)  | 0.037***<br>(2.77)   |
| Bilateral Aid                        | -0.026*<br>(-1.71) | -0.025**<br>(-2.40) | -0.021***<br>(-2.71) |
| Multilateral aid × Resources         | -0.001<br>(-0.48)  |                     |                      |
| Bilateral aid × Resources            | 0.000<br>(0.16)    |                     |                      |
| Multilateral aid × Oil               |                    | -0.004**<br>(-2.51) | -0.005*<br>(-1.86)   |
| Bilateral aid × Oil                  |                    | 0.000<br>(0.49)     | 0.000*<br>(1.66)     |
| Multilateral aid × Mineral           |                    |                     | -0.000<br>(-0.12)    |
| Bilateral aid × Mineral              |                    |                     | 0.002<br>(0.37)      |
| Multilateral aid × Gas               |                    |                     | -0.046<br>(-0.97)    |
| Bilateral aid × Gas                  |                    |                     | 0.030<br>(1.10)      |
| Observations                         | 166                | 166                 | 166                  |
| Lag restriction?                     | No                 | No                  | Yes                  |
| Countries/Instruments                | 46/35              | 46/37               | 46/43                |
| Hansen J test (P-value)              | 0.737              | 0.701               | 0.860                |
| AR(2) test (P-value)                 | 0.070              | 0.066               | 0.050                |

*Notes:* a. Table 1.3 reports the system GMM estimation results of 3-years averages between 1997 and 2008 of equations (1.1) and (1.2). b. The World Bank Control of Corruption is the dependent variable. c. The ratio countries/instruments is below 1 in the regression reported in Column (3). The number of lags used to instruments the endogenous variables is restricted until the ratio is equal or higher than one. d. Column (1) reports the estimation results of equation (1.1). Column (2) reports the estimation results of equation (1.2) including only interactions terms involving oil. Column (3) reports the estimation results of equation (1.2) including all interactions terms. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 1.4: Robustness regressions (2) – Alternative specifications

|                                             | (1)                  | (2)                  | (3)                  |
|---------------------------------------------|----------------------|----------------------|----------------------|
| <i>Panel A: "Difference" GMM estimation</i> |                      |                      |                      |
| Multilateral aid                            | 0.004***<br>(2.71)   | 0.004***<br>(2.73)   | 0.004*<br>(1.72)     |
| Bilateral aid                               | -0.004***<br>(-4.66) | -0.004***<br>(-4.28) | -0.003<br>(-1.56)    |
| Mult. aid × Resources                       | -0.000**<br>(-2.11)  |                      |                      |
| Bil. aid × Resources                        | 0.000***<br>(5.43)   |                      |                      |
| Mult. aid × Oil                             |                      | -0.001***<br>(-2.64) | -0.001***<br>(-3.37) |
| Bil. aid × Oil                              |                      | 0.000***<br>(4.39)   | 0.000***<br>(4.25)   |
| Observations                                | 99                   | 99                   | 99                   |
| Lag restriction?                            | Yes                  | Yes                  | Yes                  |
| Maximum number of lags used                 | 1                    | 1                    | 1                    |
| Countries/instruments                       | 34/30                | 34/32                | 34/48                |
| <i>Panel B: OLS estimation</i>              |                      |                      |                      |
| Multilateral aid                            | 0.006***<br>(3.75)   | 0.007***<br>(4.25)   | 0.006***<br>(3.24)   |
| Bilateral Aid                               | -0.004***<br>(-3.87) | -0.005***<br>(-4.14) | -0.004**<br>(-2.47)  |
| Mult. aid × Resources                       | -0.000<br>(-0.54)    |                      |                      |
| Bil. aid × Resources                        | 0.000<br>(1.31)      |                      |                      |
| Mult. aid × Oil                             |                      | -0.001***<br>(-2.92) | -0.001***<br>(-3.16) |
| Bil. aid × Oil                              |                      | 0.000**<br>(2.44)    | 0.000**<br>(2.20)    |
| Observations                                | 133                  | 133                  | 133                  |
| <i>Panel C: Sub-Saharan Africa sample</i>   |                      |                      |                      |
| Multilateral aid                            | 0.007***<br>(3.82)   | 0.011***<br>(3.37)   | 0.014***<br>(2.97)   |
| Bilateral Aid                               | -0.005***<br>(-3.03) | -0.007***<br>(-3.60) | -0.010***<br>(-3.50) |
| Mult. aid × Resources                       | -0.001**             |                      |                      |

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Table 1.4 – *Continued from previous page*

|                                                                | (1)       | (2)       | (3)            |
|----------------------------------------------------------------|-----------|-----------|----------------|
|                                                                | (-2.34)   |           |                |
| Bil. aid × Resources                                           | 0.000     |           |                |
|                                                                | (1.17)    |           |                |
| Mult. aid × Oil                                                |           | -0.001*** | -0.001***      |
|                                                                |           | (-4.92)   | (-3.77)        |
| Bil. aid × Oil                                                 |           | 0.000**   | 0.000**        |
|                                                                |           | (2.12)    | (2.18)         |
| Observations                                                   | 115       | 115       | 115            |
| Hansen J test (p-value)                                        | 0.670     | 0.964     | 0.997          |
| AR(2) test (p-value)                                           | 0.150     | 0.595     | 0.307          |
| Lag restriction                                                | Yes       | Yes       | Yes            |
| Maximum number of lags used                                    | 2         | 2         | 1 <sup>a</sup> |
| Countries/instruments                                          | 29/28     | 29/28     | 29/32          |
| <i>Panel D: Low or not resource dependent countries sample</i> |           |           |                |
| Multilateral aid                                               | 0.010***  | 0.017***  | 0.011***       |
|                                                                | (6.03)    | (2.74)    | (3.66)         |
| Bilateral Aid                                                  | -0.008*** | -0.011*** | -0.008***      |
|                                                                | (-5.09)   | (-3.05)   | (-3.23)        |
| Mult. aid × Resources                                          | -0.001    |           |                |
|                                                                | (-0.72)   |           |                |
| Bil. aid × Resources                                           | 0.001     |           |                |
|                                                                | (0.69)    |           |                |
| Mult. aid × Oil                                                |           | -0.009**  | -0.002         |
|                                                                |           | (-2.29)   | (-0.26)        |
| Bil. aid × Oil                                                 |           | 0.002**   | 0.001          |
|                                                                |           | (2.48)    | (0.34)         |
| Observations                                                   | 115       | 115       | 115            |
| Hansen J test (p-value)                                        | 0.344     | 0.513     | 0.764          |
| AR(2) test (p-value)                                           | 0.196     | 0.298     | 0.663          |
| Lag restriction                                                | Yes       | Yes       | Yes            |
| Maximum number of lags used                                    | 2         | 2         | 1              |
| Countries/instruments                                          | 29/28     | 29/28     | 29/32          |
| <i>Panel E: Alternative measure of bilateral aid</i>           |           |           |                |
| Multilateral aid                                               | 0.007***  | 0.009***  | 0.012***       |
|                                                                | (2.97)    | (3.65)    | (2.90)         |
| DAC aid                                                        | -0.005**  | -0.007*** | -0.009**       |
|                                                                | (-2.43)   | (-3.26)   | (-2.52)        |
| Mult. aid × Resources                                          | -0.001*** |           |                |
|                                                                | (-2.83)   |           |                |

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CHAPTER 1. Do Natural Resources Condition the Aid – Governance Relationship?

Table 1.4 – Continued from previous page

|                                    | (1)                  | (2)                  | (3)                  |
|------------------------------------|----------------------|----------------------|----------------------|
| DAC aid × Resources                | 0.000***<br>(2.58)   |                      |                      |
| Mult. aid × Oil                    |                      | -0.001***<br>(-2.80) | -0.002***<br>(-6.43) |
| DAC aid × Oil                      |                      | 0.000*<br>(1.75)     | 0.000***<br>(2.78)   |
| Observations                       | 133                  | 133                  | 133                  |
| Hansen J test (p-value)            | 0.491                | 0.606                | 0.866                |
| AR(2) test (p-value)               | 0.071                | 0.776                | 0.949                |
| Lag restriction                    | No                   | Yes                  | Yes                  |
| Maximum number of lags used        |                      | 3                    | 3                    |
| Countries/instruments              | 34/33                | 34/34                | 34/34                |
| <i>Panel F: Time fixed effects</i> |                      |                      |                      |
| Multilateral aid                   | 0.005*<br>(1.78)     | 0.009***<br>(3.00)   | 0.008**<br>(1.99)    |
| Bilateral Aid                      | -0.005**<br>(-2.18)  | -0.008***<br>(-3.42) | -0.007**<br>(-2.47)  |
| Mult. aid × Resources              | -0.001***<br>(-2.74) |                      |                      |
| Bil. aid × Resources               | 0.000*<br>(1.67)     |                      |                      |
| Mult. aid × Oil                    |                      | -0.001***<br>(-2.95) | -0.001***<br>(-2.67) |
| Bil. aid × Oil                     |                      | 0.000**<br>(2.57)    | 0.000**<br>(2.28)    |
| Observations                       | 133                  | 133                  | 133                  |
| Hansen J test (p-value)            | 0.378                | 0.785                | 0.911                |
| AR(2) test (p-value)               | 0.369                | 0.774                | 0.691                |
| Lag restriction                    | Yes                  | Yes                  | Yes                  |
| Maximum number of lags used        | 2                    | 2                    | 1                    |
| Countries/instruments              | 28/28                | 29/28                | 29/32                |

Notes: a. Table 1.4 reports the system GMM estimation results of 3-years averages between 1997 and 2008 of equations (1.1) and (1.2). b. The ICRG quality of governance is the dependent variable. c. When the number of instruments exceeds the number of countries, the number of lags used to instruments endogenous variables is restricted. d. Column (1) reports the estimation results of equation (1.1). Column (2) reports the estimation results of equation (1.2) including only interactions terms involving oil. Column (3) reports the estimation results of equation (1.2). <sup>a</sup> Maximal restriction. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 1.5: Robustness regressions (4) – Extended samples

|                              | (1)                   | (2)                 | (3)                   | (4)                | (5)                   | (6)                   |
|------------------------------|-----------------------|---------------------|-----------------------|--------------------|-----------------------|-----------------------|
| <i>Panel A</i>               |                       |                     |                       |                    |                       |                       |
|                              | 1984–2008             |                     |                       | 1987–2008          |                       |                       |
| Multilateral aid             | 0.005<br>(1.264)      | 0.007***<br>(1.450) | 0.005***<br>(1.894)   | 0.004<br>(1.172)   | 0.012***<br>(1.806)   | 0.006***<br>(1.622)   |
| Bilateral aid                | -0.003<br>(-1.171)    | -0.003<br>(-0.871)  | -0.004***<br>(-1.711) | -0.002<br>(-1.138) | -0.006<br>(-1.335)    | -0.005***<br>(-1.841) |
| Multilateral aid × Oil       |                       |                     | -0.000<br>(-0.043)    |                    |                       | -0.000<br>(0.117)     |
| Bilateral aid × Oil          |                       |                     | 0.000<br>(0.232)      |                    |                       | 0.000<br>(0.023)      |
| Multilateral aid × Resources |                       | -0.000<br>(-0.851)  |                       |                    | -0.001***<br>(-1.786) |                       |
| Bilateral aid × Resources    |                       | -0.000<br>(-0.051)  |                       |                    | 0.000<br>(0.646)      |                       |
| <i>Panel B</i>               |                       |                     |                       |                    |                       |                       |
| Multilateral aid             | 0.005***<br>(1.679)   | 0.000<br>(0.027)    | 0.002<br>(1.121)      | 0.003<br>(1.332)   | 0.003<br>(0.612)      | 0.003***<br>(1.542)   |
| Bilateral aid                | -0.002***<br>(-1.774) | 0.002<br>(0.562)    | -0.002***<br>(-1.476) | -0.001<br>(-1.438) | 0.000<br>(0.081)      | -0.003***<br>(-1.896) |
| Multilateral aid × Oil       |                       |                     | 0.000<br>(0.708)      |                    |                       | 0.000<br>(0.850)      |
| Bilateral aid × Oil          |                       |                     | -0.000<br>(-0.680)    |                    |                       | -0.000<br>(-0.651)    |
| Multilateral aid × Resources |                       | 0.000<br>(1.125)    |                       |                    | 0.000<br>(0.455)      |                       |
| Bilateral aid × Resources    |                       | -0.000              |                       |                    | -0.000                |                       |

*Continued on next page*

Table 1.5 – Continued from previous page

|              | (1)      | (2) | (3) | (4) | (5) | (6) |
|--------------|----------|-----|-----|-----|-----|-----|
|              | (-1.195) |     |     |     |     |     |
|              | (-1.188) |     |     |     |     |     |
| Panel A      |          |     |     |     |     |     |
| Observations | 166      | 166 | 166 | 166 | 166 | 166 |
| Countries    | 34       | 34  | 34  | 34  | 34  | 34  |
| Panel B      |          |     |     |     |     |     |
| Observations | 210      | 210 | 210 | 206 | 206 | 206 |
| Countries    | 41       | 41  | 41  | 41  | 41  | 41  |

*Notes:* a. Table 1.5 reports the estimation results of 3-years averages of equations (1.1) and (1.2) using the [Blundell and Bond \(1998\)](#) estimator with robust standard errors for different time periods (*Panel A*) and for the extended sample that also includes countries from the MENA region (*Panel B*). We always restrict the number of lags used to instruments variables related to aid. b. The ICRG quality of governance is the dependent variable. c. Our results pass the Hansen J test of overidentification and the AR(2) test of no second order autocorrelation in residuals. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 1.6: Robustness regressions (4) – Extended samples

|                              | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Panel A</i>               |                       |                       |                       |                       |                       |                       |
|                              | 1990–2008             |                       |                       | 1993–2008             |                       |                       |
| Multilateral aid             | 0.005***<br>(1.501)   | 0.011***<br>(2.393)   | 0.006***<br>(1.658)   | 0.004***<br>(1.440)   | 0.011***<br>(3.702)   | 0.006***<br>(1.745)   |
| Bilateral aid                | -0.003***<br>(-1.710) | -0.006***<br>(-1.948) | -0.005***<br>(-1.886) | -0.003<br>(-1.225)    | -0.006***<br>(-2.919) | -0.005***<br>(-1.907) |
| Multilateral aid × Oil       |                       |                       | -0.000<br>(-0.134)    |                       |                       | -0.001<br>(-0.314)    |
| Bilateral aid × Oil          |                       |                       | 0.000<br>(0.455)      |                       |                       | -0.000<br>(-0.235)    |
| Multilateral aid × Resources |                       | -0.001***<br>(-2.724) |                       |                       | -0.001***<br>(-2.936) |                       |
| Bilateral aid × Resources    |                       | 0.000<br>(0.950)      |                       |                       | 0.000<br>(0.525)      |                       |
| <i>Panel B</i>               |                       |                       |                       |                       |                       |                       |
| Multilateral aid             | 0.004***<br>(1.490)   | 0.005<br>(1.147)      | 0.004***<br>(1.511)   | 0.004***<br>(1.660)   | 0.009***<br>(2.515)   | 0.006***<br>(1.916)   |
| Bilateral aid                | -0.002***<br>(-1.507) | -0.002<br>(-1.049)    | -0.004***<br>(-2.035) | -0.002***<br>(-1.579) | -0.005***<br>(-1.510) | -0.005***<br>(-2.227) |
| Multilateral aid × Oil       |                       |                       | 0.001<br>(1.135)      |                       |                       | -0.001<br>(-0.736)    |
| Bilateral aid × Oil          |                       |                       | -0.000<br>(-0.718)    |                       |                       | -0.000<br>(-0.078)    |
| Multilateral aid × Resources |                       | -0.000<br>(-0.093)    |                       |                       | -0.001***<br>(-2.183) |                       |
| Bilateral aid × Resources    |                       | -0.000                |                       |                       | -0.000                |                       |

*Continued on next page*

Table 1.6 – Continued from previous page

|              | (1) | (2)      | (3) | (4) | (5)      | (6) |
|--------------|-----|----------|-----|-----|----------|-----|
|              |     | (-0.956) |     |     | (-0.264) |     |
| Panel A      |     |          |     |     |          |     |
| Observations | 166 | 166      | 166 | 166 | 166      | 166 |
| Countries    | 34  | 34       | 34  | 34  | 34       | 34  |
| Panel B      |     |          |     |     |          |     |
| Observations | 201 | 201      | 201 | 195 | 195      | 195 |
| Countries    | 41  | 41       | 41  | 41  | 41       | 41  |

*Notes:* a. Table 1.6 reports the estimation results of 3-years averages of equations (1.1) and (1.2) using the [Blundell and Bond \(1998\)](#) estimator with robust standard errors for different time periods (*Panel A*) and for the extended sample that also includes countries from the MENA region (*Panel B*). We always restrict the number of lags used to instruments variables related to aid. b. The ICRG quality of governance is the dependent variable. c. Our results pass the Hansen J test of overidentification and the AR(2) test of no second order autocorrelation in residuals. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 1.7: Robustness regressions (3) – Methodological issues

|                            | (1)                     | (2)                | (3)                  | (4)                 | (5)                  | (6)                  |
|----------------------------|-------------------------|--------------------|----------------------|---------------------|----------------------|----------------------|
|                            | Maximum lag restriction |                    |                      | No lag restriction  |                      |                      |
| Multilateral aid           | 0.014**<br>(2.01)       | 0.009<br>(1.35)    | 0.014***<br>(2.88)   | 0.007***<br>(3.25)  | 0.008***<br>(3.91)   | 0.009***<br>(3.78)   |
| Bilateral Aid              | -0.008**<br>(-2.16)     | -0.006*<br>(-1.74) | -0.009***<br>(-3.33) | -0.005**<br>(-2.48) | -0.006***<br>(-2.92) | -0.008***<br>(-3.59) |
| Mult. aid × Res.           |                         | -0.001<br>(-1.58)  |                      |                     | -0.001***<br>(-2.98) |                      |
| Bil. aid × Res.            |                         | 0.000<br>(0.56)    |                      |                     | 0.000**<br>(2.23)    |                      |
| Mult. aid × Oil            |                         |                    | -0.001***<br>(-3.02) |                     |                      | -0.002***<br>(-2.59) |
| Bil. aid × Oil             |                         |                    | 0.000<br>(1.46)      |                     |                      | 0.000***<br>(4.33)   |
| Observations               | 133                     | 133                | 133                  | 133                 | 133                  | 133                  |
| Hansen J test <sup>a</sup> | 0.656                   | 0.128              | 0.915                | 0.760               | 0.617                | 0.738                |
| AR(2) test <sup>a</sup>    | 0.346                   | 0.078              | 0.469                | 0.731               | 0.052                | 0.688                |

*Notes:* a. Table 1.7 reports the estimation results of 3-years averages between 1997 and 2008 of equations (1.1) and (1.2) using the system GMM estimator with robust standard errors. Only the coefficients of our variables of interest are reported. b. The ICRG quality of governance is the dependent variable. c. Columns (1) and (4) report the estimation results of equation (1.1) without interaction terms. Columns (2) and (5) report the estimation results of equation (1.2). Columns (3) and (6) report the estimation results of equation (1.2) including only interactions terms involving oil. <sup>a</sup> Probability. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 1.8: List of recipient countries – all data set – 52 countries

|                              |                   |                      |              |
|------------------------------|-------------------|----------------------|--------------|
| Algeria                      | Egypt             | Libya                | Senegal      |
| Angola                       | Equatorial Guinea | Madagascar           | Seychelles   |
| Benin                        | Eritrea           | Malawi               | Sierra Leone |
| Botswana                     | Ethiopia          | Mali                 | Somalia      |
| Burkina Faso                 | Gabon             | Morocco              | South Africa |
| Burundi                      | Gambia            | Mauritania           | Sudan        |
| Cameroon                     | Ghana             | Mozambique           | Swaziland    |
| Cape Verde                   | Guinea            | Namibia              | Tanzania     |
| Central African Republic     | Guinea-Bissau     | Niger                | Togo         |
| Chad                         | Ivory Coast       | Nigeria              | Tunisia      |
| Comoros                      | Kenya             | Republic of Congo    | Uganda       |
| Democratic Republic of Congo | Lesotho           | Rwanda               | Zambia       |
| Djibouti                     | Liberia           | Sao Tome et Principe | Zimbabwe     |

*Notes:* South Sudan and Mauritius are dropped from the sample of African countries because of data very limited availability.

Table 1.9: List of Sub-Saharan African countries – 45 countries

|                              |               |                   |              |
|------------------------------|---------------|-------------------|--------------|
| Angola                       | Djibouti      | Lesotho           | Rwanda       |
| Benin                        | Egypt         | Liberia           | Senegal      |
| Botswana                     | Eritrea       | Madagascar        | Seychelles   |
| Burkina Faso                 | Ethiopia      | Malawi            | Sierra Leone |
| Burundi                      | Gabon         | Mali              | Somalia      |
| Cameroon                     | Gambia        | Mauritania        | Sudan        |
| Cape Verde                   | Ghana         | Mozambique        | Swaziland    |
| Central African Republic     | Guinea        | Namibia           | Tanzania     |
| Chad                         | Guinea-Bissau | Niger             | Togo         |
| Comoros                      | Ivory Coast   | Nigeria           | Uganda       |
| Democratic Republic of Congo | Kenya         | Republic of Congo | Zambia       |
|                              |               |                   | Zimbabwe     |

*Notes:* Data set “Sub-Saharan Africa” (45 countries) includes the whole data set minus: South Africa, Algeria, Morocco, Equatorial Guinea, Libya, Sao Tome et Principe, and Tunisia.

Table 1.10: List of non-resource-rich recipient countries – 46 countries

|                          |               |                      |              |
|--------------------------|---------------|----------------------|--------------|
| Algeria                  | Eritrea       | Mali                 | Somalia      |
| Benin                    | Ethiopia      | Mauritania           | South Africa |
| Botswana                 | Gambia        | Morocco              | Sudan        |
| Burkina Faso             | Ghana         | Mozambique           | Swaziland    |
| Burundi                  | Guinea        | Namibia              | Tanzania     |
| Cameroon                 | Guinea-Bissau | Niger                | Togo         |
| Cape Verde               | Ivory Coast   | Republic of Congo    | Tunisia      |
| Central African Republic | Kenya         | Rwanda               | Uganda       |
| Chad                     | Lesotho       | Sao Tome et Principe | Zambia       |
| Comoros                  | Liberia       | Senegal              | Zimbabwe     |
| Djibouti                 | Madagascar    | Seychelles           |              |
| Egypt                    | Malawi        | Sierra Leone         |              |

*Notes:* Data set “Africa minus resource-rich countries” (46 countries) includes the whole data set minus: Angola, Democratic Republic of Congo, Gabon, Equatorial Guinea, Libya, Nigeria. This grouping of countries gathers resource-rich countries that depend on natural resources rents for 10% or more of GDP in average during the whole period.

Table 1.11: Data sources and definitions of variables

| Variable                     | Definition                                                                                                                                                                    | Source                    |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <i>Bilateral aid</i>         | ODA transactions undertaken by a donor country directly with an aid recipient.                                                                                                | OECD                      |
| <i>Catholic share</i>        | Percentage of Catholics in the population of a country.                                                                                                                       | CIA-Factbook <sup>a</sup> |
| <i>Control of corruption</i> | Degree to which public power is diverted from private gain (World Bank indicator). Scaled -2.5 (weakest) to 2.5 (highest).                                                    | WDI                       |
| <i>DAC aid</i>               | Bilateral aid allocated by the members of the Development Assistance Committee.                                                                                               | OECD                      |
| <i>Deaths in conflicts</i>   | Deaths in battle-related conflicts.                                                                                                                                           | WDI                       |
| <i>Economic Growth</i>       | Annual percentage growth rate of GDP (based on constant 2000 U.S. dollars).                                                                                                   | WDI                       |
| <i>English law</i>           | Dummy takes 1 if the legal origin of the Company Law or Commercial Code of the country is English and zero otherwise.                                                         | La Porta et al. (1999)    |
| <i>ELF</i>                   | Ethno-linguistic fractionalization is the “probability that two randomly drawn individuals from the population belong to two different groups.” (Alesina et al. (2003), p.5). | Alesina et al. (2003)     |

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Table 1.11 – Continued from previous page

| Variable                 | Definition                                                                                                                                                               | Source                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <i>Gas</i>               | “Natural gas rents are the difference between the value of natural gas production at world prices and total costs of production divided by GDP” (World Bank definition). | WDI                       |
| <i>Governance</i>        | The mean value of the ICRG variables “Corruption”, “Law and Order” and “Bureaucracy Quality”, scaled 0-1 (see <a href="http://www.prsgroup.com">www.prsgroup.com</a> ).  | QoG datasets              |
| <i>Minerals</i>          | “Mineral rents are the difference between the value of minerals production at world prices and total costs of production divided by GDP” (World Bank definition).        | WDI                       |
| <i>Multilateral aid</i>  | ODA from an international institution.                                                                                                                                   | WDI                       |
| <i>Muslim share</i>      | Percentage of Muslims in the population of a country.                                                                                                                    | CIA-Factbook <sup>a</sup> |
| <i>Political Freedom</i> | Degree of political liberties (i.e., competitive elections and competitive and autonomous parties), scaled 1 (weakest) to 7 (highest).                                   | Freedom House             |
| <i>Resources</i>         | Resources rents are the sum of oil, minerals and natural gas rents.                                                                                                      |                           |
| <i>Rural population</i>  | Percentage of people living in rural areas.                                                                                                                              | WDI                       |
| <i>Oil</i>               | “Oil rents are the difference between the value of crude oil production at world prices and total costs of production divided by GDP” (World Bank definition).           | WDI                       |
| <i>Tropical location</i> | Dummy takes 1 if the country is within the tropics.                                                                                                                      | CIA-Factbook              |

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<sup>a</sup> Missing data are filled with data issued from [www.wholesomewords.org](http://www.wholesomewords.org).

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## Appendix 1.A

### Why should donors care about governance?

While understanding the effects of aid on governance is useful to enlighten the foreign aid policy debate, empirical researches have pointed out the difficulty to assess the aid-governance nexus. A related argument is that defining and measuring governance is not a simple matter. However, analyzing this nexus may shed light on the ongoing aid-growth debate. Indeed, the quality of governance in aid recipient countries presumably condition aid outcomes in terms of economic growth.

#### 1.A.1 Defining and measuring governance

Two questions arise when governance is tackled: what defines governance – came out in the thirteenth century as a synonym for government – and what delineates *good* governance? Undeniably, there is neither consensus on the definition of governance nor clarity on the subjective concept of good governance.

In 1992, the World Bank institute defined governance as “the manner in which power is exercised in the management of a country’s economic and social resources for development”.<sup>19</sup> As part of the Worldwide Governance Indicators (WGI) project, [Kaufmann et al. \(1999\)](#) specified that governance is the process by which governments are chosen, supervised and how a government succeeds to another one, the capacity of a government to define, realize, and enforce policies, and the respect of citizens for the government: governance is “the traditions and institutions by which authority in a country is exercised” ([Kaufmann et al., 1999](#), p. 1). At the beginning of the same decade, the concept of “good governance” became part of the vocabulary used by international institutions. According to the United Nations Development Program, good governance refers to a “participatory, transparent and accountable” governance. Governance and the quality of governance take on many facets that make complex their measurements.

Measuring governance is, however, as important to evaluate and promote domestic policies as it is for international relationships – in particular for investors – and for economic research. To evaluate the various dimensions of governance, several indicators of governance have been shaped since the nineties. Different indicators of the quality of governance cover different data across countries and different aspects of governance. Most of them (as the World Business Environment Survey) are built on data issued from surveys: they are national averages of answers of citizens or private agents to questions related

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<sup>19</sup>[World Bank \(1992\)](#), p. 1

to governance. Rankings can be provided by rating agencies, non governmental organizations or international organizations as the Political Risk Service Group (PRSG) of Syracuse. The PRSG is a commercial service providing information on governance for investors and lenders. It produces International Country Risk Guide (ICRG) indicators, which cover different facets of governance, either aggregated or not.

Because donors have traditionally focused on corruption, a specific aspect of governance, several governance indicators are specifically attentive to measure corruption (for example, the Corruption Perceptions Index (CPI) provided by Transparency International (TI)). The influential study of [Rose-Ackerman \(1975\)](#) defines public corruption as the presence of decisions taken at the government discretion, without officials and leaders liability. Corruption exists when a rent may be appropriated. To a wider extent, the quality of governance may also refer to the degree to which governments have the incentive and ability to pursue credible policies in the public interest. A broader definition of good governance can include, for example, the quality of bureaucracy, which quantifies the independence and autonomy of the public administration and political authorities as well as the incentives for citizens to work through the system of recruitment and promotions. Some of the existing broader indicators focus on specific countries. Indicators from the Business Environmental Risk Intelligence (BERI), for example, are available for about 50 countries in which international investors have interests. Since [Knack and Keefer \(1995\)](#), the ICRG indicators are the most frequently employed in the empirical literature. These indicators (not entirely available for free) cover a very large panel data set. One specific and recurrent ICRG indicator used to measure the quality of governance is composed of three ICRG indicators: a “corruption”, “law and order”, and “quality of bureaucracy” measure.<sup>20</sup> Since 1996, Daniel Kaufmann and Aart Kraay in particular have compiled six aggregated indicators based on various sources (“rule of law”, “control of corruption”, “voice and accountability”, “government effectiveness”, “political instability and violence” and “regulatory quality”) that have become more and more used in empirical investigations ([Asongu, 2012](#)).<sup>21</sup>

All data on governance are necessarily based on subjective assessments of experts. Despite their gain in legitimacy, each indicator of governance may be criticized: it is difficult to capture all aspects defining good governance and to weight the priority given to each indicator. None of these indicators is able to cover each part of what defines the quality of governance. But these indicators improve the understanding of political and social determinants of good governance and may be useful to identify the strategies

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<sup>20</sup>See Table D.1 for definitions.

<sup>21</sup>See Table D.1 for definitions.

designed to improve the quality of governance. Based on these contributions and new assessments, foreign aid donors have more and more been able to take into account the recipient's quality of governance when they decide to allocate foreign assistance. Moreover, the growing number of empirical researches on measuring governance allows to compare various measures of governance, in particular based on the strength of the correlation between governance indicators ([Alesina and Weder, 2002](#)).

### 1.A.2 Governance, a channel from aid to growth

These advances have also benefit the aid literature. They have contributed to the emergence of the idea that the negative and weak effect of aid on growth is not necessarily attributable to aid but, maybe, to intermediate channels lying between aid and growth ([Gomanee et al., 2005](#)). Foreign aid may affect economic growth through backhanded channels that cannot be apprehended by investing the direct causal effect of aid on economic growth ([Djankov et al., 2006](#); [Rajan and Subramanian, 2011](#)). For example, aid may alter the investment share of GDP, which indirectly affects economic growth, or may affect government consumption, which is known to have a negative effect on economic growth ([Boone, 1996](#); [Hansen and Tarp, 2001](#)). Identifying a context in which aid may be beneficial for the recipient country is valuable to inform foreign donors on the way following which foreign aid should be allocated to be the most efficient for economic growth.

The seminal work of [Burnside and Dollar \(2000\)](#), supported, for example, by [Devarajan et al. \(2001\)](#), established that foreign aid is able to raise growth when allocated to well governed countries. In most developing countries, governments play a central function in planning and executing developmental projects ([Otim, 1996](#)). Foreign aid is overall managed by the government, as taxation or other domestic resources are. Improving the quality of governance should in turn improves the way in which aid is used by the government. While the key result of Burnside and Dollar quickly became controversial (see, for example, [Dalgaard and Hansen \(2001\)](#), [Chauvet and Guillaumont \(2003\)](#), [Easterly \(2005\)](#) and [Roodman \(2007\)](#) against [Svensson \(1999\)](#) and [Rajan and Subramanian \(2007\)](#)), the quality of governance and policies still attract scholars' attention.

### 1.A.3 The benefits of good governance

The quality of governance in aid recipient countries may indeed condition the social and economic context. Though empirical results can be sensitive to the econometric methodology ([Dreher and Herzfeld, 2005](#)), governance has been tightly related to development and economic growth.

First, the quality of governance shapes the quality of conditions for building and sustaining economic growth. Good policies and institutions give incentives to investors to engage in beneficial projects from which they are able to obtain their due. Higher corruption, in particular, decreases investment and reduces opportunities for economic growth (Knack and Keefer, 1995; Mauro, 1995; Ades and Di Tella, 1997). In particular, corruption alongside with a weak rule of law is even more detrimental to investment and growth (Méon and Sekkat, 2005). Corruption may distort trade as well as increase political instability due to a deficiency of government legitimacy (Mo, 2001; Pellegrini and Gerlagh, 2004).

Second, education and basic human needs may also suffer from weak institutional quality. Good governance is supposed to guarantee political, civil and human rights, fair trials and access to public services with no need to bribe officials (Neumayer, 2005b). Bad governance may deprive citizens from living a secure and confident human life. As bribes are difficult to be collected over education, the extent of corruption is likely to decrease the provision of this public good. Corruption also affects human and social development outcomes, as longevity, school attainment, literacy, health and standard of living (Gupta et al., 2000; Tanzi, 1998; Al-Marhubi, 2000; Barreto, 2001; Gyimah-Brempong and Gyimah-Brempong, 2006). A poor governance may hence stuck poor people in their dependence on inefficient – or even absent – public services. Conversely, improving the quality of governance seems to decrease income inequalities, even more in African countries and in Latin America than in the rest of the world (Gyimah-Brempong and Gyimah-Brempong, 2006).

Aiming at promoting economic and social development, aid donors may want consequently to improve the quality of governance in recipient countries thanks to their allocations. Section 1.2 in Chapter 1 presents the existing literature on this topic and gives a hint on why aid may or not improve the quality of governance.

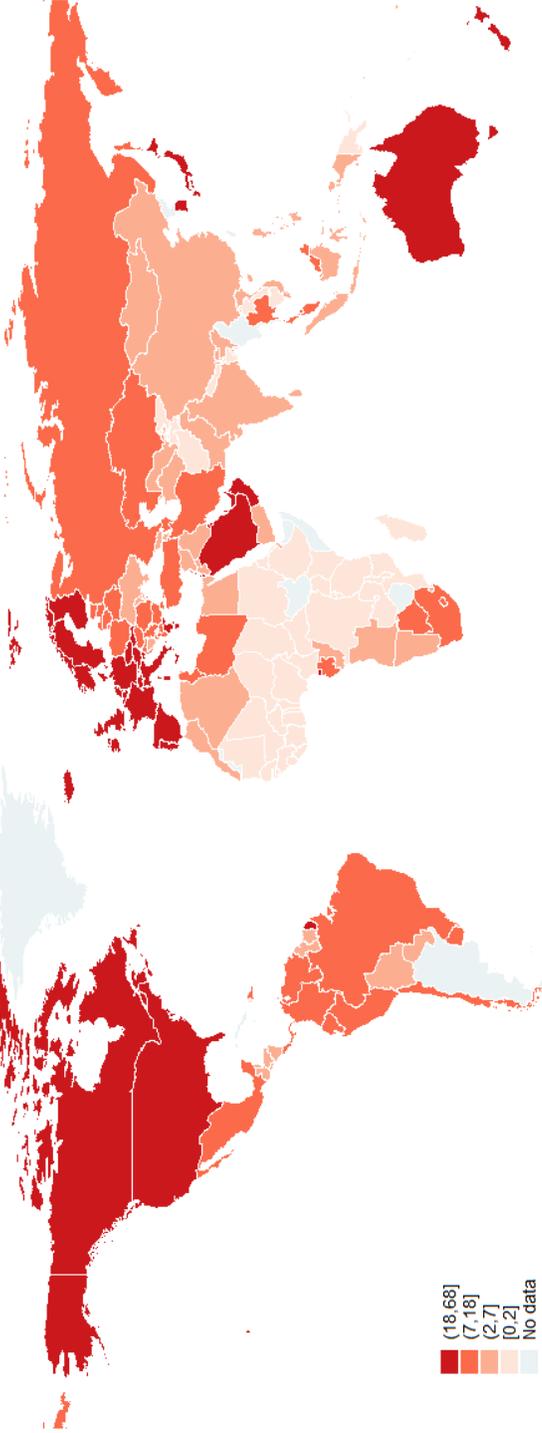
## Appendix I.B

### Descriptive analysis of African countries

Africa, accounting for one fifth of the world land area, represents more than 30 million squared kilometers and gathers one billion people in 54 countries. According to the African Economic Outlook (AEO), the GDP of Africa has reached in 2012 3,359 billion dollars (converted to international dollars using Purchasing Power Parity (PPP) rates), say 3,204 PPP GDP per African, which is almost four times less than the world average (see Figure 1.A.3). Since the end of the nineties, economic growth in Africa has been encouraging. According to AEO previsions, the economic growth rate of Africa should again reach 5.2

per cent in 2014, far ahead those of other regions. [Zafar \(2007\)](#) showed that trade with Asia (mainly China), Saudi Arabia and the United Arab Emirates have supported important growth rates in Africa since the beginning of this century, in particular thanks to transfers of skills, infrastructures and machinery in exchange for natural resources (see Table 1.B.1). The average growth rate of Africa hides, however, very important disparities.

Economic growth of Africa, which counts a third of world resources reserves, is particularly triggered by South Africa, Egypt, Algeria, Angola and Sudan, countries that mainly rely on natural resources rents whose prices have sharply increased the last decades. On the contrary, Somalia, Zimbabwe, Liberia, Central African Republic and Eritrea are left on the sidelines of important economic growth prospects. As observed in the eighties with the shrink of natural resources prices, African countries (and, as a consequence, economic growth issued from rents over natural resources) are tightly dependent on prices variations. Besides, most of citizens in resource-rich countries do not benefit from economic advantages derived from resources extraction. Even more, conflicts over these rents and corruption may impede development. Despite that Africa is a major producer of oil and minerals, no efficient regulation has been set up. For example, the Extractive Industries Transparency Initiative (EITI) is a British attempt to settle good governance and monitoring in Africa since 2003. The EITI provides a framework for transparency and accountability from natural resources companies and the government of developing countries. However, the EITI is voluntary and the only country in Africa that is fully consistent with EITI criteria is Liberia.



Note: Data on GDP per capita are in constant 2011 international dollars (in thousands) and are based on purchasing power parity (PPP). Data are available on line at: [databank.worldbank.org/data/](http://databank.worldbank.org/data/).

Figure 1.B.1: GDP per capita in 2012

Table 1.B.1: Major trade sectors in African country

|                           | Main product exported (share in total exports)                                   |
|---------------------------|----------------------------------------------------------------------------------|
| Algeria                   | Petroleum oils and oils obtained from bituminous minerals, crude (48.4%)         |
| Angola                    | Petroleum oils and oils obtained from bituminous minerals, crude (96.8%)         |
| Benin                     | Cashew nuts, in shell (19.1%)                                                    |
| Botswana                  | Diamonds non-industrial unworked or simply sawn, cleaved or bruted (78.5%)       |
| Burkina Faso              | Cotton, not carded or combed. (54.2%)                                            |
| Burundi                   | Coffee, not roasted, not decaffeinated (68.6%)                                   |
| Cameroon                  | Petroleum oils and oils obtained from bituminous minerals, crude(43,3%)          |
| Cape Verde                | Mackerel (24.5%)                                                                 |
| Central African Republic  | Diamonds unsorted whether or not worked (35.3%)                                  |
| Chad                      | Petroleum oils and oils obtained from bituminous minerals, crude (95.5%)         |
| Comoros                   | Cloves (whole fruit, cloves and stems) (61.2%)                                   |
| Congo Republic            | Petroleum oils and oils obtained from bituminous minerals, crude (85.4%)         |
| Congo Democratic Republic | Cathodes and sections of cathodes (25.2%)                                        |
| Côte d'Ivoire             | Cocoa beans, whole or broken, raw or roasted (37.5%)                             |
| Djibouti                  | Live animals (40.0%)                                                             |
| Egypt                     | Petroleum oils and oils obtained from bituminous minerals, crude (24.2%)         |
| Equatorial Guinea         | Petroleum oils and oils obtained from bituminous minerals, crude (75.8%)         |
| Eritrea                   | Gold, non-monetary: other unwrought forms (95.5%)                                |
| Ethiopia                  | Coffee, not roasted, not decaffeinated (45.0%)                                   |
| Gabon                     | Petroleum oils and oils obtained from bituminous minerals, crude (82.1%)         |
| Gambia                    | Wood, in the rough, whether/not stripped of bark/sapwood/roughly squared (22.3%) |
| Ghana                     | Cocoa beans, whole or broken, raw or roasted (30.0%)                             |

*Continued on next page*

Table 1.B.1 – *Continued from previous page*

|                     | Main product exported (share in total exports)                                   |
|---------------------|----------------------------------------------------------------------------------|
| Guinea              | Natural gas, liquefied (24.6%)                                                   |
| Guinea-Bissau       | Cashew nuts, in shell (66.0%)                                                    |
| Kenya               | Black tea (fermented) and other partly fermented tea (18.7%)                     |
| Lesotho             | Diamonds non-industrial unworked or simply sawn, cleaved or bruted (48.9%)       |
| Liberia             | Technically specified natural rubber (30.9%)                                     |
| Libya               | Petroleum oils and oils obtained from bituminous minerals, crude (84.4%)         |
| Madagascar          | Cloves (whole fruit, cloves and stems) (25.2%)                                   |
| Malawi              | Tobacco, partly or wholly stemmed/s (41.1%)                                      |
| Mali                | Cotton, not carded or combed (47.2%)                                             |
| Mauritania          | Iron ores & concentrates, non-agglomerated (50.2%)                               |
| Mauritius           | Tunas, skipjack and bonito (12.0%)                                               |
| Morocco             | Phosphoric acid and polyphosphoric (9.0%)                                        |
| Mozambique          | Aluminium, not alloyed (36.7%)                                                   |
| Namibia             | Diamonds non-industrial unworked or simply sawn, cleaved or bruted (22.4%)       |
| Niger               | Natural uranium and its compounds (56,1%)                                        |
| Nigeria             | Petroleum oils and oils obtained from bituminous minerals, crude (85,6%)         |
| Rwanda              | Tin ores and concentrates. (29.0%)                                               |
| São Tomé & Príncipe | Cocoa beans, whole or broken, raw or roasted (37.9%)                             |
| Senegal             | Phosphoric acid and polyphosphoric (21.9%)                                       |
| Seychelles          | Tunas, skipjack and bonito (61.0%)                                               |
| Sierra Leone        | Diamonds non-industrial unworked or simply sawn, cleaved or bruted (23.7%)       |
| Somalia             | Goats (28.2%)                                                                    |
| South Africa        | Gold (and gold plated with platinum), in unwrought forms (except powder) (10.2%) |

*Continued on next page*

Table 1.B.1 – Continued from previous page

|               | Main product exported (share in total exports)                           |
|---------------|--------------------------------------------------------------------------|
| South Sudan   | Petroleum oils and oils obtained from bituminous minerals, crude (91.3%) |
| Sudan         | Raw sugar, cane (19.7%)                                                  |
| Swaziland     | Other Precious metal ores and concentrates, other than silver (19.7%)    |
| Tanzania      | Cocoa beans, whole or broken, raw or roasted (31.4%)                     |
| Togo          | Petroleum oils and oils obtained from bituminous minerals, crude (10.7%) |
| Tunisia       | Coffee, not roasted, not decaffeinated (37.6%)                           |
| Uganda        | Cathodes and sections of cathodes (51.6%)                                |
| Zambia        | Tobacco, partly or wholly stemmed/stripped (24.8%)                       |
| Zimbabwe      | Petroleum oils and oils obtained from bituminous minerals, crude (45.2%) |
| <b>Africa</b> | Petroleum oils and oils obtained from bituminous minerals, crude (46.6%) |

Note: Table 1.B.1 is based on data available on line at: [www.africaneconomicoutlook.org/en/data-statistics/table-7-exports-2010](http://www.africaneconomicoutlook.org/en/data-statistics/table-7-exports-2010).

Aside from natural resources revenues, most of African countries are dependent on foreign assistance. Sub-Saharan Africa alone has received more than the third of total aid allocations in 2010 (see Table A.2 in Appendix A).<sup>22</sup> Democratic Republic of Congo, Ethiopia, Kenya, Tanzania and Ivory Coast are the top five net aid recipients in 2012. In average, each African has received 49 U.S. dollars in 2011, mostly allocated by the United States, European institutions, the World Bank, France and the United Kingdom. This amount was twice bigger than the average amount of aid allocated to developing country. Far ahead the second aid recipient continent (Asia), Africa has received 37.6 per cent of all aid allocated in 2011 and 45 per cent of DAC donors' aid (see Table 1.B.2). 40 per cent of the 164,493 million of 2011 US dollars committed this year by DAC donors were designed to fund the social sector (of which education, health, water supply, and government) while 14 per cent were targeting economic issues (as, mainly, transport, communication and the primary sector). The first African recipient country (Democratic Republic of Congo) is an exception: debt relief has been the weightiest sector funded by aid allocations.

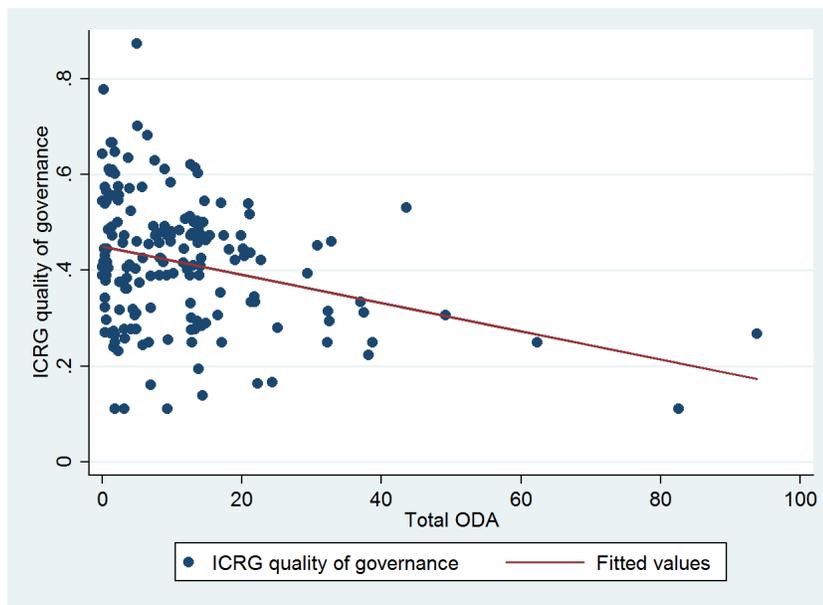
As far as the institutional sector is concerned, government and civil society is the most social sector funded by multilateral agencies (in average) and the second one by DAC donors (in particular Scandinavian donors). Government and civil society have gained importance since the end of the nineties. Aside from diseases and conflicts, corruption and poor governance have been pointed out since that decade to explain why Africa remains the less developed area in the world (see Table 1.B.3 for the world ranking of African countries' control of corruption estimates). Does foreign aid enable African countries to improve their quality of governance? Seemingly, the answer is no. A first look at our data when we plot the ordinary least squares residuals of the quality of governance shows a negative correlation between good governance and aid inflows. Nevertheless, we argue that, behind this apparent correlation, a conditional causal relationships may emerge if we account for (i) recipient countries' dependence on natural resources, (ii) the bilateral and multilateral origin of aid and (iii) the potential endogeneity of aid with respect to governance. This is precisely the purpose of Chapter 1.

## Appendix I.C

### Estimates of the direct effect of total ODA on governance

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<sup>22</sup>All subsequent statistics are available online at: [www.oecd.org/dac/stats/aid-at-a-glance.htm](http://www.oecd.org/dac/stats/aid-at-a-glance.htm).



Note: This graph plots the ICRG measure of the quality of governance in function of total ODA inflows received by African countries between 1997 and 2008, according to the data available in our sample. The solid line is the fixed effects-fitted line.

Figure 1.B.2: Scatter plot of the ICRG quality of governance against total ODA in GDP

Table 1.B.2: DAC ODA to Africa

|                       | (1) | (2) |
|-----------------------|-----|-----|
| Portugal              | 1   | 85  |
| Belgium               | 3   | 83  |
| Ireland               | 1   | 83  |
| Italy                 | 2   | 69  |
| Netherlands           | 4   | 64  |
| France                | 14  | 63  |
| Denmark               | 3   | 61  |
| United States         | 10  | 59  |
| Sweden                | 3   | 56  |
| Luxembourg            | 0   | 55  |
| Finland               | 1   | 54  |
| Canada                | 5   | 47  |
| Norway                | 3   | 45  |
| Austria               | 1   | 42  |
| United Kingdom        | 28  | 42  |
| Spain                 | 3   | 41  |
| Switzerland           | 1   | 39  |
| Germany               | 7   | 35  |
| Japan                 | 6   | 34  |
| Greece                | 0   | 19  |
| Korea                 | 1   | 18  |
| Australia             | 1   | 10  |
| New Zealand           | 0   | 5   |
| DAC countries (Total) | 100 | 46  |
| EU institutions       |     | 49  |

Notes: Data on DAC ODA are available on line at: <http://www.oecd.org/dac/stats/regioncharts>. Percentages are based on data in U.S. Dollars, 2010 prices and exchange rates. Figures are an average of disbursements between 2010 and 2011. Column (1) reports each DAC country' ODA going to Africa as a percentage of all DAC donors' ODA. For example, 28 % of DAC ODA going to Africa is allocated by the United Kingdom. Column (2) reports the share of each DAC donor's ODA allocated to African countries. For instance, 85 % of all ODA allocated by Portugal is going to African countries.

Table 1.B.3: Corruption ranking of African countries

| Country                  | Ranking | Country             | Ranking |
|--------------------------|---------|---------------------|---------|
| Somalia                  | 207     | Egypt               | 151     |
| Equatorial Guinea        | 202     | Liberia             | 149     |
| Sudan                    | 201     | Ethiopia            | 145     |
| Chad                     | 200     | Algeria             | 136     |
| Zimbabwe                 | 198     | Senegal             | 133     |
| Angola                   | 197     | Benin               | 132     |
| Papua New Guinea         | 196     | Zambia              | 127     |
| Congo, Dem. Rep.         | 192     | Mozambique          | 126     |
| Guinea                   | 191     | Mali                | 124     |
| Congo, Rep.              | 189     | São Tomé & Príncipe | 123     |
| Côte d'Ivoire            | 186     | Malawi              | 122     |
| Guinea-Bissau            | 185     | Tanzania            | 121     |
| Kenya                    | 180     | Morocco             | 118     |
| Gabon                    | 179     | Burkina Faso        | 114     |
| Burundi                  | 177     | Eritrea             | 111     |
| Central African Republic | 175     | Trinidad and Tobago | 106     |
| Sierra Leon              | 174     | Djibouti            | 101     |
| Cameroon                 | 172     | Tunisia             | 97      |
| Togo                     | 171     | Swaziland           | 96      |
| Timor-Leste              | 169     | Madagascar          | 94      |
| Libya                    | 167     | Ghana               | 90      |
| Uganda                   | 164     | Rwanda              | 79      |
| Nigeria                  | 163     | Namibia             | 56      |
| Comoros                  | 158     | Mauritius           | 55      |
| Gambia                   | 157     | Cape Verde          | 52      |
| Niger                    | 156     | Botswana            | 42      |
| Mauritania               | 152     |                     |         |

Notes: This country ranking is based on the estimates of the Control of Corruption of 2008, available for 207 countries and territories for free. Data are available on line at: [data.worldbank.org/](http://data.worldbank.org/)

Table 1.C.1: The direct effect of total ODA on governance

|                                        |                    |
|----------------------------------------|--------------------|
| Governance <sub>t-1</sub>              | 0.523***<br>(3.95) |
| Total ODA                              | 0.000<br>(0.17)    |
| Muslim share                           | 0.001*<br>(1.77)   |
| Catholic share                         | 0.065*<br>(1.88)   |
| ELF                                    | 0.045<br>(0.67)    |
| English law                            | 0.025<br>(0.91)    |
| Tropical location                      | -0.083*<br>(-1.65) |
| Economic growth                        | 0.003*<br>(1.79)   |
| Deaths in conflicts                    | 0.001<br>(0.59)    |
| Resources                              | -0.000<br>(-0.26)  |
| Rural population                       | 0.002**<br>(2.41)  |
| Political freedom                      | 0.004<br>(0.70)    |
| Observations                           | 133                |
| Lag restriction?                       | No                 |
| AR(2) test <sup>a</sup>                | 0.599              |
| Hansen J test <sup>a</sup>             | 0.463              |
| Difference-in-Hansen test <sup>a</sup> | 0.914              |

*Notes:* a. Table 1.C.1 reports the system GMM estimation results of 3-years averages between 1997 and 2008 of equation (1.1) using total ODA (source: WDI) instead of bilateral and multilateral ODA.

b. The ICRG quality of governance is the dependent variable.

<sup>a</sup> Probability. See footnotes of Table 1.2 for details on these tests. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

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*“ In the developing world, corruption is public enemy number one.”*

Jim Yong Kim, World Bank Group President

# Chapter 2 | Understanding the Link Between Aid and Corruption: A Causality Analysis

*Joint work with Laurent Weill*

## Chapter Abstract

Chapter 2 addresses the causal link between aid and governance, focusing on a specific aspect of the quality of governance: corruption. Widely defined, corruption is an abuse of public office for private gain. The relation between aid and corruption has extensively attracted scholars' attention, in particular since the renewal of interest over fighting corruption in the developing world in the end of the nineties (Charron, 2011). However, no work has ever granted interest to analyze the sign and direction of the causality between aid and corruption with the same attention. Yet, both are often assumed to be simultaneously determined in empirical studies (Svensson, 2000). Aid and corruption are often associated, based on the idea that both are intrinsically interconnected: aid possibly affects corruption in recipient countries and corruption possibly conditions aid allocations.

To investigate the sign and direction of causality between aid and corruption with a new approach in this literature, we perform Granger-causality tests in a dynamic GMM panel framework based on a dataset of 71 developing countries over the period 1996-2009. Contrary to our study in Chapter 1, we do not investigate the instantaneous causality, say the current effect of aid on governance but instead we employ the Granger causality approach. In other words, we test whether the *past* values of aid increase the precision of prediction of corruption and reciprocally. Our data reveal that there is no significant Granger causal relation between aid and corruption running in both directions, no matter how we measure aid and corruption, no matter the time and space we consider and no matter alternative specifications. These findings support the view that aid alone does not influence corruption in its current design, while corruption does not incline donor countries to better allocate aid.

## **2.1 Introduction**

As aid and corruption are two key issues for developing economies, it does not appear as a surprise that a large strand of literature has investigated the relation between both dimensions. First, one strand of the literature has examined the consequences of aid on corruption (Alesina and Dollar, 2000; Knack, 2001; Tavares, 2003; Charron, 2011). Findings are not straightforward. On the one hand, aid can have beneficial effects on governance by reducing corruption as it can help increasing salaries of civil servants and can give the possibility for recipient countries to implement institutional reforms. On the other hand, aid can give bad incentives for recipient countries to rule out such reforms by notably reducing the need for governments to collect taxes. Empirical literature tends to show that aid enhances corruption (Knack, 2001; Alesina and Weder, 2002) although the studies are not consensual.

Second, divers studies have investigated the potential influence of corruption on aid (Svensson, 2000; Berthélemy and Tichit, 2004; De la Croix and Delavallade, 2013). Since the end of the nineties, the global movement toward institutional improvements have assigned donor countries to focus on a global partnership designed to eradicate corruption in the developing world. Donors may have increased their aid inflows toward countries willing to improve their institutions quality (Santiso, 2001). Hence, as fighting corruption has become listed as a motivation of donors' allocations, greater corruption can deter donor countries to give aid to guarantee the optimal use of aid inflows. On the other hand, corruption can favor aid allocations as corrupt countries have lower productivity and hence per capita income which favors a greater allocation of aid (Alesina et al., 2000). Overall literature found mixed evidence on the impact of corruption on aid.

To sum it up, the empirical literature on the aid-corruption nexuses yields confused and often opposing conclusions. There is no concord neither on the existence nor on the direction of causality between aid and corruption. This is not astounding given the the use of different econometric tools and methods and the complex causality chains linking aid to corruption. No study has ever explicitly analyzed the causality between aid and corruption. Our aim in this essay is to fill this loophole in the literature by looking at the sign and direction of causality between aid and corruption instead of looking at the effect of one variable on the other. We then provide a contribution to the debated aid-corruption literature with new evidence on the direction of the causality between aid and corruption. We analyse the relation and causality between aid and corruption on a data set of 71 developing countries for the period 1996-2009. We perform Granger-causality tests to check the direction of causality. We embed Granger-causality estimations in Generalized

Method of Moments (GMM) dynamic panel estimators designed to handle auto regressive properties in the dependent variables when lagged values are included as explanatory variables. Granger causality methods have scarcely been used in the aid literature to test for causal relations between aid and political or economic outcomes (Bowles, 1987; Giles, 1994; Roodman, 2008). Yet, the Granger causality allows analysing the direction of the causality between two variables. We are then able to disentangle “the chicken and the egg” problem for the relation between aid and corruption.

The Chapter is organized as follows. Section 2.2 presents a review of the literature on the aid-corruption nexus. Section 2.3 outlines the methodology and presents the data. Section 2.4 displays the results while Section 2.5 presents the robustness tests. Section 2.6 concludes.

## 2.2 Literature review

In this section we review the studies on the aid-corruption nexus. As explained above, the former literature has chosen to examine this relation either from aid to corruption or from corruption to aid. We therefore present the most relevant studies from each of both strands of literature.<sup>1</sup>

### 2.2.1 From aid to corruption

A large set of papers has studied the potential influence of aid on corruption and more generally on governance. One of the key interest to investigate this nexus is that aid can help training local officials and particularly increase their salaries. As a consequence, Van Rijckeghem and Weder (2001) suggested that corruption would decrease as bribes are strongly related to the fact that wages for civil servants are lower than wages in the private sector. Knack (2001) investigated the influence of aid on quality of governance for a sample of 80 countries over the period 1975-1995. He tested the hypothesis that aid should give the possibility to the recipient country to undertake institutional reforms. However, he showed that aid is a rent for the recipient country. He controlled for the fact that donors may give more aid to countries with a low quality of governance to support institutional reforms. Even though, aid decreases the quality of governance. In particular, aid gives the recipient country the ability to bear the cost of ruling out institutional reforms and may grab conflicts over the control of aid funds, without any coordination. Hence aid would foster corruption instead of reducing it. Bräutigam and Knack (2004) used a similar framework to show that high dependence on foreign assistance reduces incentives

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<sup>1</sup>An overview of this literature is summarized in Tables 2.A.1 and 2.A.2 in Appendix 2.

for the recipient government to collect revenues from taxation. In turn, it breaks away the government from being accountable to its citizens. This channel may explain why aid is found to decrease the quality of governance in 32 Sub-Saharan African countries between 1982 and 1997.

[Alesina and Weder \(2002\)](#) focused on corruption and took a first look on how it can be shaped by aid. On a sample of 63 countries between 1981 and 1995 and based on OLS estimates, they found that more aid is not associated with decreases in corruption. Using data from 1980 to 1994 over 66 countries, [Svensson \(2000\)](#) stated, however, that aid seems to increase corruption in recipient countries, in particular in ethnically fragmented countries. Because aid increases public resources, groups may compete to have the stranglehold on these resources. The fact that some aid flows (in particular bilateral aid) are more tied to cultural and historical linkages may explain why almost 70% of all aid is used for public consumption ([Alesina and Dollar, 2000](#)). [Rajan and Subramanian \(2007\)](#) assumed that good institutions are a necessary condition for the development of manufactures. An expansion of the industrial sector should be a sign of improvements in terms of governance because these sectors are particularly dependent on a good quality of governance able to limit corruption, enforce law and protect investment. They evidenced that industries and manufacture would decline due to high aid inflows: one percentage point increase in aid (instrumented with the colonial history and cultural ties) in GDP reduces the share of manufacturing in GDP by 0.3 point. They concluded that aid (even technical assistance) damages local institutions (measured by the quality of bureaucracy, the rule of law, corruption and the protection of investment). Based on data covering 108 countries between 1960 and 1999, [Djankov et al. \(2008\)](#) corroborated the adverse relationship between aid dependence and the quality of institutions (measured by the Polity IV index). Their GMM and IV estimations showed that the aid effect is even more detrimental to the recipient country that deriving rents from natural resources.

According to [Dalgaard and Olsson \(2008\)](#), the effect of aid on corruption is not linear. For low levels of aid, aid succeeds in decreasing corruption (while it does not for high levels of aid). In addition, [Dunning \(2004\)](#) asserted that the end of Cold War has changed the aid-corruption relationship. During the Cold War, donors' allocations were tightly correlated to their own political and strategic interests, which have weakened the credibility of aid allocations. Since the end of the nineties, donors have seemingly paid more attention to fighting corruption in developing countries. [Dunning \(2004\)](#) evidenced that aid seems to support African countries in the provision of basic public services. [Tavares \(2003\)](#) examines the exogenous influence of aid on corruption. He found that an increase of one percent of aid inflows reduces corruption by 0.2 points. He then concluded that the results of [Alesina](#)

and Weder (2002) are biased due to aid reverse causality in the corruption regression. If aid reduces corruption, the fact that the most corrupt countries tend to receive more aid biases the size of the coefficient. Charron (2011) confirmed that, after 1997, aid is able to make corruption decline. Using data from 68 countries between 1986 and 2006, he first evidenced with instrumentation techniques (using GMM and 2SLS estimators) that the global effect of aid is unclear. But once the effect of bilateral aid is considered to be different than the effect of multilateral aid, in particular in the post-Cold War period, a consistent pattern appears. While bilateral aid has never a positive nor a significant effect on the level of corruption, multilateral aid begins to decrease corruption after 1997.

Based on data from 1995 to 2009, Okada and Samreth (2012) used both a simple OLS regression and a Quantile Regression approach allowing them to analyze the effects of aid on corruption at different intervals (not only at the mean). They confirmed that aid tends to help fighting corruption, in particular when aid is allocated by multilateral agencies and in recipient countries that already do efforts to control their level of corruption. Asongu (2012) used particular data on African countries from 1996 to 2010 in a dynamic panel data framework to redo the study of Okada and Samreth (2012). His GMM estimates showed that aid (even multilateral aid) increases the level of corruption in Africa. Jellal (2013) nuanced the aid-corruption relationship found for African countries. Accordingly, if aid goes through public consumption, which may support rent-seeking behaviors from public officials, corruption would hence increase. However, when aid is targeted to private investment or to attract FDI, corruption decreases. Kangoye (2013) denoted that leaders tend to over extract rents from foreign assistance when they face uncertainty about future aid entries. Using data covering the 1984-2004 period and a 2SLS estimation procedure, he found that high aid inflows may reduce public corruption in the recipient country while aid unpredictability intensifies corruption. Results appear to differ among empirical studies, perhaps due to different sampling and methodologies. All in all, the literature on the influence of aid on corruption rather suggests a positive effect in the sense that aid is more often found to foster corruption.

### 2.2.2 From corruption to aid

Many works have also examined the reverse causation, say how corruption can affect the allocation of foreign assistance. Though colonial history, trade interests, commercial considerations and strategic views matter when allocating aid (Alesina and Dollar, 2000; Berthélemy, 2006), the quality of domestic institutions has become listed as a key target for the donor community. Indeed, since the end of the nineties, the global movement toward institutional improvements has assigned donor countries to focus on a global partnership

designed to eradicate corruption in the developing world, as stressed notably by [Santiso \(2001\)](#) and [Berthélemy and Tichit \(2004\)](#). Hence the need for developing countries to have good governance and fight corruption in order to guarantee the good management of aid inflows has been at the heart of the donors community claim.

More specifically, many scholars have been interested in the presumable relationship between aid and institutions (as measured by governance, civil and political liberties, corruption or democracy in particular). Anecdotal evidence is in favor of a positive influence of good governance on aid. Using gravity equations covering 1980 to 1999 for 22 donors and 137 recipient countries, [Berthélemy and Tichit \(2004\)](#) showed that the quality of governance matters for most of bilateral donors, in particular in the nineties. [Trumbull and Wall \(1994\)](#) also recorded that greater political and civil rights were rewarded by greater aid inflows before the nineties. [De la Croix and Delavallade \(2013\)](#) found that corrupt countries seem to receive more than others on a sample of 159 developing countries. They explain that it may be rationale that aid goes to more corrupt countries because donors target countries with a low productivity when allocating aid while low productive countries are also more corrupt. [Dreher et al. \(2011\)](#) confirmed that both new (as Hungary) and old (as France) donors give more aid to more corrupt countries, running counter the donors community's claims about rewarding efforts in terms of governance improvements. [Neumayer \(2003a\)](#) observed that controlling public corruption is not associated to greater aid inflows. Even multilateral agencies, supposed to be less tied to strategic interests, seem to be indifferent to low corrupt countries. In particular, corruption is statistically not significant for UN agencies.

[Svensson \(2000\)](#) and [Alesina and Weder \(2002\)](#) confirmed in their studies that donors do not reward countries with low levels of corruption. [Svensson \(2000\)](#) applied IV estimations on pooled data over the 1980-1994 period to control for possible simultaneity biases. He particularly focused on the effect of aid on corruption in recipient countries, but he also evidenced that donors are not likely to allocate aid to countries with less corruption. [Alesina and Weder \(2002\)](#) have focused their attention on bilateral aid allocations. Their data covering 63 countries between 1981 and 1995 revealed that the United States tend to increase their allocations to more corrupt countries while Australia and Scandinavian countries (not concerned by historical ties with potential recipient countries) allocate more aid to countries with less corruption. In average, among all bilateral donors and no matter the period between 1975 and 1995, donors do not pay attention to the level of corruption of recipient countries when allocating their funds.

Assuming that foreign assistance should promote growth in low corrupt countries, [Büthe et al. \(2012\)](#) investigated whether donors are indeed paying attention to the quality

of governance in aid recipient countries. Focusing on the US assistance, either provided by the government (public aid) or by NGOs (private aid), they found that corruption in aid recipient countries is not statistically significant at all. According to [Neumayer \(2005a\)](#), corruption is not relevant for aid allocations not only for the United States but also for almost all major donors. The United States, the United Kingdom, Germany, France, Italy, Norway and UN agencies do neither account for the level of corruption when allocating foreign assistance. Japan only seems to give higher aid to more corrupt countries while Canada and Sweden pay attention to countries that control their level of corruption. To conclude, no clear consensus emerges from the studies which differ on the sign and the significance of the impact.

## 2.3 Method and data

This section details the methodology adopted to assess the direction of the causality between aid flows and corruption in recipient countries and presents our data. To address the existence of causality, we evaluate the nature of the linkage between aid and corruption. We want to know whether aid “Granger causes” corruption, and vice versa. Aid is said to cause corruption in the Granger sense if the forecast for corruption improves when lagged values of aid are taken into account ([Granger, 1969](#)). In other words, the Granger-causality equations explain how much of the current corruption level can be explained by past levels of corruption and whether adding past values of aid can improve this explanation. We then redo the same approach to investigate whether corruption “Granger causes” aid. Aid will be “Granger caused” by corruption if the coefficients on the lagged values of corruption are significantly different from zero in the aid regression (2.2).

We use the panel data Granger causality procedure and apply generalized method-of-moments (GMM) dynamic panel estimators. The panel data dimension offers more information to test the causal relationships than the time dimension alone, which increases the degree of freedom, useful to test with greater efficiency the causality relationships between our two variables ([Dumitrescu and Hurlin, 2012](#)). We first test for the overall causality hypothesis represented by the following equations:

$$Corruption_t = \beta_0 + \sum_{j=1}^J \beta_j Corruption_{t-j} + \sum_{k=1}^K \gamma_k Aid_{t-k} + \epsilon_t \quad (2.1)$$

$$Aid_t = \beta'_0 + \sum_{j=1}^J \beta'_j Aid_{t-j} + \sum_{k=1}^K \gamma'_k Corruption_{t-k} + \epsilon'_t \quad (2.2)$$

where *Corruption* stands for our measure of corruption, *Aid* for our measure of aid and  $\epsilon$  and  $\epsilon'$  for the error terms.

If no causality between aid and corruption is observed, there will be no need to go further in investigating whether the causality is either heterogeneous or not, namely no need to examine the contribution of each country to the existence of causality.

The study of the Granger causality requires that variables are stationary, say the distribution of these variables does not follow any trend over time. We therefore test whether our series on aid and corruption are time-stationary to avoid the problem of spurious regressions. Using panel data, we follow the Phillips-Perron test for panel unit root using a Fisher-type test statistic, which runs with unbalanced panel data. The null hypothesis is that all panels contain a unit root and hence are non-stationary. The null hypothesis is rejected if the test statistic is lower than the critical value (chosen to be 0.01). Table 2.1 shows our results: we reject this hypothesis for all variables. It means there are no unit roots in our panels under the given test conditions (included panel mean and time trend).

After checking that our series are stationary, we use the [Blundell and Bond \(1998\)](#) estimation technique. Three potential benefits of GMM estimators are that (i) they can be used in dynamic panel data models; (ii) they can handle endogenous variables provided that there is no autocorrelation in the error term; (ii) they allow accounting for country-specific characteristics. We employ the two-step system GMM estimator, which is robust to heteroskedasticity in residuals. The system GMM estimator exploits all the orthogonality conditions between endogenous variables and the error term.

We estimate equations (2.1) and (2.2) to investigate the inter-temporal relation between aid and corruption. The first equation evaluates whether changes in aid temporally precede variations in corruption, while the second equation tests whether changes in corruption temporally precede variations in aid. Because the first and second lags of the lagged dependent and the independent variables may be correlated with the error term, they are no valid instruments for the first-difference equation of the system GMM equation. We use lagged levels of our series dated  $t-3$  and earlier as instrumental variables for the equations in first-differences. We test for no second auto-correlation in residuals to be sure that lagged differences variables used to instrument endogenous variables are good instruments. The validity of instruments is also checked with the Hansen J test of over-identifying restrictions and the difference-in-Hansen test of exogeneity of instruments.

Critical is also the choice of lags  $j$  and  $k$ . [Dumitrescu and Hurlin \(2012\)](#) used the formula  $T > 5 + 2X$ ,  $T$  being the number of time periods and  $X$  the number of lags to determine the minimum time extend we need for each number of lags. To conserve the

largest data set, we restrict the number of lags to three. We keep the 71 countries for which at least 12 time periods of observations are available for both aid and corruption. Instead, we drop countries with less than twelve years of observations.<sup>2</sup>

Our sample is an unbalanced panel data that includes 71 countries between 1996 and 2009. The list of recipient countries is presented in Table 2.2. Data for aid and corruption were collected from the World Development Indicators database. Our variable *Aid* is measured by the net inflows of Official Development Assistance divided by recipient GDP as standard in the literature (see, for example, Bräutigam and Knack (2004)). *Corruption* is measured by the World Bank control of corruption indicator (as in Asongu (2012) among others) and scales -2.5 to 2.5. Greater values indicate that corruption is lower (better control of corruption). Descriptive statistics for the variables are displayed in Table 2.3 and show that the average country of our sample receives 5.28 % aid in GDP, mostly from bilateral donors, and records a control of corruption index equal to 0.44.

## 2.4 Results

This section presents the results for the relation between aid and corruption. We start with the main estimations and afterwards provide additional tests.

### 2.4.1 Main estimations

We present our estimation results in Table 2.4 in order to investigate the sign and the sense of causality between aid and corruption. First, we observe that *Aid* and *Corruption* are indeed determined by their past values.<sup>3</sup> Second, we test the Granger-causality between the two variables with a Wald test in which we check whether the sum of the coefficients of the lagged explaining variable in question is significantly different from zero. Our data reveal that aid does not Granger-cause corruption, as the sum of the lagged variables for *Aid* is not significantly different from zero. This finding can speak in favor of the fact that no effect dominates between the positive one and the negative one suggested by the literature. It does not accord with all the studies of the literature, which find various results (see Tables 2.A.1 and 2.A.2 in Appendix 2). However, our study differs from former ones on many aspects. First, we have more recent data than Van Rijckeghem and Weder (2001) or Knack (2001) and as such the results can differ on the recent years. Second, we have a broader sample of countries than Bräutigam and Knack (2004) for instance.

<sup>2</sup>Table 2.B.7 in Appendix 2.B presents estimates of equations (2.1) and (2.2) using  $j$  and  $k$  equal to two to have comparison. Estimates are similar to those obtained when  $j$  and  $k$  are chosen to be equal to three.

<sup>3</sup>Table 2.B.4 in Appendix 2 reports estimated coefficients of the lags of *Aid* (respectively *Corruption*) on *Aid* (respectively *Corruption*).

Third, we apply a new approach to study the relationship between aid and corruption. As discussed in Granger (1988), we do not investigate the contemporaneous effect but the Granger causality (namely the ability of aid (respectively corruption) to improve the forecast of corruption (respectively aid).

When we study the reverse causality, we observe that corruption does not Granger-cause aid, because the sum of the lagged variables for *Corruption* is not significant. In other words, corruption does not exert any influence on the amount of aid. Hence, we do not support the view that corruption would favor aid in line with De la Croix and Delavallade (2013). Symmetrically we do not find that corruption would have a detrimental effect on aid as suggested by Berthélemy and Tichit (2004). Here again we can interpret our different results by differences in the method, the period, and the sample of countries.

In summary, our estimations show that there is no link in the Granger sense between aid and corruption in both directions. These findings moderate the pessimist view about the influence of development aid for corruption. More corrupt countries do not significantly receive more aid as well as aid does not significantly increase corruption.

## 2.4.2 Additional estimations

Our main estimations indicate that aid does not help to forecast corruption levels, neither does corruption help to predict aid values. However, former literature has shown that the relation between aid and corruption can vary with the type of aid (namely bilateral and multilateral aid)<sup>4</sup> or with the type of countries (see Okada and Samreth (2012) among others). We then extend our estimations to take these dimensions into account.

First, we investigate the underlying mechanisms of the relation between aid and corruption by analyzing the components of aid. Namely, we disaggregate total aid to distinguish between bilateral and multilateral aid.<sup>5</sup> Both components can have different influences on corruption or reversely can be influenced in different ways by corruption (Dollar and Levin, 2006). Following Charron (2011), we postulate that multilateral aid reward good governance and countries that fight corruption while bilateral aid, less attentive to the governance issue, is not. We then employ two variables, *Bilateral Aid* and *Multilateral Aid* respectively defined as net inflows of bilateral ODA to the recipient GDP and net inflows of multilateral ODA to the recipient GNI (as in Charron (2011)). Results by considering separately both components of aid are displayed in Table 2.5. They do not reveal any significant impact of multilateral aid and of bilateral aid on corruption in opposition to the results of Charron (2011). It is also of interest to stress that corruption does not influence

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<sup>4</sup>See Appendix B for a discussion.

<sup>5</sup>Table 2.B.3 in Appendix 2 reports the Phillips-Perron test statistics for both series.

both forms of aid. Hence our main finding on the absence of any causal link between aid and corruption is not affected by the disaggregation of aid.

Second, we examine whether the results differ for particular groups of countries. [Bräutigam and Knack \(2004\)](#) and [Asongu \(2012\)](#) have shown some evidence on the impact of aid on corruption and governance for African countries while [Charron \(2011\)](#) suggested that Asian countries can drive the results because both their corruption levels and ODA inflows have significantly decreased in the 2000s. It is then natural to consider that the aid-corruption nexus may differ across regions of the world. We therefore redo all estimations by considering four regions: Asia, Africa, Europe, and Latin America. We add alternatively interaction terms between both key variables and a dummy variable equal to one for each region to investigate if the relation differs across countries. We can then check if the impact of one variable on the other is significant by analyzing the significance of the sum of the interaction terms. Results are presented in Table 2.6. We find no significant result no matter the region. Our results differ from those observed for African countries by [Asongu \(2012\)](#) with a positive influence of aid on corruption, which can arise from our different methodology.

## 2.5 Robustness checks

We check the robustness of our results in different ways to ensure that the results discussed before are not altered by proper changes in specification or the use of alternative measurements. First, we use an alternative measure for corruption: the Corruption Perception Index (CPI) provided by Transparency International (higher values indicate greater corruption). This measure, which is a synthesized index on a scale 0-10 and made up of manifold surveys from various sources, is also commonly used in the literature (see [Charron \(2011\)](#) and [Asongu \(2012\)](#) among others). However, we only have information for 32 countries for which we observe twelve time periods to have a comparison with a similar data period sample. We display the results in Table 2.7 (Columns (1) and (3)). We observe again no significant relation in the Granger sense between aid and corruption.<sup>6,7</sup>

Second, we employ an alternative measure for aid, namely log (plus one) of ODA, measured in 2011 constant US dollars (as done in [Easterly and Williamson \(2011\)](#)). Thirteen observations were missing leading us to drop two countries from the whole sample of 71 countries (Gabon and Thailand). GMM estimates are reported in Table 2.7 (Columns (2)

<sup>6</sup>Phillips-Perron test statistics for *Aid* and *Corruption* are reported in Table 2.B.2 in Appendix 2.

<sup>7</sup>No matter the governance facet measured by World Bank Indicators, our data show no causality running between aid and governance. These supplemental Granger causality tests are reported in Tables 2.B.5 and 2.B.6 in Appendix 2.

and (4)). Despite the change in the specification of aid, these results corroborate those obtained in our main estimations.

Third, we construct five year averages with the aim of smoothing out fluctuations in aid flows and corruption. Though we would sacrifice information on our variables when averaging over time, it enables us to eradicate first order autocorrelation observed when estimating equation (2.1) (see the Durbin-Watson statistics reported at the bottom of Table 2.4). We report the results in Table 2.8 (Columns (1) and (4)). We see robust support for our benchmark results.

Fourth, we verify whether our results are driven by extreme values. We exclude potential problematic outliers in aid and corruption using the blocked adaptive computationally efficient outlier nominators (BACON) algorithm proposed by [Billor et al. \(2000\)](#). To do so, we use the 0.85 percentile of the chi-squared distribution as a threshold to separate outliers from non-outliers. 19 observations were dropped leading us to drop four countries from the main sample (to conserve only countries with at least 12 years of observations), say the Democratic Republic of Congo, the Republic of Congo, Eritrea and Mauritania. Results are displayed in Table 2.8 (Columns (2) and (5)). Results are not sensitive to the exclusion of outliers.

Fifth, we take into account the fact that the relation between aid and corruption can have evolved over time. Namely, we consider that the international community focus on fighting corruption during the last decade and the donor community reassessment on aid effectiveness at the Millenium Summit of the United Nations in 2000 may have played a role in the aid-corruption nexus (see, for example, [Charron \(2011\)](#)). To examine this issue, we consider a dummy variable (*Post 2000*) equal to one for years after 2000 and we add interaction terms between both key variables and this dummy variable. We report also the results in Table 2.8 (Columns (3) and (6)). We still observe no significant relation between aid and corruption, but also no significant coefficient for the interaction term meaning that the relation has not changed after 2000.

Sixth, we redo estimations with alternative estimators, namely the one-step system GMM estimator and the Fixed Effects estimator, which allows to control for time-invariant heterogeneity. The one-step GMM estimator is not robust to heteroskedasticity but it can be more reliable for finite sample than the two-step estimator ([Blundell and Bond, 2000](#)). Results reported in Table 2.9 confirm that our findings are not dependent on our estimation procedure.

Our benchmark results have been confirmed by several robustness tests. We therefore have strong support for the absence of causal relation between aid and corruption in both directions in the Granger sense.

## 2.6 Conclusion

In Chapter 2, we have investigated the relation between aid and corruption by examining the Granger causality of this link. While this relation has been analyzed in one direction in many works, none has ever analyzed the potential reverse causality in the same way. We did so by performing Granger-causality tests on a dataset of developing countries over the 1996-2009 period. We found no impact of aid on corruption, and reversely corruption does not exert a significant influence on aid. Additional estimations that took into account the components of aid and regional grouping of recipient countries led to the same findings.

As a consequence, our main conclusion is that there is no causality between aid and corruption in the sense of Granger. Our results then shed light on the debate over “the chicken and the egg” problem for the relation between aid and corruption. They do not accord with all the former studies of the large literature on aid and corruption which finds various results but differ from ours through differences in methodologies and samples. We can notably stress that the use of very recent data can contribute to influence the results. The relation between aid and corruption might have become less significant in the recent years with the evolution of the motives to allocate aid on the donor side.

Though bounded to the time span available, findings may have important policy implications by suggesting that aid and corruption should be disentangled. As past amount of aid do not influence the current level of corruption, aid cannot be rejected by claiming that it enhances corruption but, seemingly, cannot be used to reduce it. On the other side, as corruption does not affect aid, it cannot be accused of favoring aid or reversely of attracting aid and then giving wrong incentives. Hence both these major issues for developing countries should either be considered separately or at least in a wider framework say with the consideration of other recipients and donors’ characteristics.

Table 2.1: Phillips-Perron unit root tests for Aid and Corruption

|                              | Corruption |             | Aid       |             |
|------------------------------|------------|-------------|-----------|-------------|
|                              | Statistic  | Probability | Statistic | Probability |
| Inverse chi-squared (144)    | 249.883    | 0.000       | 246.657   | 0.000       |
| Inverse normal               | -3.732     | 0.004       | -4.941    | 0.000       |
| Inverse logit t (359)        | -3.469     | 0.003       | -5.513    | 0.000       |
| Modified inverse chi-squared | 5.827      | 0.000       | 6.049     | 0.000       |

The Phillips-Perron test tests whether *Corruption* (Control of Corruption) and *Aid* (ODA in GNI) have a unit root accounting for serial correlation. The null hypothesis is that all panels contain unit roots (variables were generated by a stationary process). Panel means are included to mitigate the impact of cross-sectional dependence. Time trend is also included. Average number of periods: 13.41. Number of panels: 71.

Table 2.2: List of recipient countries (71)

|                        |                    |               |                      |
|------------------------|--------------------|---------------|----------------------|
| Albania                | Croatia            | Madagascar    | Sri Lanka            |
| Armenia                | Cuba               | Malaysia*     | Sudan                |
| Azerbaijan             | Ecuador*           | Mali          | Swaziland            |
| Benin                  | Egypt, Arab Rep.*  | Mauritania    | Syrian Arab Republic |
| Bolivia*               | El Salvador*       | Mauritius*    | Tajikistan           |
| Bosnia and Herzegovina | Eritrea            | Mexico*       | Tanzania*            |
| Brazil*                | Ethiopia           | Moldova       | Thailand*            |
| Burkina Faso           | Gabon              | Morocco       | Togo                 |
| Cambodia               | Guatemala          | Mozambique    | Tunisia*             |
| Cameroon*              | India*             | Namibia*      | Turkey*              |
| Cape Verde             | Indonesia*         | Nicaragua     | Uganda*              |
| Chile*                 | Iran, Islamic Rep. | Pakistan*     | Uruguay*             |
| China*                 | Jordan*            | Panama        | Uzbekistan           |
| Colombia*              | Kazakhstan         | Paraguay      | Venezuela, RB*       |
| Congo, Dem. Rep.       | Kenya*             | Peru*         | Vietnam*             |
| Congo, Rep.            | Kyrgyz Republic    | Philippines*  | Yemen, Rep.          |
| Costa Rica*            | Lebanon            | Senegal*      | Zambia*              |
| Cote d'Ivoire          | Lesotho            | South Africa* |                      |

The 32 countries with a star are countries with sufficient available data to employ the CPI.

Table 2.3: Summary statistics

| Variable         | Observations | Mean        | Standard Deviation | Minimum       | Maximum       |
|------------------|--------------|-------------|--------------------|---------------|---------------|
| Aid              | 967 (948)    | 5.28 (4.68) | 7.52 (5.80)        | -0.69 (-0.69) | 99.51 (26.11) |
| Corruption       | 967 (948)    | 0.44 (0.44) | 0.56 (0.56)        | -2.22 (-2.22) | 1.51 (1.51)   |
| Bilateral aid    | 969 (948)    | 2.93 (2.56) | 4.74 (3.34)        | -0.69 (-0.69) | 84.04 (19.20) |
| Multilateral aid | 970 (948)    | 1.98 (1.84) | 2.85 (2.63)        | -1.3 (-1.3)   | 22.06 (16.45) |

Brackets contain statistics calculated when excluding outliers from the sample. *Corruption* is the World Bank Control of Corruption indicator.

Table 2.4: Results for benchmark Granger Causality tests

|                                             | (1)                          | (2)                          |
|---------------------------------------------|------------------------------|------------------------------|
|                                             | Aid $\rightarrow$ Corruption | Corruption $\rightarrow$ Aid |
| Corruption $_{t-1}$                         | 1.018***<br>(5.75)           | 1.823<br>(0.56)              |
| Corruption $_{t-2}$                         | -0.056<br>(-0.27)            | -2.579<br>(-0.55)            |
| Corruption $_{t-3}$                         | 0.023<br>(0.37)              | -0.828<br>(-0.75)            |
| $\sum_{i=1}^3$ Corruption $_{t-i}$          | 0.985***<br>(16.73)          | -1.584<br>(-0.60)            |
| Aid $_{t-1}$                                | -0.003<br>(-0.83)            | 0.391***<br>(3.22)           |
| Aid $_{t-2}$                                | -0.002<br>(-1.34)            | 0.112<br>(1.52)              |
| Aid $_{t-3}$                                | 0.000<br>(0.34)              | 0.088**<br>(2.52)            |
| $\sum_{i=1}^3$ Aid $_{t-i}$                 | -0.005<br>(-1.49)            | 0.591***<br>(4.38)           |
| Constant                                    | 0.010<br>(0.37)              | 0.954<br>(1.25)              |
| Observations                                | 736                          | 736                          |
| Hansen J (p-value) <sup>a</sup>             | 0.792                        | 0.714                        |
| Difference-in-Hansen (p-value) <sup>b</sup> | 0.258                        | 0.116                        |
| AR(1) (p-value) <sup>c</sup>                | 0.007                        | 0.114                        |
| AR(2) (p-value) <sup>c</sup>                | 0.750                        | 0.896                        |

*Notes:* Table 2.4 reports the system GMM results of equations (2.1) and (2.2) and the sum of the coefficients of lags of variables. <sup>a</sup> The null hypothesis of the Hansen J test (robust to autocorrelation) is that the instruments are not correlated with the residuals. <sup>b</sup> The null hypothesis of the Difference-in-Hansen test of exogeneity of instrument is that instruments for endogenous variables are exogenous to the dependent variable. <sup>c</sup> The null hypothesis of the AR(1) test (respectively AR(2)) is that the errors in the first difference regression exhibit no first (respectively second) order serial correlation. Probabilities reported. *Corruption* is the World Bank indicator (Control of Corruption). *Aid* is ODA scaled by GNI. The dependent variable in Column (1) (respectively Column (2)) is *Corruption* (respectively *Aid*). Robust standard errors (to heteroskedasticity) in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.5: Results for Granger Causality tests – Disaggregating aid

|                                          | (1)                 | (2)                 | (3)                | (4)                |
|------------------------------------------|---------------------|---------------------|--------------------|--------------------|
|                                          | Aid → Corruption    |                     | Corruption → Aid   |                    |
|                                          | Bilateral aid       | Multilateral aid    | Bilateral aid      | Multilateral aid   |
| Corruption <sub>t-1</sub>                | 0.968***<br>(4.75)  | 1.127***<br>(7.10)  | 1.469<br>(0.48)    | -0.319<br>(-0.11)  |
| Corruption <sub>t-2</sub>                | -0.026<br>(-0.12)   | -0.200<br>(-1.08)   | -2.388<br>(-0.85)  | 0.900<br>(0.26)    |
| Corruption <sub>t-3</sub>                | 0.006<br>(0.08)     | 0.015<br>(0.26)     | -0.208<br>(-0.29)  | -0.062<br>(-0.06)  |
| $\sum_{i=1}^3$ Corruption <sub>t-i</sub> | 0.948***<br>(11.94) | 0.942***<br>(13.16) | -1.127<br>(-1.18)  | 0.518<br>(0.90)    |
| Aid <sub>t-1</sub>                       | -0.007<br>(-1.26)   | -0.009<br>(-0.99)   | 0.122<br>(1.48)    | 0.978***<br>(5.39) |
| Aid <sub>t-2</sub>                       | -0.002<br>(-1.24)   | 0.001<br>(0.08)     | 0.081**<br>(2.09)  | 0.071<br>(0.51)    |
| Aid <sub>t-3</sub>                       | -0.000<br>(-0.25)   | 0.004<br>(0.82)     | 0.148***<br>(4.47) | -0.067<br>(-0.77)  |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>        | -0.009<br>(-1.38)   | -0.004<br>(-0.97)   | 0.352***<br>(2.84) | 0.981***<br>(9.38) |
| Constant                                 | -0.006<br>(-0.19)   | -0.021<br>(-0.69)   | 0.930**<br>(2.01)  | 0.242<br>(1.11)    |
| Observations                             | 736                 | 736                 | 736                | 736                |
| Hansen J <sup>a</sup>                    | 0.855               | 0.960               | 0.860              | 0.939              |
| Difference-in-Hansen <sup>b</sup>        | 0.440               | 0.416               | 0.132              | 0.100              |
| AR(1) <sup>c</sup>                       | 0.015               | 0.002               | 0.199              | 0.026              |
| AR(2) <sup>c</sup>                       | 0.917               | 0.447               | 0.189              | 0.398              |

*Notes:* Table 2.5 reports estimation results of equations (2.1) and (2.2) when aid is disaggregated between *Bilateral aid* and *Multilateral aid*. <sup>a</sup> The null hypothesis of the Hansen J test (robust to autocorrelation) is that the instruments are not correlated with the residuals. <sup>b</sup> The null hypothesis of the Difference-in-Hansen test of exogeneity of instrument is that instruments for endogenous variables are exogenous to the dependent variable. <sup>c</sup> The null hypothesis of the AR(1) test (resp. AR(2)) is that the errors in the first difference regression exhibit no first (resp. second) order serial correlation. Probabilities reported. *Corruption* is the World Bank Control of Corruption. *Aid* is either bilateral or multilateral ODA scaled by GNI. The dependent variable in Columns (1) and (2) (resp. Columns (3) and (4)) is *Corruption* (resp. *Aid*). Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.6: Results for Granger Causality tests – By region

|                                                          | (1)                          | (2)                 | (3)                 | (4)                          | (5)                | (6)                | (7)                | (8)                |
|----------------------------------------------------------|------------------------------|---------------------|---------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|
|                                                          | Aid $\rightarrow$ Corruption |                     |                     | Corruption $\rightarrow$ Aid |                    |                    |                    |                    |
|                                                          | Africa                       | Asia                | Europe              | LA <sup>a</sup>              | Africa             | Asia               | Europe             | LA <sup>a</sup>    |
| Corruption <sub>t-1</sub>                                | 0.954***<br>(5.12)           | 1.040***<br>(3.79)  | 1.176***<br>(4.57)  | 1.054***<br>(5.76)           | -3.677<br>(-1.01)  | 1.145<br>(0.14)    | -3.440<br>(-0.85)  | 0.445<br>(0.14)    |
| Corruption <sub>t-2</sub>                                | -0.090<br>(-0.42)            | -0.047<br>(-0.16)   | -0.078<br>(-0.32)   | -0.014<br>(-0.06)            | 5.011<br>(1.34)    | -1.356<br>(-0.12)  | 3.032<br>(0.72)    | -1.412<br>(-0.34)  |
| Corruption <sub>t-3</sub>                                | 0.064<br>(0.90)              | -0.031<br>(-0.35)   | -0.079<br>(-0.63)   | -0.012<br>(-0.16)            | 1.196<br>(1.24)    | -1.143<br>(-0.54)  | -1.080<br>(-0.85)  | -1.103<br>(-0.80)  |
| $\sum_{i=1}^3$ Corruption <sub>t-i</sub>                 | 0.929***<br>(13.82)          | 0.962***<br>(14.72) | 1.012***<br>(11.86) | 1.029***<br>(18.19)          | 2.531*<br>(1.85)   | -1.355<br>(-0.42)  | -1.484<br>(-0.58)  | -2.079<br>(-0.54)  |
| Aid <sub>t-1</sub>                                       | -0.003<br>(-0.58)            | -0.002<br>(-0.59)   | -0.004<br>(-0.96)   | -0.005<br>(-1.36)            | 0.201**<br>(2.19)  | 0.399***<br>(3.01) | 0.409***<br>(3.21) | 0.407***<br>(3.57) |
| Aid <sub>t-2</sub>                                       | -0.002<br>(-0.56)            | -0.003<br>(-1.63)   | -0.001<br>(-0.84)   | -0.001<br>(-0.56)            | 0.433***<br>(6.71) | 0.098<br>(1.39)    | 0.087<br>(1.33)    | 0.096<br>(1.48)    |
| Aid <sub>t-3</sub>                                       | -0.001<br>(-0.30)            | 0.000<br>(0.17)     | 0.001<br>(0.59)     | 0.001<br>(0.73)              | 0.169**<br>(2.25)  | 0.075*<br>(1.71)   | 0.052<br>(1.37)    | 0.071**<br>(2.07)  |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>                        | -0.006*<br>(-1.79)           | -0.004<br>(-1.22)   | -0.05<br>(-1.29)    | -0.005<br>(-1.54)            | 0.803***<br>(8.86) | 0.572***<br>(3.79) | 0.549***<br>(3.91) | 0.573***<br>(4.11) |
| Corruption <sub>t-1</sub> $\times$ Africa                | 0.098<br>(0.28)              |                     |                     |                              | 2.132<br>(0.25)    |                    |                    |                    |
| Corruption <sub>t-2</sub> $\times$ Africa                | 0.091<br>(0.23)              |                     |                     |                              | -2.397<br>(-0.30)  |                    |                    |                    |
| Corruption <sub>t-3</sub> $\times$ Africa                | -0.147<br>(-1.08)            |                     |                     |                              | -3.714<br>(-1.16)  |                    |                    |                    |
| $\sum_{i=1}^3$ Corruption <sub>t-i</sub> $\times$ Africa | 0.001                        |                     |                     |                              | -0.286             |                    |                    |                    |

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|                                             | (1)     | (2)     | (3)    | (4) | (5)       | (6)     | (7) | (8)    |
|---------------------------------------------|---------|---------|--------|-----|-----------|---------|-----|--------|
| $Aid_{t-1} \times Africa$                   | (0.26)  |         |        |     | (-1.50)   |         |     |        |
|                                             | -0.000  |         |        |     | 0.182     |         |     |        |
|                                             | (-0.05) |         |        |     | (1.13)    |         |     |        |
| $Aid_{t-2} \times Africa$                   | 0.000   |         |        |     | -0.355*** |         |     |        |
|                                             | (0.08)  |         |        |     | (-4.31)   |         |     |        |
| $Aid_{t-3} \times Africa$                   | 0.001   |         |        |     | -0.113    |         |     |        |
|                                             | (0.35)  |         |        |     | (-1.50)   |         |     |        |
| $\sum_{i=1}^3 Aid_{t-i} \times Africa$      | 0.042   |         |        |     | -3.979    |         |     |        |
|                                             | (0.50)  |         |        |     | (-0.88)   |         |     |        |
| $Aid_{t-1} \times Asia$                     |         | 0.000   |        |     |           | 0.263   |     |        |
|                                             |         | (0.06)  |        |     |           | (1.18)  |     |        |
| $Aid_{t-2} \times Asia$                     |         | 0.004   |        |     |           | 0.087   |     |        |
|                                             |         | (0.57)  |        |     |           | (0.57)  |     |        |
| $Aid_{t-3} \times Asia$                     |         | -0.001  |        |     |           | -0.031  |     |        |
|                                             |         | (-0.17) |        |     |           | (-0.39) |     |        |
| $\sum_{i=1}^3 Aid_{t-i} \times Asia$        |         | 0.003   |        |     |           | 0.319*  |     |        |
|                                             |         | (0.49)  |        |     |           | (1.92)  |     |        |
| $Corruption_{t-1} \times Asia$              |         | -0.013  |        |     |           | 1.046   |     |        |
|                                             |         | (-0.03) |        |     |           | (0.11)  |     |        |
| $Corruption_{t-2} \times Asia$              |         | -0.178  |        |     |           | 0.358   |     |        |
|                                             |         | (-0.45) |        |     |           | (0.03)  |     |        |
| $Corruption_{t-3} \times Asia$              |         | 0.244   |        |     |           | 1.420   |     |        |
|                                             |         | (1.20)  |        |     |           | (0.65)  |     |        |
| $\sum_{i=1}^3 Corruption_{t-i} \times Asia$ |         | 0.053   |        |     |           | 2.824   |     |        |
|                                             |         | (0.68)  |        |     |           | (0.80)  |     |        |
| $Aid_{t-1} \times Europe$                   |         |         | -0.011 |     |           |         |     | -0.350 |

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Table 2.6 – Continued from previous page

|                                               | (1) | (2) | (3)     | (4)     | (5) | (6) | (7)     | (8)     |
|-----------------------------------------------|-----|-----|---------|---------|-----|-----|---------|---------|
| $Aid_{t-2} \times Europe$                     |     |     | (-1.37) |         |     |     | (-1.06) |         |
|                                               |     |     | -0.010  |         |     |     | 0.175   |         |
|                                               |     |     | (-0.92) |         |     |     | (0.81)  |         |
| $Aid_{t-3} \times Europe$                     |     |     | -0.003  |         |     |     | 0.164   |         |
|                                               |     |     | (-0.75) |         |     |     | (1.40)  |         |
| $\sum_{i=1}^3 Aid_{t-i} \times Europe$        |     |     | -0.023  |         |     |     | -0.011  |         |
|                                               |     |     | (-1.30) |         |     |     | (-0.04) |         |
| $Corruption_{t-1} \times Europe$              |     |     | -1.029  |         |     |     | 3.087   |         |
|                                               |     |     | (-1.25) |         |     |     | (0.33)  |         |
| $Corruption_{t-2} \times Europe$              |     |     | -0.350  |         |     |     | -7.768  |         |
|                                               |     |     | (-0.65) |         |     |     | (-0.98) |         |
| $Corruption_{t-3} \times Europe$              |     |     | 0.851   |         |     |     | 6.825   |         |
|                                               |     |     | (1.31)  |         |     |     | (1.57)  |         |
| $\sum_{i=1}^3 Corruption_{t-i} \times Europe$ |     |     | -0.537  |         |     |     | 2.143   |         |
|                                               |     |     | (-1.14) |         |     |     | (0.39)  |         |
| $Aid_{t-1} \times LA^a$                       |     |     |         | -0.001  |     |     |         | -0.014  |
|                                               |     |     |         | (-0.38) |     |     |         | (-0.31) |
| $Aid_{t-2} \times LA^a$                       |     |     |         | -0.002  |     |     |         | 0.034   |
|                                               |     |     |         | (-1.23) |     |     |         | (1.40)  |
| $Aid_{t-3} \times LA^a$                       |     |     |         | -0.000  |     |     |         | 0.048   |
|                                               |     |     |         | (-0.22) |     |     |         | (1.45)  |
| $\sum_{i=1}^3 Aid_{t-i} \times LA^a$          |     |     |         | -0.003  |     |     |         | 0.673   |
|                                               |     |     |         | (-0.89) |     |     |         | (1.27)  |
| $Corruption_{t-1} \times LA^a$                |     |     |         | -0.011  |     |     |         | -0.750  |
|                                               |     |     |         | (-0.15) |     |     |         | (-0.72) |
| $Corruption_{t-2} \times LA^a$                |     |     |         | -0.061  |     |     |         | 0.783   |

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Table 2.6 – Continued from previous page

|                                                           | (1)     | (2)    | (3)    | (4)     | (5)     | (6)    | (7)    | (8)    |
|-----------------------------------------------------------|---------|--------|--------|---------|---------|--------|--------|--------|
| $\text{Corruption}_{t-3} \times \text{LA}^a$              |         |        |        | (-0.59) |         |        |        | (0.64) |
|                                                           |         |        |        | 0.015   |         |        |        | 0.315  |
|                                                           |         |        |        | (0.38)  |         |        |        | (0.44) |
| $\sum_{i=1}^3 \text{Corruption}_{t-i} \times \text{LA}^a$ |         |        |        | -0.057  |         |        |        | 0.349  |
|                                                           |         |        |        | (-1.20) |         |        |        | (0.30) |
| Constant                                                  | -0.009  | 0.005  | 0.017  | 0.024   | 2.150** | 1.482* | 1.356  | 0.769  |
|                                                           | (-0.37) | (0.20) | (0.56) | (0.95)  | (2.56)  | (1.73) | (1.61) | (0.71) |
| Observations                                              | 736     | 736    | 736    | 736     | 736     | 736    | 736    | 736    |
| Hansen $J^b$                                              | 0.637   | 0.886  | 0.998  | 0.955   | 0.669   | 0.909  | 1.000  | 0.985  |
| Difference-in-Hansen <sup>c</sup>                         | 0.254   | 0.293  | 0.782  | 0.984   | 0.213   | 0.866  | 0.628  | 0.987  |
| AR(1) <sup>d</sup>                                        | 0.008   | 0.011  | 0.014  | 0.004   | 0.121   | 0.104  | 0.098  | 0.094  |
| AR(2) <sup>d</sup>                                        | 0.853   | 0.683  | 0.912  | 0.788   | 0.809   | 0.816  | 0.738  | 0.801  |
| Number of lags (instruments)                              | 10      | 10     | 10     | 10      | 10      | 10     | 10     | 10     |
| Countries/Instruments                                     | 69/71   | 69/71  | 69/71  | 69/71   | 69/71   | 69/71  | 69/71  | 69/71  |

Notes: Table 2.6 reports estimation results of equations (2.1) and (2.2) by region. <sup>a</sup> LA stands for Latin America. <sup>b</sup> The null hypothesis of the Hansen J test (robust to autocorrelation) is that the instruments are not correlated with the residuals. <sup>c</sup> The null hypothesis of the Difference-in-Hansen test of exogeneity of instrument is that instruments for endogenous variables are exogenous to the dependent variable. <sup>d</sup> The null hypothesis of the AR(1) test (resp. AR(2)) is that the errors in the first difference regression exhibit no first (resp. second) order serial correlation. Probabilities reported. *Corruption* is measured by the World Bank indicator (Control of Corruption). *Aid* is ODA scaled by GNI. The dependent variable in Columns (1), (2), (3) and (4) (resp. Columns (5), (6), (7) and (8)) is Corruption (resp. Aid). Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.7: Results for Granger Causality tests – Alternative measures

|                                          | (1)                 | (2)                | (3)                 | (4)                |
|------------------------------------------|---------------------|--------------------|---------------------|--------------------|
|                                          | Aid → Corruption    |                    | Corruption → Aid    |                    |
|                                          | CPI                 | Aid in log         | CPI                 | Aid in log         |
| Corruption <sub>t-1</sub>                | 0.779***<br>(4.83)  | -1.800*<br>(-1.66) | 1.124***<br>(7.24)  | -0.450<br>(-0.62)  |
| Corruption <sub>t-2</sub>                | 0.006<br>(0.04)     | 1.856*<br>(1.64)   | -0.198<br>(-1.35)   | 0.481<br>(0.70)    |
| Corruption <sub>t-3</sub>                | -0.032<br>(-0.33)   | -0.151<br>(-0.51)  | -0.001<br>(-0.02)   | -0.091<br>(-0.50)  |
| $\sum_{i=1}^3$ Corruption <sub>t-i</sub> | 0.753***<br>(5.26)  | -0.950<br>(-0.11)  | 0.920***<br>(13.85) | -0.072<br>(0.21)   |
| Aid <sub>t-1</sub>                       | 0.001<br>(0.07)     | 0.431***<br>(3.93) | 0.024<br>(0.35)     | 0.358<br>(1.52)    |
| Aid <sub>t-2</sub>                       | -0.019**<br>(-2.26) | 0.261**<br>(2.52)  | -0.047<br>(-1.18)   | 0.281***<br>(2.75) |
| Aid <sub>t-3</sub>                       | 0.005<br>(0.42)     | 0.168<br>(1.55)    | -0.028<br>(-1.46)   | 0.044<br>(0.44)    |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>        | -0.137<br>(-1.03)   | 0.859***<br>(8.96) | -0.053<br>(1.30)    | 0.675***<br>(3.06) |
| Constant                                 | 0.888*<br>(1.72)    | 0.714<br>(0.22)    | 0.962<br>(1.19)     | 6.289<br>(1.47)    |
| Observations                             | 310                 | 310                | 736                 | 736                |
| Hansen J (p-value) <sup>a</sup>          | 0.988               | 0.996              | 0.927               | 0.935              |
| Difference-in-Hansen <sup>a</sup>        | 0.139               | 0.964              | 0.623               | 0.542              |
| AR(1) (p-value) <sup>a</sup>             | 0.021               | 0.015              | 0.001               | 0.052              |
| AR(2) (p-value) <sup>a</sup>             | 0.882               | 0.887              | 0.499               | 0.327              |

Notes: Table 2.7 reports estimation results of equations (2.1) and (2.2) using alternative measures for *Aid* and *Corruption*. <sup>a</sup> See footnotes of Table 2.4 for description. *Corruption* is measured by CPI. *Aid* is measured by the log of net ODA in 2011 constant US dollars. The dependent variable in Columns (1) and (2) (resp. Columns (3) and (4)) is *Corruption* (resp. *Aid*). Columns (1) and (3) report the results when *Corruption* is measured with the CPI and *Aid* is ODA in GNI. Columns (2) and (4) report the results when *Corruption* is the World Bank indicator and *Aid* is the log of net ODA. When the number of lags is restricted, we use up to six lags to instruments endogenous variables. See Appendix 2 for robustness checks of this treatment. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.8: Results for Granger Causality tests – Alternative samples

|                                               | (1)                 | (2)                 | (3)                 | (4)                 | (5)                | (6)                |
|-----------------------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
|                                               | Aid → Corruption    |                     |                     | Corruption → Aid    |                    |                    |
|                                               | Mean                | Post 2000           | Outliers            | Mean                | Post 2000          | Outliers           |
| Corruption <sub>t-1</sub>                     | 0.720***<br>(4.18)  | 0.878***<br>(6.58)  | 0.922***<br>(4.47)  | -4.220<br>(-1.00)   | 2.765<br>(0.76)    | -1.817<br>(-0.70)  |
| Corruption <sub>t-2</sub>                     | 0.229<br>(1.41)     | 0.103<br>(0.62)     | 0.055<br>(0.25)     | 3.624<br>(0.99)     | -2.228<br>(-0.54)  | 2.663<br>(0.81)    |
| Corruption <sub>t-3</sub>                     | -0.018<br>(-1.17)   | -0.032<br>(-0.55)   | -0.010<br>(-0.15)   | -0.483<br>(-0.85)   | -0.906<br>(-0.60)  | -0.081<br>(-0.08)  |
| $\sum_{i=1}^3$ Corruption <sub>t-i</sub>      | 0.931***<br>(20.18) | 0.949***<br>(45.11) | 0.966***<br>(12.26) | -1.080<br>(-0.70)   | -0.369<br>(-0.60)  | 0.765<br>(0.90)    |
| Aid <sub>t-1</sub>                            | -0.004<br>(-0.87)   | 0.000<br>(0.03)     | 0.009<br>(1.25)     | 0.935***<br>(9.03)  | 0.250<br>(1.24)    | 0.600*<br>(1.81)   |
| Aid <sub>t-2</sub>                            | 0.002<br>(0.36)     | -0.004<br>(-1.20)   | -0.012**<br>(-2.14) | -0.073<br>(-0.74)   | 0.197<br>(1.56)    | 0.292<br>(1.38)    |
| Aid <sub>t-3</sub>                            | 0.000<br>(0.38)     | 0.002<br>(0.92)     | -0.000<br>(-0.08)   | -0.031**<br>(-2.07) | 0.354***<br>(2.83) | 0.171*<br>(1.75)   |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>             | -0.002<br>(-1.60)   | -0.002<br>(-0.49)   | -0.004<br>(-0.95)   | 0.831***<br>(21.23) | 0.801***<br>(6.06) | 1.062***<br>(7.76) |
| Aid <sub>t-1</sub> × Post 2000                |                     | -0.001<br>(-0.07)   |                     |                     | 0.275<br>(1.19)    |                    |
| Aid <sub>t-2</sub> × Post 2000                |                     | 0.003<br>(0.73)     |                     |                     | -0.038<br>(-0.34)  |                    |
| Aid <sub>t-3</sub> × Post 2000                |                     | -0.001<br>(-0.64)   |                     |                     | -0.218<br>(-1.59)  |                    |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub> × Post 2000 |                     | 0.001               |                     |                     | 0.018              |                    |

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Table 2.8 – Continued from previous page

|                                                                     | (1)               | (2)                | (3)               | (4)             | (5)               | (6)             |
|---------------------------------------------------------------------|-------------------|--------------------|-------------------|-----------------|-------------------|-----------------|
| Corruption <sub>t-1</sub> × Post 2000                               |                   | (0.18)<br>0.007    |                   |                 | (0.11)<br>2.273*  |                 |
| Corruption <sub>t-2</sub> × Post 2000                               |                   | (0.15)<br>0.014    |                   |                 | (1.78)<br>-2.296  |                 |
| Corruption <sub>t-3</sub> × Post 2000                               |                   | (0.52)<br>-0.002   |                   |                 | (-1.45)<br>0.140  |                 |
| ∑ <sub>i=1</sub> <sup>3</sup> Corruption <sub>t-i</sub> × Post 2000 |                   | (-0.07)<br>0.020   |                   |                 | (0.29)<br>0.117   |                 |
| Constant                                                            | -0.032<br>(-1.30) | (0.76)<br>-0.016** | -0.004<br>(-0.15) | 0.151<br>(0.26) | (0.13)<br>0.412** | 0.109<br>(0.33) |
| Observations                                                        | 736               | 736                | 696               | 736             | 736               | 696             |
| Hansen J (p-value) <sup>a</sup>                                     | 0.531             | 0.832              | 0.621             | 0.915           | 0.670             | 0.835           |
| Difference-in-Hansen <sup>a</sup>                                   | 0.016             | 0.705              | 0.673             | 0.215           | 0.049             | 0.837           |
| AR(1) (p-value) <sup>a</sup>                                        | 0.107             | 0.006              | 0.024             | 0.044           | 0.096             | 0.475           |
| AR(2) (p-value) <sup>a</sup>                                        | 0.142             | 0.619              | 0.552             | 0.971           | 0.504             | 0.663           |

*Notes:* Table 2.8 reports estimation results of equations (2.1) and (2.2) using alternative samples. <sup>a</sup> See footnotes of Table 2.4. *Corruption* is measured by the World Bank indicator. *Aid* is ODA scaled by GNI. The dependent variable in Columns (1), (2) and (3) (resp. Columns (4), (5) and (6)) is *Corruption* (resp. *Aid*). Columns (1) and (4) report the results of the Granger causality tests using time averages (over five years). Columns (2) and (5) report the results of the Granger causality tests considering the potential change of the post-Cold War period. Columns (3) and (6) report the results of the Granger causality tests excluding outliers. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.9: Results for Granger Causality tests – Alternative estimators

|                                          | (1)                 | (2)                  | (3)                | (4)                |
|------------------------------------------|---------------------|----------------------|--------------------|--------------------|
|                                          | Aid → Corruption    |                      | Corruption → Aid   |                    |
|                                          | One-step GMM        | Fixed effects        | One-step GMM       | Fixed effects      |
| Corruption <sub>t-1</sub>                | 0.946***<br>(5.19)  | 0.791***<br>(23.55)  | 1.042<br>(0.28)    | 0.303<br>(0.24)    |
| Corruption <sub>t-2</sub>                | 0.025<br>(0.12)     | -0.050<br>(-0.89)    | -1.603<br>(-0.39)  | 1.100<br>(0.80)    |
| Corruption <sub>t-3</sub>                | -0.007<br>(-0.14)   | -0.039<br>(-0.75)    | -1.167<br>(-0.50)  | 2.039*<br>(1.82)   |
| $\sum_{i=1}^3$ Corruption <sub>t-i</sub> | 0.964***<br>(18.89) | 0.703***<br>(20.80)  | -1.728<br>(-0.49)  | 3.442<br>(1.41)    |
| Aid <sub>t-1</sub>                       | -0.004<br>(-1.36)   | 0.001<br>(1.29)      | 0.370***<br>(3.21) | 0.277***<br>(5.40) |
| Aid <sub>t-2</sub>                       | -0.001<br>(-1.02)   | -0.001<br>(-1.30)    | 0.111<br>(1.47)    | 0.004<br>(0.08)    |
| Aid <sub>t-3</sub>                       | -0.000<br>(-0.08)   | 0.000<br>(0.61)      | 0.092***<br>(3.03) | -0.043<br>(-1.13)  |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>        | -0.005<br>(-1.55)   | 0.000<br>(0.11)      | 0.573***<br>(3.47) | 0.238**<br>(2.48)  |
| Constant                                 | 0.006<br>(0.26)     | -0.142***<br>(-8.10) | 1.439<br>(1.25)    | 5.685***<br>(4.11) |
| Observations                             | 736                 | 736                  | 736                | 736                |
| R squared                                |                     | 0.550                |                    | 0.099              |
| Hansen J (p-value) <sup>a</sup>          | 0.939               |                      | 0.908              |                    |
| Difference-in-Hansen <sup>a</sup>        | 0.258               |                      | 0.116              |                    |
| AR(1) (p-value) <sup>a</sup>             | 0.014               |                      | 0.119              |                    |
| AR(2) (p-value) <sup>a</sup>             | 0.912               |                      | 0.829              |                    |

Notes: Table 2.9 reports estimation results of equations (2.1) and (2.2) employing alternative estimators. <sup>a</sup> See footnotes of Table 2.4. *Corruption* is measured by the World Bank indicator. *Aid* is ODA is scaled by GNI. The dependent variable in Columns (1), (2) and (3) (resp. Columns (4), (5) and (6)) is *Corruption* (resp. *Aid*). Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

## **Appendix 2.A**

### **Summary of the literature**

Tables 2.A.1 and 2.A.2 present an insight into the literature covering the study of the aid-corruption relationship in both directions. This overview of the literature reveals that any clear consensus has emerged from the manifold empirical investigations. Evidence of an effect of foreign aid on the recipient country corruption and of an influence of corruption on the decision to allocate assistance is still doubtful.

Table 2.A.1: Overview of existing empirical studies – From aid to corruption

| Study                                        | Aid measure                         | Corruption measure                                                                | Sample                      | Effect of aid on the QoG                    |
|----------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------|-----------------------------|---------------------------------------------|
| <a href="#">Knack (2001)</a>                 | ODA/GNP,<br>ODA/Gov.                | Corruption+Rule of law +<br>Bureaucracy quality (ICRG)                            | 1975-1995 – 80 countries    | (-)                                         |
| <a href="#">Bräutigam and Knack (2004)</a>   | ODA/GNI,<br>ODA/Gov.                | Corruption + Rule of law +<br>Bureaucracy quality (ICRG)                          | 1982-1997 – SSA             | (-)                                         |
| <a href="#">Alesina and Weder (2002)</a>     | Aid per capita                      | Seven measures of corruption                                                      | 1984-1995                   | Not significant                             |
| <a href="#">Svensson (2000)</a>              | Gross ODA/GDP                       | Corruption (ICRG)                                                                 | 1980-1994 – 66 countries    | (-)                                         |
| <a href="#">Rajan and Subramanian (2007)</a> | ODA/GDP, TA                         | Quality of bureaucracy + law<br>and order + corruption + in-<br>vestment measures | 1981-1990 – UNIDO countries | (-)                                         |
| <a href="#">Ear (2007)</a>                   | ODA/GDP                             | Corruption (WB)                                                                   | 1996-2002 – 166 countries   | Not significant                             |
| <a href="#">Dunning (2004)</a>               | ODA/GNP                             | Political rights and civil liber-<br>ties (Freedom house)                         | 1975-1997 – SSA             | (+)                                         |
| <a href="#">Tavares (2003)</a>               | ODA/GDP                             | Corruption (ICRG)                                                                 | 2001 – Non OECD countries   |                                             |
| <a href="#">Charron (2011)</a>               | ODA/GDP, bil. ODA,<br>mul. ODA      | Corruption (ICRG)                                                                 | 1986-2006 – 82 countries    | Type of aid and period<br>matter            |
| <a href="#">Okada and Samreth (2012)</a>     | ODA/GDP, bil. ODA,<br>mul. ODA      | Corruption (WB)                                                                   | 1995-2009 – 120 countries   | (+)                                         |
| <a href="#">Asongu (2012)</a>                | ODA/GDP, bil. ODA,<br>mul. ODA      | Corruption (WB), CPI (TI)                                                         | 1996-2010 – Africa          | (-)                                         |
| <a href="#">Jellal (2013)</a>                | ODA/GDP, bil. ODA,<br>mul. ODA      | CPI (TI)                                                                          | 1996-2010 – Africa          | Channels matter                             |
| <a href="#">Kangoye (2013)</a>               | ODA/GDP,<br>ODA/GNI,<br>ODA/imports | Corruption (ICRG)                                                                 | 1984-2004 – 67 countries    | Aid predictability and<br>dependence matter |

*Notes:* (+) means that aid increases the quality of institutions (decreases corruption). (-) means that aid decreases the quality of institutions (increases corruption). *QoG* stands for the quality of governance. *ICRG* stands for International Country Risk Guide. *TI* stands for Transparency International. *WB* stands for World Bank. *SSA* stands for Sub-Saharan Africa. *Gov.* stands for government spending. *TA* stands for Technical Assistance.

Table 2.A.2: Overview of existing empirical studies – From corruption to aid

| Study                                                  | Aid measure                      | Corruption measure                                   | Sample                                   | Effect of the QoG on aid       |
|--------------------------------------------------------|----------------------------------|------------------------------------------------------|------------------------------------------|--------------------------------|
| Alesina and Dollar (2000)                              | Bil. ODA per capita              | Rule of law (ICRG)                                   | 1970-1994 – DAC donors                   | Not significant                |
| Berthélemy and Tichit (2004)                           | Bil. ODA/GDP                     | Political rights and civil liberties (Freedom House) | 1980-1999 – DAC donors                   | (+)                            |
| Trumbull and Wall (1994)                               | Bil. ODA and mul. ODA per capita | Political rights and civil liberties (Freedom House) | 1984-1989 – DAC donors                   | (+)                            |
| De la Croix and Delavallade (2013) (Baur et al., 2013) | ODA per capita                   | Corruption (WB)                                      | 1996-2004 – 159 countries                | (-)                            |
| Svensson (2000)                                        | ODA/GDP                          | Corruption (ICRG)                                    | EU countries<br>1980-1994 – 66 countries | Not significant                |
| Dreher et al. (2011)                                   | Aid commitments                  | Corruption (WB)                                      | 2001-2008 – DAC and 16 non-DAC donors    | (-)                            |
| Neumayer (2003a)                                       | Bil. ODA, ODA, UN ODA            | Corruption (WB), Corruption (ICRG)                   | 1983-1995 – DAC and mul. donors          | Mostly not significant         |
| Alesina and Weder (2002)                               | ODA per capita                   | Seven measures of corruption                         | 1970-1995 – DAC donors                   | Scandinavia and Australia: (+) |
| Büthe et al. (2012)                                    | ODA per capita                   | Corruption (WB), CPI (TI), Corruption (ICRG)         | United States                            | Not significant                |
| Hout (2002)                                            | Aid eligibility                  | Corruption (WB)                                      | 2000 Netherlands                         | Not significant                |

Notes: (+) means that aid increases the quality of institutions (decreases corruption). (-) means that aid decreases the quality of institutions (increases corruption). *QoG* stands for the quality of governance. *ICRG* stands for International Country Risk Guide. *TI* stands for Transparency International. WB stands for World Bank.

## Appendix 2.B

### Additional information, tests and results

#### 2.B.1 Descriptive statistics for the CPI

Table 2.B.1: Summary statistics (CPI)

| Variable         | Observations | Mean | Standard<br>Deviation | Minimum | Maximum |
|------------------|--------------|------|-----------------------|---------|---------|
| Corruption       | 424          | 3.55 | 1.25                  | 1       | 7.50    |
| Aid              | 425          | 2.95 | 4.60                  | -0.69   | 25.66   |
| Bilateral aid    | 427          | 1.86 | 2.88                  | -0.64   | 16.91   |
| Multilateral aid | 426          | 1.04 | 1.82                  | -0.06   | 8.90    |

Statistics are calculated for the 32 countries for which data on the CPI are available.

#### 2.B.2 Additional unit root tests for corruption

Table 2.B.2: Phillips-Perron unit root test for Corruption (CPI) and Aid

|                              | Corruption (CPI) |             | Aid       |             |
|------------------------------|------------------|-------------|-----------|-------------|
|                              | Statistic        | Probability | Statistic | Probability |
| Inverse chi-squared(68)      | 204.367          | 0.000       | 457.432   | 0.000       |
| Inverse normal               | -5.839           | 0.000       | -11.660   | 0.000       |
| Inverse logit t(169)         | -8.050           | 0.000       | -20.890   | 0.000       |
| Modified inverse chi-squared | 11.693           | 0.000       | 33.394    | 0.000       |

Table 2.B.2 reports the tests for unit roots accounting for serial correlation for *Corruption* (CPI) and *Aid* (ODA in GNI). The null hypothesis is that all panels contain unit roots (variables were generated by a stationary process). Panel means are included to mitigate the impact of cross-sectional dependence. Time trend is also included. Average number of periods: 12.97. Number of panels: 32.

Table 2.B.3: Phillips-Perron unit root test for Bilateral aid and Multilateral aid

|                              | Bilateral aid |             | Multilateral aid |             |
|------------------------------|---------------|-------------|------------------|-------------|
|                              | Statistic     | Probability | Statistic        | Probability |
| Inverse chi-squared(68)      | 256.608       | 0.000       | 342.835          | 0.000       |
| Inverse normal               | -5.676        | 0.000       | -6.902           | 0.000       |
| Inverse logit t(169)         | -5.868        | 0.000       | -8.879           | 0.000       |
| Modified inverse chi-squared | 6.636         | 0.000       | 11.717           | 0.000       |

Table 2.B.3 reports the tests for unit roots accounting for serial correlation for *Bilateral aid* and *Multilateral aid*. The null hypothesis is that all panels contain unit roots (variables were generated by a stationary process) Panel means are included to mitigate the impact of cross-sectional dependence. Time trend is also included. Average number of periods: 13.41. Number of panels (whole sample): 71.

### 2.B.3 Additional tables of results

Table 2.B.4: The effects of lags of the dependent variable

|                                 | (1)                | (2)               |
|---------------------------------|--------------------|-------------------|
|                                 | Aid → Corruption   | Corruption → Aid  |
| Corruption <sub>t-1</sub>       | 1.261***<br>(5.57) |                   |
| Corruption <sub>t-2</sub>       | -0.353<br>(-1.27)  |                   |
| Corruption <sub>t-3</sub>       | 0.006<br>(0.09)    |                   |
| Aid <sub>t-1</sub>              |                    | 0.411**<br>(2.10) |
| Aid <sub>t-2</sub>              |                    | 0.111<br>(1.32)   |
| Aid <sub>t-3</sub>              |                    | 0.100**<br>(2.46) |
| Constant                        | -0.038<br>(-1.16)  | 1.021*<br>(1.71)  |
| Observations                    | 736                | 736               |
| AR(1) (p-value) <sup>a</sup>    | 0.008              | 0.113             |
| AR(2) (p-value) <sup>a</sup>    | 0.372              | 0.813             |
| Hansen J (p-value) <sup>a</sup> | 0.817              | 0.864             |

Notes: <sup>a</sup> See footnotes of Table 2.4. *Corruption* is measured by the World Bank indicator. *Aid* is ODA scaled by GNI. The dependent variable in Column (1) (resp. Column (2)) is *Corruption* (resp. *Aid*). Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.B.5: Results for Granger Causality tests (1) – Other governance measures

|                                          | (1)                      | (2)                 | (3)                 | (4)                |                          |
|------------------------------------------|--------------------------|---------------------|---------------------|--------------------|--------------------------|
|                                          | Aid → Governance         |                     |                     |                    |                          |
|                                          | Government effectiveness | Political Stability | Rule of Law         | Regulatory Quality | Voice and Accountability |
| Governance <sub>t-1</sub>                | 0.676***<br>(5.04)       | 0.628***<br>(3.59)  | 1.062***<br>(7.95)  | 0.977***<br>(7.88) | 1.295***<br>(3.22)       |
| Governance <sub>t-2</sub>                | 0.265<br>(1.49)          | 0.425**<br>(2.15)   | -0.021<br>(-0.10)   | 0.031<br>(0.25)    | -0.372<br>(-0.74)        |
| Governance <sub>t-3</sub>                | 0.083<br>(1.16)          | -0.148**<br>(-2.43) | -0.054<br>(-0.91)   | -0.078<br>(-1.55)  | 0.033<br>(0.20)          |
| $\sum_{i=1}^3$ Governance <sub>t-i</sub> | 1.023***<br>(21.67)      | 0.904***<br>(15.07) | 0.987***<br>(23.49) | 0.929***<br>(9.82) | 0.955***<br>(15.18)      |
| Aid <sub>t-1</sub>                       | -0.001<br>(-0.17)        | 0.002<br>(0.33)     | 0.002<br>(0.62)     | 0.002<br>(0.69)    | -0.003<br>(-0.68)        |
| Aid <sub>t-2</sub>                       | -0.001<br>(-0.63)        | -0.005**<br>(-2.00) | 0.000<br>(0.13)     | -0.003<br>(-1.30)  | 0.002<br>(0.75)          |
| Aid <sub>t-3</sub>                       | -0.001<br>(-0.59)        | -0.002<br>(-0.96)   | -0.002**<br>(-2.50) | -0.000<br>(-0.23)  | 0.000<br>(0.57)          |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>        | -0.002<br>(-1.10)        | -0.002<br>(-0.93)   | 0.001<br>(0.37)     | -0.000<br>(-0.19)  | -0.000<br>(-0.16)        |
| Constant                                 | 0.024*<br>(1.70)         | -0.029<br>(-1.12)   | -0.013<br>(-0.64)   | -0.019<br>(-0.59)  | -0.020<br>(-0.81)        |
| Observations                             | 736                      | 736                 | 736                 | 736                | 736                      |
| AR(1) (p-value) <sup>a</sup>             | 0.024                    | 0.141               | 0.003               | 0.000              | 0.179                    |
| AR(2) (p-value) <sup>a</sup>             | 0.564                    | 0.058               | 0.452               | 0.823              | 0.758                    |
| Hansen J (p-value) <sup>a</sup>          | 0.900                    | 0.953               | 0.979               | 0.831              | 0.362                    |

*Notes:* Table 2.9 reports estimation results of equation (2.1) using alternative measures of governance. <sup>a</sup> See footnotes of Table 2.4. *Governance* is measured alternatively by five distinct World Bank indicators named in the header of each column. All series are time stationary. *Aid* is ODA is scaled by GNI. The dependent variable is *Governance*. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.B.6: Results for Granger Causality tests (2) – Other governance measures

|                                          | (1)                      | (2)                 | (3)                 | (4)                |                          |
|------------------------------------------|--------------------------|---------------------|---------------------|--------------------|--------------------------|
|                                          | Governance → Aid         |                     |                     |                    |                          |
|                                          | Government effectiveness | Political Stability | Rule of Law         | Regulatory Quality | Voice and Accountability |
| Governance <sub>t-1</sub>                | 2.433<br>(0.37)          | 2.202<br>(0.69)     | -10.275<br>(-1.29)  | 4.819<br>(0.90)    | -12.188*<br>(-1.66)      |
| Governance <sub>t-2</sub>                | -2.807<br>(-0.47)        | -2.318<br>(-0.61)   | 14.690<br>(1.53)    | -1.990<br>(-0.32)  | 15.459<br>(1.62)         |
| Governance <sub>t-3</sub>                | -0.634<br>(-0.62)        | -0.485<br>(-0.35)   | -3.959**<br>(-2.01) | -0.928<br>(-0.34)  | -5.202<br>(-1.40)        |
| $\sum_{i=1}^3$ Governance <sub>t-i</sub> | -1.008<br>(-0.58)        | -0.601<br>(-0.69)   | 0.457<br>(0.20)     | 1.901<br>(0.73)    | -1.930<br>(-1.21)        |
| Aid <sub>t-1</sub>                       | 0.307**<br>(2.48)        | 0.375**<br>(2.43)   | 0.330<br>(1.59)     | 0.347***<br>(3.24) | 0.329**<br>(2.18)        |
| Aid <sub>t-2</sub>                       | 0.092<br>(1.41)          | 0.065<br>(0.80)     | 0.086<br>(0.70)     | 0.099<br>(1.51)    | 0.095<br>(0.97)          |
| Aid <sub>t-3</sub>                       | 0.064**<br>(2.47)        | 0.060*<br>(1.86)    | 0.057<br>(1.41)     | 0.080***<br>(2.65) | 0.109***<br>(2.67)       |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>        | 0.962***<br>(2.77)       | 0.500***<br>(2.94)  | 0.473***<br>(3.15)  | 0.526***<br>(4.80) | 0.533***<br>(3.37)       |
| Constant                                 | 1.815**<br>(2.14)        | 1.274**<br>(2.33)   | 1.920<br>(1.62)     | 2.146**<br>(2.29)  | 0.778<br>(1.29)          |
| Observations                             | 736                      | 736                 | 736                 | 736                | 736                      |
| AR(1) (p-value) <sup>a</sup>             | 0.102                    | 0.129               | 0.149               | 0.122              | 0.111                    |
| AR(2) (p-value) <sup>a</sup>             | 0.895                    | 0.774               | 0.985               | 0.925              | 0.871                    |
| Hansen J (p-value) <sup>a</sup>          | 0.747                    | 0.836               | 0.881               | 0.989              | 0.886                    |

Notes: Table 2.B.6 reports estimation results of equation (2.2) using alternative measures of governance.

<sup>a</sup> See footnotes of Table 2.4. *Governance* is measured alternatively by five distinct World Bank indicators named in the header of each column. All series are time stationary. *Aid* is ODA is scaled by GNI. The dependent variable is *Aid*. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

APPENDIX 2

Table 2.B.7: Results for Granger Causality tests – Alternative choice for  $j$  and  $k$

|                                    | (1)                          | (2)                          |
|------------------------------------|------------------------------|------------------------------|
|                                    | Aid $\rightarrow$ Corruption | Corruption $\rightarrow$ Aid |
| Corruption $_{t-1}$                | 1.050***<br>(4.83)           | -1.371<br>(-0.32)            |
| Corruption $_{t-2}$                | -0.146<br>(-0.66)            | 4.441<br>(1.43)              |
| $\sum_{i=1}^2$ Corruption $_{t-i}$ | 0.904***<br>(14.22)          | 3.067<br>(1.45)              |
| Aid $_{t-1}$                       | -0.001<br>(-0.18)            | 0.223**<br>(2.01)            |
| Aid $_{t-2}$                       | -0.002<br>(-1.58)            | 0.060<br>(1.35)              |
| $\sum_{i=1}^2$ Aid $_{t-i}$        | -0.003<br>(-1.02)            | 0.283**<br>(2.14)            |
| Constant                           | -0.031<br>(-0.98)            | 3.768***<br>(2.89)           |
| Observations                       | 807                          | 807                          |
| AR(1) (p-value) <sup>a</sup>       | 0.019                        | 0.115                        |
| AR(2) (p-value) <sup>a</sup>       | 0.714                        | 0.664                        |
| Hansen J (p-value) <sup>a</sup>    | 0.869                        | 0.883                        |

*Notes:* Table 2.B.7 reports estimation results of equations (2.1) and (2.2) using alternative lags for  $j$  and  $k$ . <sup>a</sup> See footnotes of Table 2.4. Table 2.B.7 reports estimates of equation (2.1) and (2.2) choosing the number of lags  $j$  and  $k$  equal to two. *Corruption* is measured by the World Bank indicator. *Aid* is ODA scaled by GNI. The dependent variable in Column (1) (resp. Column (2)) is *Corruption* (resp. *Aid*). Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 2.B.8: Results for Granger Causality tests – Applying lag restriction

|                                          | (1)                    | (2)                | (3)                    | (4)                |
|------------------------------------------|------------------------|--------------------|------------------------|--------------------|
|                                          | Aid → Corruption (CPI) |                    | Corruption (CPI) → Aid |                    |
|                                          | Benchmark              | Lag restriction    | Benchmark              | Lag restriction    |
| Corruption <sub>t-1</sub>                | 0.787***<br>(4.42)     | 0.496**<br>(2.45)  | -1.781**<br>(-2.06)    | -1.831<br>(-1.05)  |
| Corruption <sub>t-2</sub>                | -0.026<br>(-0.15)      | 0.399**<br>(2.21)  | 1.613*<br>(1.90)       | 1.846<br>(1.48)    |
| Corruption <sub>t-3</sub>                | -0.046<br>(-0.43)      | -0.001<br>(-0.01)  | -0.151<br>(-0.50)      | -0.132<br>(-0.31)  |
| $\sum_{i=1}^3$ Corruption <sub>t-i</sub> | 0.715***<br>(3.15)     | 0.894***<br>(4.36) | -0.318<br>(-0.44)      | -0.117<br>(-0.07)  |
| Aid <sub>t-1</sub>                       | -0.003<br>(-0.12)      | 0.014<br>(0.34)    | 0.427***<br>(4.82)     | 0.574***<br>(5.61) |
| Aid <sub>t-2</sub>                       | -0.017<br>(-1.14)      | -0.019<br>(-0.80)  | 0.254**<br>(2.34)      | 0.186<br>(1.07)    |
| Aid <sub>t-3</sub>                       | 0.008<br>(0.77)        | 0.010<br>(0.81)    | 0.163<br>(1.23)        | 0.168<br>(1.38)    |
| $\sum_{i=1}^3$ Aid <sub>t-i</sub>        | -0.011<br>(-0.71)      | 0.005<br>(0.22)    | 0.844***<br>(10.90)    | 0.928***<br>(6.86) |
| Constant                                 | 1.019<br>(1.42)        | 0.356<br>(0.47)    | 1.498<br>(0.56)        | 0.518<br>(0.08)    |
| Observations                             | 307                    | 307                | 307                    | 307                |
| AR(1) (p-value) <sup>a</sup>             | 0.018                  | 0.350              | 0.013                  | 0.034              |
| AR(2) (p-value) <sup>a</sup>             | 0.943                  | 0.090              | 0.900                  | 0.769              |
| Hansen J (p-value) <sup>a</sup>          | 0.989                  | 0.500              | 0.995                  | 0.523              |
| Lag restriction (number)? <sup>b</sup>   | No                     | Yes (6)            | No                     | Yes (6)            |
| Countries/Instruments                    | 54/32                  | 29/32              | 54/32                  | 29/32              |

*Notes:* Table 2.B.8 compares the results of Granger causality tests when we control for the number of lags used to instrument corruption and when we do not control for it. <sup>a</sup> See footnotes of Table 2.4. *Corruption* is measured by the CPI. *Aid* is ODA scaled by GNI. The dependent variable in Columns (1) and (2) (resp. Columns (3) and (4)) is *Corruption* (resp. *Aid*). <sup>b</sup> When the number of lags is restricted (Columns (2) and (4)), we use up to six lags to instruments endogenous variables. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

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*“There appear to be almost no findings in the contemporary literature that a) find a significant effect of aid on growth, b) are robust, and c) are free of the methodological problems described here.”*

Roodman (2008), p. 17

# Chapter 3 | Is Aid Efficient?

*Joint work with Laurent Weill*

### Chapter Abstract

The aim of this essay is to investigate the relation between aid and macroeconomic efficiency, a measure of the country productivity. In the vein of Chapter 1 and Chapter 2, it fits into the aid literature that examines the consequences of foreign assistance for developing countries. Especially, it contributes to the understanding of the puzzling aid-growth linkage focusing on a very new concept in this literature brought by [Christopoulos et al. \(2010\)](#), [Veiderpass and Andersson \(2011\)](#) and [Alvi and Senbeta \(2012a\)](#): the macroeconomic efficiency of production. It measures the relative distance of a particular country to an estimated production frontier common to all countries. It enables us to evaluate how far a country's actual production is compared to the highest production it could reach using the same bundle of inputs.

We estimate this macroeconomic efficiency frontier based on a stochastic frontier approach applied on a panel of 67 countries over the period 1985–2010. We then use General Method of Moments techniques to analyze the relation between foreign aid and our measure of macroeconomic efficiency. We want to determine whether foreign assistance is able to increase the efficiency with which countries are producing, namely whether aid is able to reduce the gap between the optimal and the actual levels of production without increasing the set of input employed in production. Our findings reveal that aid is able to foster macroeconomic efficiency. This beneficial effect is found for both bilateral aid and multilateral aid. We also take a look at diverse conditional effects of aid on efficiency, through the political environment, the financial system and the macroeconomic stability. Our panel data analysis exhibits that the benefits of aid on efficiency increase with the extents of democracy and of macroeconomic stability observed in aid recipient countries. Since efficiency of production is part of economic growth, these findings may give support to donors' aid policies aiming at promoting economic growth in developing countries.

## 3.1 Introduction

Is aid helping developing countries to achieve higher growth? This question has been a large debate for policy-makers, in particular since the start of this century and the renewed interest on aid consequences. To disentangle the aid-growth controversy, scholars have focused on specific growth determinants, say on investment and productivity. While the aid-investment relationship has been widely studied (see [Boone \(1996\)](#), [Hansen and Tarp \(2001\)](#), [Arndt et al. \(2011\)](#) and [Alvi and Senbeta \(2012a\)](#) among others), the aid-productivity relationship has been much less debated. It is, however, somewhat surprising that the relationship between aid and productivity has not received more systematic attention given the importance of productivity in explaining the differences in terms of economic growth and level between countries ([Easterly and Levine \(2001\)](#); [Baier et al. \(2006\)](#)).

Studies exploring the aid-productivity link do not agree on its sign. [Dalgaard et al. \(2004\)](#) showed that aid has a positive effect on the long run productivity (measured by output per capita), though with diminishing returns. Productivity gains are also more likely when aid is allocated to countries outside tropics and with good institutions. Conversely, [Alvi and Senbeta \(2012a\)](#) evidenced that foreign aid only foments growth through investment in capital accumulation but not thanks to Total Factor Productivity.

This essay aims at providing new evidence on the aid-productivity nexus. Our contribution is twofold. First, we analyze the impact of aid on macroeconomic efficiency, a different measure of performance than the growth of productivity (or technical change). Frontier efficiency techniques have been applied in several recent works to estimate macroeconomic efficiency, namely technical efficiency at the aggregate level, and to analyze its potential determinants (see, for example, [Méon and Weill \(2010\)](#), [Kuhry and Weill \(2010\)](#) and [Afonso and Aubyn \(2013\)](#)). Macroeconomic efficiency computes the relative distance of a country to an estimated common production frontier. It then measures how close a country's production is to its optimal production for its bundle of inputs, and constitutes a key component of aggregate productivity. Macroeconomic efficiency scores provide a synthetic measure of productivity in the sense that macroeconomic efficiency scores can take several inputs into account. As a consequence, they allow comparing the output of a country to the stocks of all production factors. Besides, macroeconomic efficiency scores are relative measures of performance. Once the macroeconomic frontier is estimated, each country is compared to the best-practice countries. Finally, measuring efficiency allows us to overcome an issue inherent to Total Factor Productivity, which its estimates depend crucially on the assumptions made about the production function.

Second, we examine the impact of aid on efficiency by taking into account the type of

donor and the potential interaction with characteristics of recipients. Different sources of aid may possibly have different effects on productivity. Different donors having different motives in allocating aid are supposed to condition the growth effect of foreign aid (Ram, 2003; Berthélemy, 2006). While Dollar and Levin (2006) found that multilateral donors pay greater attention to aid effectiveness than bilateral donors, Headey (2008) evidenced that both bilateral and multilateral aid have a positive effect after the Cold War. Rajan and Subramanian (2008) concluded, however, that no matter the source of aid, the period considered, or the political and climate conditions, the aid-growth relationship remains negative. Moreover, the effect of aid on efficiency can be subject to some characteristics of recipient countries. Allocating aid to undemocratic or inflating countries is likely to affect the efficiency effect of foreign assistance. The reason might be that democratic countries have institutional constraints (and pressure to keep their popular support) that force the government to use efficiently their resources (Angeles and Neanidis, 2009) and that countries with high inflation may also be countries with a lower quality of policy management (Svensson, 2000; Economides et al., 2008). There is a high debate in the aid literature on the positive effect of good macroeconomic policies for growth, with some suggesting benefits of good policies (Burnside and Dollar, 2000; Collier and Hoeffler, 2004) while others do not find such evidence (Rajan and Subramanian, 2008; Hansen and Tarp, 2001). Alvi and Senbeta (2012a) also suggested that aid may reduce productivity growth through the financial development channel, because aid may enter in national recipient banks, which are inefficient in reallocating funds.

In these veins, we ask three questions. Is aid beneficial to efficiency? Does bilateral aid have a different upshot than multilateral aid on efficiency? How is the role of aid on efficiency influenced by country-specific factors? We are then able to provide a broad analysis of the relation between aid and efficiency. The remainder of Chapter 3 is organized as follows. Section 3.2 discusses the methodology. Section 3.3 describes the data. Section 3.4 presents the empirical results. Section 3.5 concludes.

## 3.2 Why and how focusing on efficiency?

A huge literature has been dedicated to investigate the effects of aid on economic growth (see, for example, the literature reviews of Hansen and Tarp (2001), Kanbur (2006), Roodman (2007) and Doucouliagos and Paldam (2011)) but has not brought any clear conclusion on the aid-growth nexus. This relationship is, seemingly, intricate and complicated. A way to simplify investigations would be to refocus on a more specific outcome, largely related to economic growth, namely efficiency.

### 3.2.1 A background on the aid-productivity nexus

The growth effects of foreign aid have been the subject of long debates, mostly pessimistic. A range of studies has attempted to explain such discrepancies by investigating the effect of aid on growth determinants.<sup>1</sup>

Though the aid-investment channel has attracted most of scholars' attention, investment is perhaps not the only source of growth. Following [Dalgaard et al. \(2004\)](#), aid may have a direct positive effect on the long run productivity (output per capita), which accounts for the major part of differences in economic growth between countries ([East-erly and Levine, 2001](#)). Instrumenting for foreign aid, [Dalgaard et al. \(2004\)](#) cover at least 63 countries over six periods between 1974 and 1997. They found that productivity gains should be higher when aid is allocated to countries outside tropics and with good institutions, provided that recipient countries are not highly aid dependent. Accordingly, aid would be particularly efficient in non-tropical areas. [Veiderpass and Andersson \(2011\)](#) is at odds with [Dalgaard et al. \(2004\)](#). They used a non-parametric Data Envelopment Analysis on 60 developing countries between 1995 and 2000 to concisely conclude that aid does not lead to higher productivity. [Christopoulos et al. \(2010\)](#) evidenced that both bilateral and multilateral aid decrease the efficiency of production as obtained when applying a stochastic frontier approach. Their data covering 124 developing countries between 1971 and 2007 revealed that aid is particularly misused in non-democratic countries, say when allocated to less accountable hands. Besides, as democracy consolidates, institutional constraints and the possible citizens' protest should enforce the elected government to allocate resources in a way to reduce production inefficiency. [Alvi and Senbeta \(2012b\)](#) applied General Method of Moments (GMM) estimations covering 62 aid recipient countries between 1970 and 2004 to confirm that aid decreases productivity. They argued that aid (especially multilateral aid) only foments growth through investment in capital accumulation but not thanks to productivity, measured by Total Factor Productivity (TFP). Foreign aid, and again particularly multilateral aid, even reduce the growth rate of productivity, providing mixed aggregate results, which are dependent on the size of each source of growth. They also noticed that loans increase investment but not productivity. [Alvi and Senbeta \(2012b\)](#) also investigated whether the negative causal effect of aid on TFP growth is higher when the institutional quality is low in the recipient country. By supporting rent seeking activities, corruption and bad governance, aid would not conduct the recipient government to implement policies and reforms in favor of a better use of resources ([Svensson, 2000](#); [Economides et al., 2008](#)). Because both aid and corruption have

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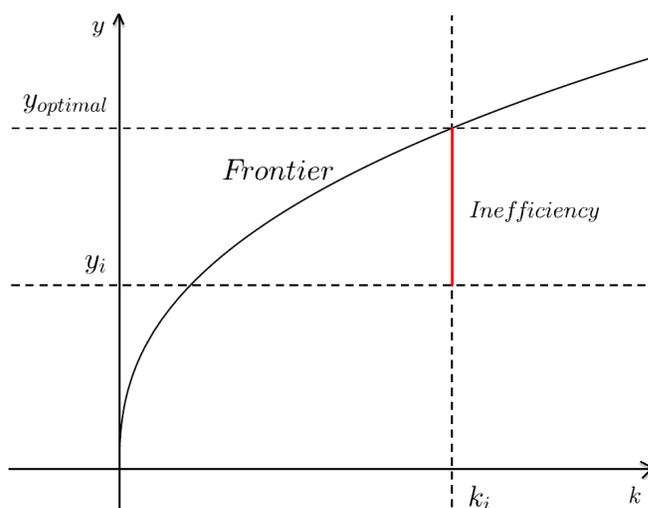
<sup>1</sup>See Appendix 3.A for an insight into the literature over the aid-investment nexus.

alongside a negative coefficient, [Alvi and Senbeta \(2012b\)](#) suggested, however, that aid may reduce TFP growth through an alternative channel. They investigated the financial development channel because foreign aid may enter in national recipient banks. When an interactive term between aid and the financial development is introduced in the regression, they observed that foreign aid decreases the positive expected effect of financial institutions in increasing the growth rate of TFP. They concluded that banks are not allocating aid and money to the best project able to support any presumable TFP growth.

### 3.2.2 A focus on efficiency

In this study, we propose to analyze the economic effect of foreign assistance with a particular focus on the efficiency part of economic growth. While technological progress (as measured by TFP) is less likely to occur in developing countries, the efficiency with which existing inputs are used can be ([Christopoulos et al., 2010](#)). Economic efficiency stands for the best use of resources when the objective is to maximize production. The maximum technically realizable for a bundle of inputs is represented by the production frontier. Figure 3.1 illustrates the production frontier. Investigating macroeconomic efficiency let us know how far a country is from its frontier (the highest efficiency it can reach) given the inputs it is using to obtain the actual level of output. While technical change may be viewed as switches of production frontiers, gains (loss) in efficiency represents a reduction (an increase) of the gap between the maximal output a country can reach using its inputs and the one it actually obtains with the same bundle of inputs ([Grosskopf, 1993](#)). To wit, a country increases the efficiency of its production when it increases its output or when it manages to reduce the use of its inputs, all things being equal. For example, an efficiency score of 45 per cent would mean that a country is producing 45 per cent of its maximum production. In other words, when production efficiency increases in a country, existent inputs are meant to be employed with greater efficiency and the country is moving toward the frontier. Finally, when a country operate on the frontier, it is technically efficient.

Several techniques have been suggested to estimate technical efficiency at the country level. While non-parametric approaches like Data Envelopment Analysis (DEA) adopt linear programming techniques, parametric approaches, such as the Stochastic Frontier Approach (SFA), use econometric tools to estimate the frontier. We adopt the stochastic frontier approach to measure macroeconomic efficiency in our investigation, following [Méon and Weill \(2010\)](#) among others. Contrary to the deterministic DEA frontier, the difference between actual and efficient output when using the SFA is not only attributable to inefficiency: a stochastic noise (caused by measurement errors or omitted factors) is also taken into account. The random shocks that define this stochastic component are not



Note: This graph depicts an efficiency frontier using the simple case of a production function with two inputs, where  $y$  ( $y_i$ ) is the output (actual output) per worker and  $k$  ( $k_i$ ) is the stock (actual stock) of capital per worker. Inefficiency represents (for example) how far the actual output per worker is compared to the optimal output per worker (located on the frontier) a country could reach with the same stock of capital per worker.

Figure 3.1: The efficiency frontier

directly imputable to the technology of production but are, for example, weather changes or luck. In other words, SFA (thanks to a two-component error term) takes into account the potential influence of noise on the shape and positioning of the frontier. The stochastic frontier approach is therefore based on the hypothesis that production deviates from the optimal production by an error term, which is the sum of this random disturbance and an inefficiency term. The random disturbance is a two-sided component, reflecting luck or measurement errors, and is assumed to have a normal distribution. The inefficiency term is a one-sided component. We assume a half-normal distribution. We consider a constant returns-to-scale Cobb-Douglas production frontier. This specification is standard in the literature (see, for example, [Méon and Weill \(2010\)](#)). The estimated production frontier is thus the following one:

$$\log\left(\frac{Y_i}{L_i}\right) = \beta_0 + \beta_1 \log\left(\frac{K_i}{L_i}\right) + \beta_2 \log\left(\frac{H_i}{L_i}\right) + u_i + v_i \quad (3.1)$$

where  $i$  indexes the country.  $\frac{Y}{L}$ ,  $\frac{K}{L}$ , and  $\frac{H}{L}$  are respectively output, capital and human capital per worker, and are described in Section 3.3.2.  $u_i$  is the inefficiency term and  $v_i$  is the random disturbance.  $\log$  stands for natural logarithm. The efficiency score scales

between 0 and 1. If the score is one, the country is reaching the optimal production with the available inputs. If the score is lower than one, the country can achieve a greater level of production without altering its inputs. We adopt the stochastic frontier time-varying model from Battese and Coelli (1992), which is a specification of the stochastic frontier model for panel data allowing the degree of inefficiency to vary over time.

### 3.3 Our empirical strategy

#### 3.3.1 The relationship between aid and efficiency

The main goal of this essay is to unveil how foreign aid affects technical efficiency. Therefore, to investigate the relation between aid and efficiency, we estimate the following benchmark equation:

$$Efficiency_{it} = \alpha_i + \rho Efficiency_{it-1} + \gamma Aid_{it} + \phi' X_{it} + \lambda_t + \varepsilon_{it} \quad (3.2)$$

where  $Efficiency_{it}$  indicates our macroeconomic efficiency score for country  $i$  at time  $t$ ,  $\alpha_i$  indicates country fixed effects,  $Efficiency_{it-1}$  is the lagged value of the dependent variable,  $Aid_{it}$  is foreign aid (both bilateral aid and multilateral aid) as a share of the recipient country's GDP,  $X_{it}$  is a vector of control variables,  $\lambda_t$  indicates temporal dummies, and  $\varepsilon_{it}$  is the error term.

The inclusion of the lagged macroeconomic efficiency term among the explanatory variables enables us to account for the dynamic nature of the aid-macroeconomic efficiency relationship. A problem arises, however, with this term because it can be correlated to the fixed part of the error term  $\varepsilon$ . Another source of potential bias relates to foreign assistance. The possible endogeneity of aid with respect to economic growth has largely been discussed in the empirical literature (Arndt et al., 2010). Likewise, aid donors' allocations may be also influenced by the production efficiency of recipient countries. De la Croix and Delavallade (2013) evidenced that countries with low productivity actually receive higher amounts of foreign assistance. Accordingly, we cannot ignore that the reverse causation is also likely to occur between aid and efficiency because, if aid is indeed endogenous, the correlation between aid and the residuals would make Ordinary Least Squares estimates biased and inconsistent.<sup>2</sup>

We therefore apply the Blundell and Bond (1998) GMM estimator designed for linear dynamic panel data models in order to address the potential problems of endogeneity, omitted variables and unobserved country heterogeneity. The Blundell and Bond estima-

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<sup>2</sup>The potential endogeneity of aid with respect to efficiency is assessed in Appendix 3.B.

tor is the most powerful among the GMM estimators, in particular when the dependent variable is highly persistent (Blundell and Bond, 2000). The system GMM estimator uses the orthogonality conditions of the difference GMM estimator (Arellano and Bond, 1991) and includes additional moment conditions. The system GMM estimator estimates simultaneously equation (3.2) written in levels and equation (3.2) written in first differences. Independent variables are treated as strictly exogenous, with the exception of the lagged measure of efficiency – inherently correlated with the fixed part of the error term – and *Aid*. Following Blundell and Bond (1998), lags of endogenous variables are used as instruments for the difference equation and lagged differences of endogenous variables are used as instruments for the level equation in order to avoid the simultaneity bias when estimating equation (3.2).

The consistency of the GMM estimator depends on the validity of our instruments and relies on the absence of second-order autocorrelation in the error terms, which are tested for each regression.<sup>3</sup> The number of orthogonality conditions (namely the number of available instruments) increases with the number of time periods available. As recommended by Roodman (2009), we always control for the number of instruments used in the estimation procedure not to bias the Hansen J test for over-identifying restrictions. The number of instruments has to be lower than the number of countries available in the sample (Roodman, 2009) instead of what the significance of estimated coefficients could be upward biased. Using this whole procedure, for which all our GMM regressions pass the tests, the estimated aid coefficient should not be biased by a potential simultaneity bias and only measures the direct effect of aid on efficiency.

We use two GMM procedures to obtain the results: the one-step and the two step system GMM. The reason is that standard errors are asymptotically robust to heteroskedasticity with the two-step GMM but not with the one step GMM estimator, while the one-step GMM estimator tends to be more reliable for finite sample (Blundell and Bond, 2000). We use the finite-sample correction for the two step covariance matrix proposed by Windmeijer (2005) to remedy at best to the fact that the two step estimates of the standard errors are likely to be downward biased. We then chose to report the estimations results for both techniques.

### 3.3.2 The data

According to data availability, we use a panel data set of 67 countries over the period 1985-2010 to examine the effects of aid inflows on our measure of efficiency in a dynamic equation, for which we control for possible endogenous biases.

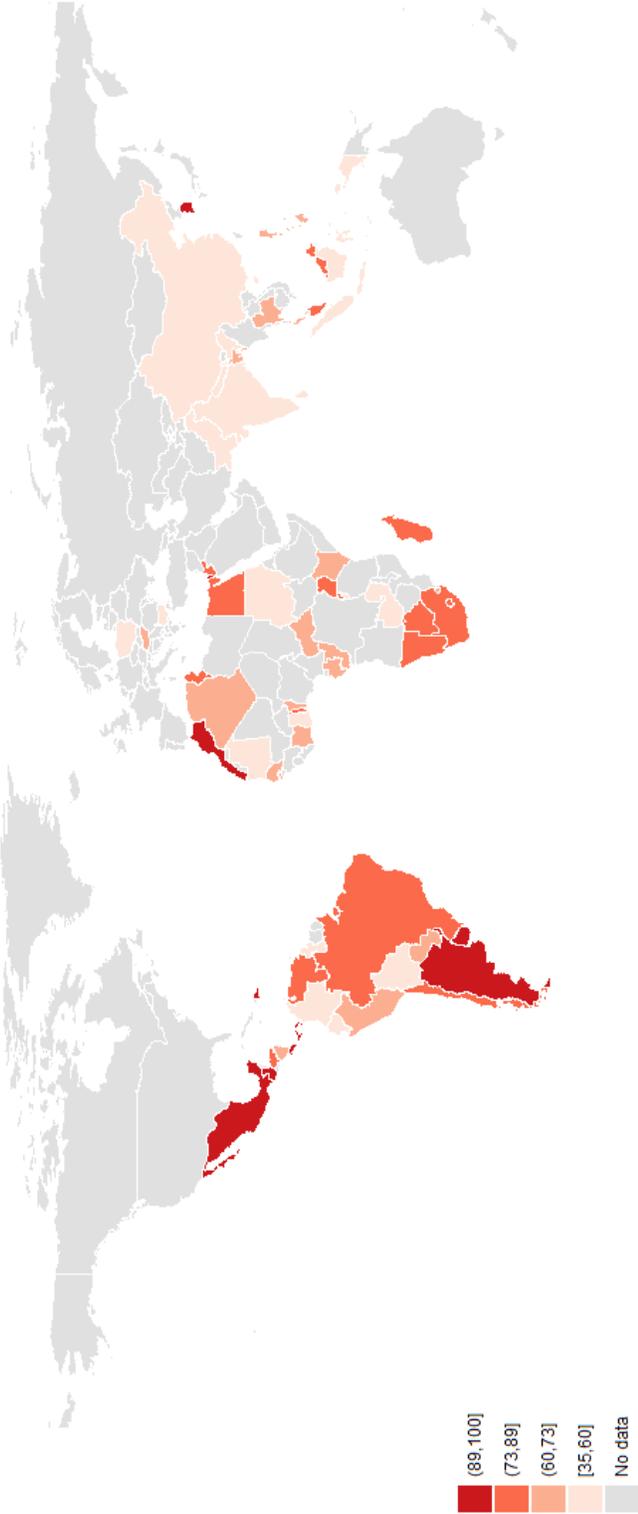
<sup>3</sup>Appendix 3.B discusses the issue of instrumentation.

To the best of our knowledge, data covering recent capital stock are not available from any statistical yearbook or database. We hence compute ourselves these data based on the initial values extracted from Penn World Tables (*PWT 6.3*) and substituting into a simple capital accumulation equation. Data on capital stock per worker used for the estimation of efficiency are based on [Easterly and Levine \(2001\)](#) estimates that are available up to 1990. To also consider the recent decades, we use a perpetual inventory method to compute capital stock for each year up to 2010 thanks to the estimated capital stock of 1985 in current US dollars ([Easterly and Levine, 2001](#)) and annual data on investment available up to 2010 (source: World Development Indicators). Let  $K_t$  equals capital stock in period  $t$  and  $\lambda$  equals the constant depreciation rate assumed to be equal to 0.07, as in [Easterly and Levine \(2001\)](#). Let  $I_t$  equals investment measured by the gross fixed capital formation in period  $t$ . The capital accumulation equation is:  $K_{t+1} = I_t + (1 - \lambda) \times K_t$ . Human and physical capital stocks are key inputs to produce the economic output measured by GDP. Data on GDP are available from the World Development Indicators database. Data on educational attainment for adult population, a proxy for human capital, are issued from Barro and Lee Educational Attainment Dataset. We linearly interpolate these quinquennial data to obtain yearly data. All these data are in 2000 US dollars prices and production factors are all divided by the working age population (source: World Development Indicators).

Data on aid are obtained from the OECD database. Our key variable, *Aid*, is measured by gross Official Development Assistance (ODA) flows as a percentage of GDP (as in [Djankov et al. \(2006\)](#) and [Clemens et al. \(2012\)](#)). Gross ODA refers to the new aid provided annually by donor countries. We include six control variables that have been suggested in the literature to influence components of growth: financial development, measured with the ratio of domestic credit to private sector to GDP (*Finance*); openness to trade, measured by exports plus imports as a percentage of GDP in 2005 U.S. dollars (*Openness*); the extend of democracy, measured by the Freedom House scores of civil liberties and political freedom (*Democracy*); an index of ethno-linguistic fractionalization (*ELF*); military expenditures, measured by the log of military expenditures divided by GDP (*Military*); and macroeconomic instability, measured by the log of the rate of inflation plus one (*Inflation*). Definition and sources of variables are given in Table 3.4.

Table 3.2 presents descriptive statistics and Table 3.3 reports the average value of each country's efficiency score over the whole period while Figure 3.2 illustrates available efficiency scores in 2009. The summary statistics show cross-country differences in terms of aid receipts, with a mean of 7.7 per cent of a recipient's GDP. In terms of efficiency, we observe that the average country in our sample has the possibility to extend its current pro-

duction level by 41.1 per cent without increasing its capital endowment. Morocco, Gambia and Singapore record, in average, the greatest efficiency score while Malawi, Guyana and Bulgaria have, in average, the highest difference between their actual output and their optimal output.



Note: Efficiency scores are self-computed from data available in our sample in 2009.

Figure 3.2: Macroeconomic efficiency scores in 2009

## 3.4 Results

Section 3.4 presents our empirical results on the effect of *Aid* on *Efficiency* and compares the effects of bilateral versus multilateral aid. It then considers the conditional effects of aid on efficiency.

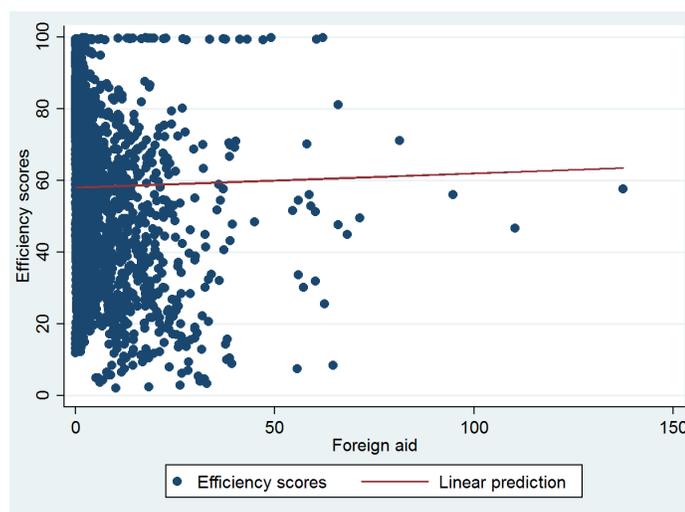
### 3.4.1 The direct effect of aid on efficiency

Looking at the simple scatter plot between foreign aid as a percent of the recipient's GDP and its macroeconomic efficiency score, we observe a slight and positive relationship between both variables (see Figure 3.3), even when excluding extreme values that may drive the picture (see Figure 3.4). To verify whether this apparent relationship holds or vanishes when we control for all econometric issues, we move to analyze our GMM estimates for equation (3.2) reported in Tables 3.5 and 3.6.

The primary result is that the coefficient for *Aid* is significant and positive in all estimations, suggesting that aid exerts a positive effect on efficiency. Aid allows recipient countries to reduce the gap between their current production and the maximal production they could reach given their bundle of production factors. Turning to the control variables, we observe that our measure of democracy has a negative effect on efficiency. This result gives support to the evidence of Clague et al. (1996). They explained that autocratic leaders are less under social pressure for public good provisions (immediate consumption) and can hence dedicate more resources to investment and savings, because they have future interests in doing so (collecting higher tax revenues). The coefficient of trade openness is, as expected, significant and positive. The signs of the coefficients of *Finance*, *Inflation* and *Military* are those commonly found in the empirical literature but are overall not significantly different from zero.

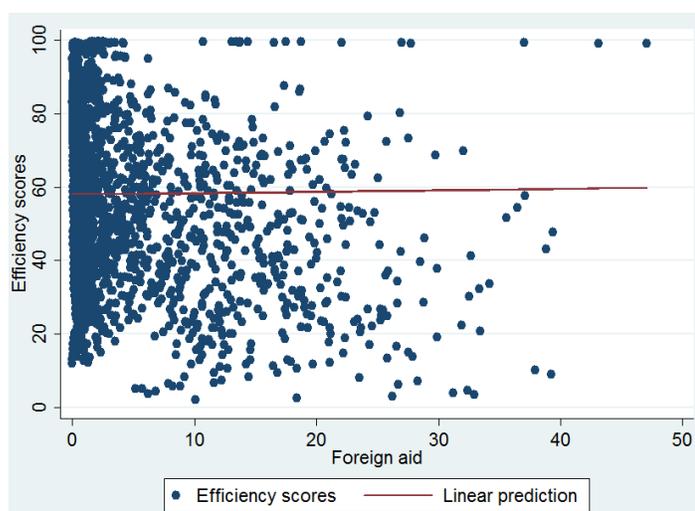
A question that comes to bear is whether the type of aid is relevant in determining the effect of aid on efficiency. We can wonder if this result stands for different types of aid, as found by Headey (2008), or if the distribution of aid matters, as suggested in Ram (2003). Aid can be bilateral (a direct transfer from a donor to a recipient) or multilateral (a transfer from an international organization to a recipient).<sup>4</sup> We re-estimate equation (3.2) using *Bilateral aid* and *Multilateral aid* measures instead of the aggregate *Aid* measure. We observe that the beneficial effect of aid on efficiency goes through both bilateral and multilateral aid. Our findings thus accord with the results of Headey (2008) on economic growth, following which both bilateral aid and multilateral aid exert a beneficial effect on economic outcomes.

<sup>4</sup>See Appendices B and C for a discussion on bilateral versus multilateral aid motives and consequences.



Note: This figure shows the scatter plot (built on the data available in our sample between 1985 and 2010) from the regression of ODA in GDP on of macroeconomic efficiency. The solid line is the fixed effects-fitted line.

Figure 3.3: Scatter plot of efficiency against ODA in GDP



Note: This figure shows the scatter plot (built on the data available in our sample between 1985 and 2010 excluding outliers (the procedure to exclude outliers is described in Section 3.4.3) from regressing total ODA in GDP on our measure of macroeconomic efficiency. The solid line is the fixed effects-fitted line.

Figure 3.4: Scatter plot of efficiency against ODA in GDP – excluding extreme values

### 3.4.2 The conditional effects of aid on efficiency

We now investigate if the effect of aid on efficiency is conditional to country-specific dimensions. We redo estimations by considering interaction terms between aid and three country-specific variables. The benchmark equation (3.2) becomes:

$$\begin{aligned} Efficiency_{it} = & \alpha_i + \rho Efficiency_{it-1} + \gamma Aid_{it} + \\ & \phi Aid_{it} \times Country_{it} + \psi' X_{it} + \lambda_t + \varepsilon_{it} \end{aligned} \quad (3.3)$$

where  $Aid_{it} \times Country_{it}$  stands for one of the three interaction terms between aid and country-specific variables already including in the vector of control variables  $X_{it}$ . Each interaction term is assumed to be endogenous to efficiency because of aid. Consequently, the number of instruments used for the estimation procedures becomes larger than the country sample size. Following the instrumentation strategy discussed in Section 3.3, we reduce to twenty lags per endogenous variable the number of lags used for the instrumentation strategy to conserve the GMM estimation consistency. Table 3.6 displays the estimations results of equation (3.3) by considering each interaction term in one column.

First, we consider the interaction between aid and financial development. According to [Alvi and Senbeta \(2012a\)](#), financial intermediaries (as the central bank of recipients) may be an intermediary between the entry of aid flows and the reallocation to local project. However, our data reveal that financial development does not play a role as a channel through which aid can influence efficiency. In other words, financial intermediaries do not condition the capacity of foreign aid to improve technical efficiency. Second, we follow [Alvi and Senbeta \(2012a\)](#) and [Christopoulos et al. \(2010\)](#) in taking into account the interaction between aid and democracy, a proxy of quality of the institutional environment. Its coefficient is always significant and negative (lower numbers of *Democracy* stand for greater quality). Allocating aid to more democratic countries presumably improves the effect of aid on efficiency. Finally, we consider the interaction between aid and inflation, a proxy of macroeconomic instability. We test the hypothesis that aid is particularly beneficial for efficiency if the recipient country has sound macroeconomic policies. We find that the interaction term between aid and inflation is significantly negative in two of the three regressions while the coefficient measuring the direct effect of aid on efficiency remains again positive. This finding suggests that allocating aid to inflating countries is likely to reduce the beneficial effect of aid.

Turning briefly to our significant control variables, the causation found between the soundness of democratic institutions and macroeconomic efficiency may again surprise. But [Olson \(1993\)](#) and [Méon and Weill \(2010\)](#) also gave support to [Clague et al. \(1996\)](#).

They showed that autocrats may have incentive to improve private sector efficiency in order to maximize their own rents. The coefficient of public military expenditures is mostly positive and strongly significant. [Benoit \(1978\)](#) and [Shieh et al. \(2002\)](#), for example, claimed that public expenditures dedicated to the military sector are not only beneficial for developed countries but also for the least developed ones and that limiting public military expenditures may even be counterproductive. Finally, openness to trade is, as expected, positively related to macroeconomic efficiency (see, for example, [Winters \(2004\)](#)).

### 3.4.3 Robustness checks

Our analysis of aid and of the country-specific context shows that aid improves technical efficiency and that democracy and greater macroeconomic stability can contribute to strengthen the beneficial effect of aid on efficiency. We now check the robustness of our findings in different ways. The full results for aid, disaggregated aid and country-specific characteristics are reported in Tables 3.7 to 3.12.

First, we include a post-Cold War dummy in our estimations, which takes the value of one after 1990 and zero before. The motivation for this test is that foreign aid has largely been argued to be subject to donors' strategies during the Cold War, reducing the potential effect of aid ([Headey, 2008](#)). Results presented in Tables 3.7 and 3.8 remain unchanged. Second, we test if our results are robust to the exclusion of potential outliers in aid and efficiency, namely countries with extreme values in aid or efficiency that may drive the core results of our estimates. To do so, we follow the [Billor et al. \(2000\)](#) algorithm. We use the 0.85 percentile of the chi-squared distribution as a threshold to separate outliers from non-outliers. According to this blocked adaptive computationally efficient outlier nominators (BACON) procedure, we drop 101 excessive values for *Aid* and for efficiency scores. Estimates reported in Tables 3.9 and 3.10 show that our findings are not shaped by these outliers. The fact that aid coefficients are significantly positive is not due to extreme values. Political liberalization as well as macroeconomic stability still enhance the positive aid-efficiency relationship. Third, we check robustness of our results to the addition of control variables suggested in the literature on growth: latitude ([Hall and Jones, 1999](#)) and religion ([Barro and McCleary, 2003](#); [Noland, 2005](#)). Difference in location in particular (by determining the leg of institutions) may explain a sensitive part of differences in productivity. [Noland \(2005\)](#) found that religion matters in determining economic performance. Islam, specifically, seems to promote economic growth depending on the country. We measure distance from the equator as the absolute value of latitude in degrees divided by 90 so that our measure ranges from 0 to 1 and we add the shares of Muslims and Catholics in the population (observed in 1980). Again, the direct and

conditional effects of aid on efficiency hold while any robust pattern emerges for added control variables (see Tables 3.11 and 3.12).

## 3.5 Conclusion

In Chapter 3, we have employed panel data techniques to answer a simple question: what are the direct and conditional effects of foreign aid on macroeconomic efficiency in developing countries? This research is of particular interest for the economic analysis of the consequences of aid, as macroeconomic efficiency, a component of aggregate growth, is a driving force of long-term growth, in particular for developing countries. Yet, the aid-efficiency relationship has received remarkably little attention, in particular compared to abundant (and inconclusive) literature interested in the consequences of aid on economic growth.

Our findings can be summarized as follows. First, aid exerts a positive impact on efficiency. Second, bilateral aid and multilateral aid both contribute to favor efficiency. Third, the positive impact of aid on efficiency is influenced by the institutional and macroeconomic environment of recipient countries. Namely, higher democracy and greater macroeconomic stability enhance the beneficial effect of aid on efficiency.

The main policy implications of our results are that aid should be supported to favor growth through greater efficiency, and that this support should be accompanied with efforts to promote democracy and macroeconomic stability to strengthen the benefits of aid. This work indeed contributes to the growing research designed to establish the conditions and requirements that would enable aid to be effective.

On the whole, even if aid can affect macroeconomic efficiency through other channels and sectors as through education and health, it could be interesting to extend this introductory study and to focus on specific aid flows, in particular on aid targeting specifically the productive sectors (where data are available). Though the one-stage estimation does not allow to solve the issue of endogeneity as done in this study, it could be interesting to compare the results with this alternative computation because our efficiency score is measured with sampling error (efficiency, not observed, is estimated leading to measure it with error), which may bias the estimated covariance matrix of the second step of estimation. Estimates of the second step might then be biased (generally biased downward as demonstrated by [Wang and Schmidt \(2002\)](#)). Finally, investigating the long run effect of aid could be a matter of interest as well as including in the estimated production frontier inputs that are specific to groups of developing countries.

Table 3.1: List of recipient countries

|                          |                    |             |                   |
|--------------------------|--------------------|-------------|-------------------|
| Algeria                  | Dominican Republic | Madagascar  | Republic of Congo |
| Argentina                | Ecuador            | Malawi      | Rwanda            |
| Bahrain                  | Egypt              | Malaysia    | Senegal           |
| Bangladesh               | El Salvador        | Malta       | Singapore         |
| Barbados                 | Gabon              | Mauritania  | South Africa      |
| Benin                    | Gambia             | Mauritius   | South Korea       |
| Bolivia                  | Ghana              | Mexico      | Sri Lanka         |
| Botswana                 | Guatemala          | Morocco     | Sudan             |
| Brazil                   | Guyana             | Namibia     | Swaziland         |
| Bulgaria                 | Honduras           | Nepal       | Thailand          |
| Burundi                  | Hungary            | Nicaragua   | Togo              |
| Central African Republic | India              | Pakistan    | Tunisia           |
| Chile                    | Indonesia          | Panama      | Uganda            |
| China                    | Israel             | Paraguay    | Uruguay           |
| Colombia                 | Ivory Coast        | Peru        | Venezuela         |
| Costa Rica               | Jordan             | Philippines | Zambia            |
| Cyprus                   | Kenya              | Poland      |                   |

Table 3.2: Summary statistics for the main variables

| Variable                | Observations | Mean    | Standard deviation |
|-------------------------|--------------|---------|--------------------|
| $H/L$                   | 1142         | 6.154   | 2.498              |
| $K/L$                   | 1142         | 9323.91 | 11800.39           |
| $Y/L$                   | 1142         | 3697.52 | 4,531.49           |
| <i>Efficiency</i>       | 1142         | 58.92   | 24.46              |
| <i>Aid</i>              | 1142         | 7.68    | 11.45              |
| <i>Bilateral Aid</i>    | 1142         | 4.21    | 5.94               |
| <i>Multilateral Aid</i> | 1142         | 3.32    | 6.82               |
| <i>Finance</i>          | 1142         | 35.29   | 31.01              |
| <i>Inflation</i>        | 1142         | 0.13    | 0.34               |
| <i>Democracy</i>        | 1142         | 7.69    | 3.31               |

Table 3.3: Mean of efficiency scores

| Country            | Efficiency Score | Country                  | Efficiency Score |
|--------------------|------------------|--------------------------|------------------|
| Morocco            | 99.52            | Gabon                    | 56.89            |
| Gambia             | 99.51            | Nicaragua                | 56.46            |
| Singapore          | 99.20            | Central African Republic | 54.09            |
| Cyprus             | 99.04            | Peru                     | 53.72            |
| Uruguay            | 98.96            | Paraguay                 | 52.89            |
| Barbados           | 98.67            | Bangladesh               | 51.73            |
| Argentina          | 98.67            | Republic of Congo        | 49.08            |
| Malta              | 97.69            | Hungary                  | 46.85            |
| Costa Rica         | 97.01            | Thailand                 | 46.03            |
| South Korea        | 94.93            | Swaziland                | 45.50            |
| Mexico             | 91.56            | Ivory Coast              | 44.93            |
| Panama             | 91.54            | Algeria                  | 44.78            |
| El Salvador        | 89.30            | Philippines              | 44.57            |
| Israel             | 86.63            | Benin                    | 44.57            |
| Guatemala          | 84.83            | Kenya                    | 41.83            |
| Bahrain            | 83.07            | Pakistan                 | 41.39            |
| Dominican Republic | 82.15            | Poland                   | 40.91            |
| Egypt              | 80.73            | Colombia                 | 39.99            |
| Brazil             | 78.86            | Sudan                    | 39.22            |
| Togo               | 76.92            | Bolivia                  | 38.95            |
| Malaysia           | 74.83            | Burundi                  | 38.14            |
| Chile              | 73.03            | Indonesia                | 36.47            |
| Venezuela          | 71.60            | Sri Lanka                | 34.77            |
| Madagascar         | 71.26            | China                    | 34.04            |
| South Africa       | 68.55            | Mauritania               | 32.97            |
| Botswana           | 68.35            | India                    | 32.64            |
| Mauritius          | 67.29            | Ecuador                  | 32.11            |
| Namibia            | 61.09            | Zambia                   | 30.37            |
| Tunisia            | 60.91            | Nepal                    | 26.56            |
| Honduras           | 60.52            | Ghana                    | 20.59            |
| Jordan             | 59.72            | Bulgaria                 | 18.77            |
| Rwanda             | 58.91            | Guyana                   | 17.87            |
| Uganda             | 57.57            | Malawi                   | 7.85             |
| Senegal            | 57.26            |                          |                  |

*Notes:* These efficiency scores (in percentage) are averages over the whole period 1985-2010.

Table 3.4: Data sources and definitions of variables

| Variable                               | Definition                                                                                                                   | Source                                                                                                         |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Variables for efficiency scores</b> |                                                                                                                              |                                                                                                                |
| $\frac{H}{L}$                          | Years of schooling per capita divided by the working age population.                                                         | WDI, Easterly and Levine (2001)                                                                                |
| $\frac{k}{L}$                          | Capital stock per capita in constant 2000 US dollars divided by the working age population.                                  | Easterly and Levine (2001), calculations, WDI                                                                  |
| $\frac{y}{L}$                          | GDP per capita in constant 2000 US dollars divided by the working age population.                                            | WDI                                                                                                            |
| <b>Main explaining variables</b>       |                                                                                                                              |                                                                                                                |
| <i>Africa</i>                          | Dummy variable, which equals to one if the recipient country is in Africa, zero otherwise.                                   | CEPII                                                                                                          |
| <i>Aid</i>                             | Gross ODA as a share of GDP.                                                                                                 | OECD-DAC, WDI                                                                                                  |
| <i>Bilateral aid</i>                   | Gross ODA transactions undertaken by a Donor Assistance Committee donor directly with a recipient divided by GDP.            | OECD-DAC, WDI                                                                                                  |
| <i>ELF</i>                             | Ethno-linguistic fractionalization is the probability that two individuals from a population belong to two different groups. | Alesina et al. (2003)                                                                                          |
| <i>Finance</i>                         | Domestic credit to private sector divided by GDP.                                                                            | WDI                                                                                                            |
| <i>GDPPC</i>                           | GDP per capita based on purchasing power parity (PPP).                                                                       | WDI                                                                                                            |
| <i>Inflation</i>                       | Log of one plus the GDP inflation growth rate.                                                                               | WDI                                                                                                            |
| <i>Democracy</i>                       | Sum of “civil liberties” and “political rights”. Lower numbers stand for greater democracy.                                  | Freedom House                                                                                                  |
| <i>Latin America</i>                   | ( <i>LA</i> ) Dummy variable, which equals to one if the recipient country is in Latin America, zero otherwise.              | CEPII                                                                                                          |
| <i>Military</i>                        | Log of military expenditures divided by GDP.                                                                                 | Stockholm International Peace Research Institute, Yearbook: Armaments, Disarmaments and International Security |
| <i>Multilateral aid</i>                | Gross ODA from international agencies divided by GDP.                                                                        | OECD-DAC.                                                                                                      |

*Continued on next page*

Table 3.4 – Continued from previous page

| Variable                    | Definition                                                                                                                                                          | Source                                               |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| <i>Openness</i>             | Exports plus imports at constant 2005 prices divided by GDP.                                                                                                        | UNSD (2012)                                          |
| <b>Additional variables</b> |                                                                                                                                                                     |                                                      |
| <i>Latitude</i>             | Latitude in absolute value divided by 90.                                                                                                                           | <a href="#">La Porta et al. (1999)</a>               |
| <i>Pop</i>                  | Size of the population, in thousands.                                                                                                                               | WDI                                                  |
| <i>Share of Catholics</i>   | Percentage of Catholics in the population in 1996.                                                                                                                  | CIA-Factbook, <a href="#">La Porta et al. (1999)</a> |
| <i>Share of Muslims</i>     | Percentage of Muslims in the population in 1996.                                                                                                                    | CIA-Factbook, <a href="#">La Porta et al. (1999)</a> |
| <i>South Asia</i>           | Dummy variable, which equals to one if the recipient country is in South Asia, zero otherwise.                                                                      | CEPII                                                |
| <i>UNGA</i>                 | Percent of times a country votes in line with the average of the G7 countries in the UN General Assembly. All votes are included (definition according to Thacker). | <a href="#">Dreher and Sturm (2012)</a>              |
| <i>UNSC</i>                 | Dummy equals to one if the recipient country belongs to the UNSC.                                                                                                   | <a href="#">Dreher and Sturm (2012)</a>              |

Table 3.5: The direct effects of foreign aid on efficiency

|                                        | (1)                  | (2)                  | (3)                  | (4)                  |
|----------------------------------------|----------------------|----------------------|----------------------|----------------------|
|                                        | One step GMM         |                      | Two step GMM         |                      |
| Efficiency <sub>t-1</sub>              | 0.979***<br>(333.90) | 0.978***<br>(329.50) | 0.979***<br>(336.10) | 0.978***<br>(326.02) |
| Aid                                    | 0.011***<br>(2.64)   |                      | 0.010**<br>(2.35)    |                      |
| Bilateral aid                          |                      | 0.015*<br>(1.89)     |                      | 0.015*<br>(1.83)     |
| Multilateral aid                       |                      | 0.005**<br>(1.97)    |                      | 0.004**<br>(1.97)    |
| Openness                               | 0.644***<br>(8.40)   | 0.633***<br>(8.19)   | 0.581***<br>(8.16)   | 0.618***<br>(8.18)   |
| ELF                                    | -0.794*<br>(-1.79)   | -0.697<br>(-1.58)    | -0.309<br>(-0.60)    | -0.570<br>(-1.23)    |
| Democracy                              | 0.023***<br>(2.64)   | 0.023**<br>(2.13)    | 0.020**<br>(2.44)    | 0.022**<br>(2.08)    |
| Inflation                              | -0.030<br>(-0.59)    | -0.045<br>(-0.67)    | -0.021<br>(-0.51)    | -0.046<br>(-0.67)    |
| Finance                                | 0.001<br>(1.40)      | 0.002<br>(1.58)      | 0.001<br>(0.89)      | 0.002<br>(1.62)      |
| Military                               | -0.072*<br>(-1.71)   | -0.068*<br>(-1.68)   | -0.056<br>(-1.15)    | -0.062<br>(-1.50)    |
| Observations                           | 1142                 | 1142                 | 1142                 | 1142                 |
| Test of equality <sup>a</sup>          |                      | 0.328                |                      | 0.201                |
| Hansen J test <sup>b</sup>             | 0.129                | 0.265                | 0.129                | 0.265                |
| AR(1) test <sup>c</sup>                | 0.319                | 0.590                | 0.304                | 0.706                |
| AR(2) test <sup>c</sup>                | 0.086                | 0.291                | 0.054                | 0.262                |
| Difference-in-Hansen test <sup>d</sup> | 0.107                | 0.804                | 0.107                | 0.804                |
| Lag restriction?                       | No                   | Yes                  | No                   | Yes                  |
| Instruments/Countries                  | 54/67                | 66/67                | 54/67                | 66/67                |

*Notes:* Table 3.5 reports estimates of the direct effect of aid on our measure of efficiency. Columns (1) and (2) report the one step system GMM estimates of equation (3.2). Columns (3) and (4) report the two step system GMM estimates of equation (3.2). <sup>a</sup> The null hypothesis is that both *Bilateral aid* and *Multilateral aid* coefficients are equal (p-value reported). <sup>b</sup> The null hypothesis is that the instruments are not correlated with the residuals (p-value reported). <sup>c</sup> The null is that the errors in the first difference regression exhibit no first (AR(1)) or second (AR(2)) order serial correlation (p-value reported). <sup>d</sup> The null hypothesis of the Difference-in-Hansen test of exogeneity of instrument is that instruments for endogenous variables are exogenous to *Efficiency* (p-value reported). Robust standard errors in parentheses. Efficiency scores are estimated in a first stage with stochastic frontier approach. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.6: The interactive effects of aid on efficiency

|                                        | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  |
|----------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                        | One step GMM         |                      |                      | Two step GMM         |                      |                      |
| Efficiency <sub>t-1</sub>              | 0.982***<br>(404.89) | 0.978***<br>(343.31) | 0.983***<br>(407.60) | 0.982***<br>(392.62) | 0.987***<br>(350.98) | 0.983***<br>(395.84) |
| Aid                                    | 0.008<br>(1.47)      | 0.029***<br>(3.92)   | 0.012**<br>(2.55)    | 0.008<br>(1.45)      | 0.029***<br>(3.92)   | 0.011**<br>(2.57)    |
| Aid×Finance                            | -0.000<br>(-0.16)    |                      |                      | -0.000<br>(-0.14)    |                      |                      |
| Aid×Democracy                          |                      | -0.003***<br>(-3.73) |                      |                      | -0.003***<br>(-4.06) |                      |
| Aid×Inflation                          |                      |                      | -0.004*<br>(-1.88)   |                      |                      | -0.004*<br>(-1.91)   |
| Openness                               | 0.579***<br>(8.59)   | 0.421***<br>(6.30)   | 0.575***<br>(8.70)   | 0.565***<br>(7.73)   | 0.460***<br>(6.82)   | 0.571***<br>(8.63)   |
| ELF                                    | -0.788*<br>(-1.88)   | -0.262<br>(-1.01)    | -0.897**<br>(-2.05)  | -0.658<br>(-1.52)    | -0.838*<br>(-1.75)   | -0.849*<br>(-1.85)   |
| Military                               | 0.148***<br>(3.41)   | 0.174***<br>(2.89)   | 0.169***<br>(4.25)   | 0.147***<br>(3.46)   | 0.147***<br>(2.96)   | 0.166***<br>(4.24)   |
| Democracy                              | 0.020**<br>(2.48)    | 0.084***<br>(5.34)   | 0.021***<br>(2.67)   | 0.018**<br>(2.26)    | 0.063***<br>(4.18)   | 0.020***<br>(2.61)   |
| Inflation                              | 0.008<br>(0.14)      | -0.063<br>(-0.78)    | 0.114<br>(1.50)      | 0.007<br>(0.12)      | -0.020<br>(-0.26)    | 0.114<br>(1.53)      |
| Finance                                | 0.002*<br>(1.66)     | 0.004**<br>(2.06)    | 0.001<br>(1.17)      | 0.002<br>(1.55)      | 0.000<br>(0.49)      | 0.001<br>(1.23)      |
| Observations                           | 1142                 | 1142                 | 1142                 | 1142                 | 1142                 | 1142                 |
| Hansen J test <sup>a</sup>             | 0.262                | 0.435                | 0.253                | 0.262                | 0.310                | 0.253                |
| AR(1) test <sup>a</sup>                | 0.267                | 0.123                | 0.051                | 0.264                | 0.101                | 0.071                |
| AR(2) test <sup>a</sup>                | 0.147                | 0.256                | 0.261                | 0.116                | 0.161                | 0.377                |
| Difference-in-Hansen test <sup>a</sup> | 0.311                | 0.663                | 0.164                | 0.311                | 0.663                | 0.164                |
| Lag restriction?                       | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Instruments/Countries                  | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                |

*Notes:* Table 3.6 reports estimation results of equation (3.3) using the one step GMM estimator (Columns (1) to (3)) and the two step GMM estimator (Columns (4) to (6)) and adding a post-Cold War dummy. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.7: Robustness regressions (1a) – Post-Cold War dummy

|                            | (1)                  | (2)                  | (3)                  | (4)                  |
|----------------------------|----------------------|----------------------|----------------------|----------------------|
|                            | One step GMM         |                      | Two step GMM         |                      |
| Efficiency <sub>t-1</sub>  | 0.976***<br>(311.48) | 0.976***<br>(331.49) | 0.977***<br>(350.31) | 0.976***<br>(323.05) |
| Aid                        | 0.011***<br>(2.69)   |                      | 0.010**<br>(2.43)    |                      |
| Bilateral aid              |                      | 0.015*<br>(1.83)     |                      | 0.014*<br>(1.77)     |
| Multilateral aid           |                      | 0.005**<br>(1.99)    |                      | 0.005**<br>(1.98)    |
| Post-Cold War              | 0.027<br>(0.65)      | 0.029<br>(0.79)      | 0.023<br>(0.67)      | 0.027<br>(0.79)      |
| Openness                   | 0.642***<br>(8.91)   | 0.637***<br>(8.34)   | 0.597***<br>(9.08)   | 0.624***<br>(8.64)   |
| ELF                        | -0.584<br>(-1.61)    | -0.557<br>(-1.57)    | -0.265<br>(-0.67)    | -0.462<br>(-1.24)    |
| Democracy                  | 0.023**<br>(2.48)    | 0.022*<br>(1.76)     | 0.020**<br>(2.22)    | 0.020*<br>(1.75)     |
| Inflation                  | -0.032<br>(-0.67)    | -0.040<br>(-0.66)    | -0.025<br>(-0.57)    | -0.041<br>(-0.64)    |
| Finance                    | 0.002<br>(1.36)      | 0.002<br>(1.64)      | 0.001<br>(0.98)      | 0.002<br>(1.59)      |
| Military                   | -0.052<br>(-1.32)    | -0.053<br>(-1.38)    | -0.042<br>(-1.09)    | -0.050<br>(-1.40)    |
| Observations               | 1142                 | 1142                 | 1142                 | 1142                 |
| Hansen J test <sup>a</sup> | 0.037                | 0.302                | 0.037                | 0.302                |
| AR(2) test <sup>a</sup>    | 0.116                | 0.233                | 0.086                | 0.196                |
| Lag restriction?           | No                   | Yes                  | No                   | Yes                  |
| Instruments/Countries      | 54/67                | 66/67                | 54/67                | 66/67                |

*Notes:* Table 3.7 reports estimation results of equation (3.2) using the one step GMM estimator (Columns (1) and (2)) and the two step GMM estimator (Columns (3) and (4)) and adding a post-Cold War dummy. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.8: Robustness regressions (1b) – Post-Cold War dummy

|                                  | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                  | One step GMM         |                      |                      | Two step GMM         |                      |                      |
| Efficiency <sub><i>t</i>-1</sub> | 0.978***<br>(342.98) | 0.981***<br>(335.02) | 0.978***<br>(345.90) | 0.978***<br>(354.80) | 0.981***<br>(356.74) | 0.978***<br>(350.17) |
| Aid                              | 0.007<br>(1.24)      | 0.028***<br>(3.86)   | 0.012***<br>(2.76)   | 0.007<br>(1.26)      | 0.027***<br>(3.70)   | 0.012***<br>(2.83)   |
| Aid×Finance                      | 0.000<br>(0.40)      |                      |                      | 0.000<br>(0.42)      |                      |                      |
| Aid×Democracy                    |                      | -0.002***<br>(-3.67) |                      |                      | -0.002***<br>(-3.57) |                      |
| Aid×Inflation                    |                      |                      | -0.004**<br>(-2.05)  |                      |                      | -0.004**<br>(-2.07)  |
| Openness                         | 0.587***<br>(9.06)   | 0.464***<br>(6.98)   | 0.578***<br>(9.40)   | 0.574***<br>(8.11)   | 0.451***<br>(7.86)   | 0.573***<br>(9.07)   |
| Post-Cold War                    | 0.039<br>(1.16)      | 0.032<br>(1.03)      | 0.055<br>(1.41)      | 0.038<br>(1.20)      | 0.030<br>(1.05)      | 0.055<br>(1.44)      |
| ELF                              | -0.496<br>(-1.56)    | -0.581*<br>(-1.73)   | -0.551*<br>(-1.69)   | -0.394<br>(-1.09)    | -0.394<br>(-1.20)    | -0.522<br>(-1.48)    |
| Military                         | 0.158***<br>(3.64)   | 0.190***<br>(3.42)   | 0.180***<br>(4.57)   | 0.156***<br>(3.66)   | 0.192***<br>(3.73)   | 0.177***<br>(4.47)   |
| Democracy                        | 0.020**<br>(2.40)    | 0.071***<br>(5.00)   | 0.021**<br>(2.50)    | 0.018**<br>(2.26)    | 0.067***<br>(4.29)   | 0.020**<br>(2.53)    |
| Inflation                        | 0.011<br>(0.19)      | -0.016<br>(-0.20)    | 0.106<br>(1.55)      | 0.011<br>(0.20)      | -0.025<br>(-0.32)    | 0.105<br>(1.51)      |
| Finance                          | 0.002<br>(1.58)      | 0.001<br>(1.33)      | 0.002<br>(1.25)      | 0.002<br>(1.44)      | 0.001<br>(1.17)      | 0.002<br>(1.28)      |
| Observations                     | 1142                 | 1142                 | 1142                 | 1142                 | 1142                 | 1142                 |
| Hansen J test <sup>a</sup>       | 0.253                | 0.337                | 0.246                | 0.253                | 0.337                | 0.246                |
| AR(2) test <sup>a</sup>          | 0.101                | 0.213                | 0.284                | 0.087                | 0.135                | 0.392                |
| Lag restriction?                 | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Instruments/Countries            | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                |

*Notes:* Table 3.8 reports estimation results of equation (3.3) using the one step GMM estimator (Columns (1) to (3)) and the two step GMM estimator (Columns (4) to (6)) and adding a post-Cold War dummy. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.9: Robustness regressions (2a) – Excluding potential outliers

|                            | (1)                  | (2)                  | (3)                  | (4)                  |
|----------------------------|----------------------|----------------------|----------------------|----------------------|
|                            | One step GMM         |                      | Two step GMM         |                      |
| Efficiency $_{t-1}$        | 0.980***<br>(312.70) | 0.981***<br>(322.19) | 0.980***<br>(331.23) | 0.981***<br>(353.76) |
| Aid                        | 0.005**<br>(2.03)    |                      | 0.005*<br>(1.94)     |                      |
| Bilateral aid              |                      | 0.018**<br>(2.41)    |                      | 0.017**<br>(2.31)    |
| Multilateral aid           |                      | 0.002<br>(0.44)      |                      | 0.002<br>(0.48)      |
| Openness                   | 0.638***<br>(8.45)   | 0.619***<br>(8.67)   | 0.562***<br>(9.25)   | 0.586***<br>(9.50)   |
| ELF                        | -0.674*<br>(-1.72)   | -0.700*<br>(-1.67)   | -0.106<br>(-0.27)    | -0.475<br>(-1.28)    |
| Democracy                  | 0.016***<br>(3.00)   | 0.017***<br>(3.32)   | 0.014***<br>(2.75)   | 0.014***<br>(3.18)   |
| Inflation                  | 0.051*<br>(1.73)     | 0.032<br>(1.24)      | 0.033<br>(0.94)      | 0.024<br>(0.92)      |
| Finance                    | 0.002<br>(1.57)      | 0.002*<br>(1.91)     | 0.001<br>(1.34)      | 0.003**<br>(2.09)    |
| Military                   | -0.075*<br>(-1.72)   | -0.072*<br>(-1.70)   | -0.054<br>(-1.38)    | -0.064<br>(-1.36)    |
| Observations               | 1078                 | 1078                 | 1078                 | 1078                 |
| Hansen J test <sup>a</sup> | 0.077                | 0.344                | 0.077                | 0.344                |
| AR(2) test <sup>a</sup>    | 0.311                | 0.801                | 0.138                | 0.702                |
| Lag restriction?           | No                   | Yes                  | No                   | Yes                  |
| Instruments/Countries      | 54/67                | 66/67                | 54/67                | 66/67                |

*Notes:* Table 3.9 reports estimation results of equation (3.2) using the one step GMM estimator (Columns (1) and (2)) and the two step GMM estimator (Columns (3) and (4)) when possible problematic outliers are excluded. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.10: Robustness regressions (2b) – Excluding potential outliers

|                                  | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                  | One step GMM         |                      |                      | Two step GMM         |                      |                      |
| Efficiency <sub><i>t</i>-1</sub> | 0.983***<br>(358.32) | 0.985***<br>(383.39) | 0.985***<br>(374.91) | 0.982***<br>(374.72) | 0.984***<br>(385.25) | 0.985***<br>(368.06) |
| Aid                              | 0.002<br>(0.53)      | 0.023***<br>(3.54)   | 0.016***<br>(2.91)   | 0.002<br>(0.49)      | 0.022***<br>(3.06)   | 0.016***<br>(2.90)   |
| Aid×Finance                      | 0.000<br>(0.87)      |                      |                      | 0.000<br>(0.90)      |                      |                      |
| Aid×Democracy                    |                      | -0.002***<br>(-3.81) |                      |                      | -0.002***<br>(-3.36) |                      |
| Aid×Inflation                    |                      |                      | -0.037**<br>(-2.05)  |                      |                      | -0.037**<br>(-2.06)  |
| Openness                         | 0.594***<br>(8.70)   | 0.521***<br>(8.05)   | 0.584***<br>(8.09)   | 0.574***<br>(9.02)   | 0.516***<br>(8.25)   | 0.586***<br>(8.04)   |
| ELF                              | -0.688*<br>(-1.87)   | -0.780*<br>(-1.95)   | -0.893**<br>(-2.09)  | -0.524<br>(-1.47)    | -0.690*<br>(-1.69)   | -0.882**<br>(-2.09)  |
| Military                         | 0.131***<br>(4.12)   | 0.110***<br>(3.35)   | 0.121***<br>(3.23)   | 0.130***<br>(3.70)   | 0.108***<br>(3.43)   | 0.120***<br>(3.17)   |
| Democracy                        | 0.012**<br>(2.36)    | 0.045***<br>(3.74)   | 0.016***<br>(2.94)   | 0.010**<br>(2.18)    | 0.043***<br>(3.17)   | 0.015***<br>(2.78)   |
| Inflation                        | 0.088**<br>(2.42)    | 0.084**<br>(2.22)    | 0.206**<br>(2.16)    | 0.086**<br>(2.40)    | 0.083**<br>(2.21)    | 0.204**<br>(2.27)    |
| Finance                          | 0.002<br>(1.47)      | 0.002<br>(1.30)      | 0.001<br>(0.65)      | 0.002<br>(1.49)      | 0.002<br>(1.39)      | 0.001<br>(0.67)      |
| Observations                     | 1078                 | 1078                 | 1078                 | 1078                 | 1078                 | 1078                 |
| Hansen J test <sup>a</sup>       | 0.362                | 0.283                | 0.220                | 0.362                | 0.283                | 0.220                |
| AR(2) test <sup>a</sup>          | 0.386                | 0.415                | 0.595                | 0.396                | 0.434                | 0.746                |
| Lag restriction?                 | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Instruments/Countries            | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                |

*Notes:* Table 3.10 reports estimation results of equation (3.3) using the one step GMM estimator (Columns (1) to (3)) and the two step GMM estimator (Columns (4) to (6)) when possible problematic outliers are excluded. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.11: Robustness regressions (3a) – Adding control variables

|                            | (1)                  | (2)                  | (3)                  | (4)                  |
|----------------------------|----------------------|----------------------|----------------------|----------------------|
|                            | One step GMM         |                      | Two step GMM         |                      |
| Efficiency <sub>t-1</sub>  | 0.974***<br>(306.73) | 0.974***<br>(328.48) | 0.975***<br>(365.96) | 0.974***<br>(369.65) |
| Aid                        | 0.011***<br>(2.67)   |                      | 0.010**<br>(2.41)    |                      |
| Bilateral aid              |                      | 0.013*<br>(1.67)     |                      | 0.012<br>(1.62)      |
| Multilateral aid           |                      | 0.005**<br>(2.15)    |                      | 0.005**<br>(2.05)    |
| Openness                   | 0.640***<br>(6.69)   | 0.644***<br>(5.80)   | 0.561***<br>(6.11)   | 0.596***<br>(5.69)   |
| ELF                        | -0.477<br>(-1.19)    | -0.454<br>(-1.02)    | -0.049<br>(-0.10)    | -0.189<br>(-0.44)    |
| Democracy                  | 0.021**<br>(2.28)    | 0.017*<br>(1.68)     | 0.018**<br>(2.07)    | 0.015*<br>(1.65)     |
| Inflation                  | -0.066<br>(-1.29)    | -0.071<br>(-1.06)    | -0.048<br>(-1.07)    | -0.065<br>(-1.05)    |
| Finance                    | 0.004**<br>(2.13)    | 0.004**<br>(2.06)    | 0.003*<br>(1.71)     | 0.004*<br>(1.95)     |
| Military                   | -0.035<br>(-0.86)    | -0.035<br>(-0.89)    | -0.032<br>(-0.84)    | -0.033<br>(-0.80)    |
| Latitude                   | -0.458<br>(-0.63)    | -0.496<br>(-0.63)    | -0.321<br>(-0.39)    | -0.404<br>(-0.60)    |
| Share of Muslims           | 0.001<br>(0.49)      | 0.001<br>(0.63)      | 0.001<br>(0.34)      | 0.001<br>(0.56)      |
| Share of Catholics         | 0.002<br>(0.88)      | 0.002<br>(0.86)      | 0.003<br>(1.31)      | 0.002<br>(1.07)      |
| Observations               | 1142                 | 1142                 | 1142                 | 1142                 |
| Hansen J test <sup>a</sup> | 0.067                | 0.397                | 0.067                | 0.397                |
| AR(2) test <sup>a</sup>    | 0.093                | 0.149                | 0.060                | 0.106                |
| Lag restriction?           | No                   | Yes                  | No                   | Yes                  |
| Instruments/Countries      | 54/67                | 66/67                | 54/67                | 66/67                |

*Notes:* Table 3.11 reports estimation results of equation (3.2) using the one step GMM estimator (Columns (1) and (2)) and the two step GMM estimator (Columns (3) and (4)) when other control variables are added. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.12: Robustness regressions (3b) – Adding control variables

|                            | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  |
|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                            | One step GMM         |                      |                      | Two step GMM         |                      |                      |
| Efficiency <sub>t-1</sub>  | 0.976***<br>(316.23) | 0.982***<br>(347.21) | 0.976***<br>(325.89) | 0.976***<br>(321.39) | 0.982***<br>(339.01) | 0.976***<br>(326.76) |
| Aid                        | 0.006<br>(0.97)      | 0.034***<br>(4.09)   | 0.011**<br>(2.49)    | 0.005<br>(0.93)      | 0.031***<br>(3.74)   | 0.011**<br>(2.52)    |
| Aid×Finance                | 0.000<br>(0.69)      |                      |                      | 0.000<br>(0.70)      |                      |                      |
| Aid×Democracy              |                      | -0.003***<br>(-4.31) |                      |                      | -0.003***<br>(-4.04) |                      |
| Aid×Inflation              |                      |                      | -0.003<br>(-1.43)    |                      |                      | -0.003<br>(-1.42)    |
| Openness                   | 0.656***<br>(6.25)   | 0.565***<br>(5.41)   | 0.642***<br>(6.40)   | 0.637***<br>(6.18)   | 0.543***<br>(5.85)   | 0.636***<br>(6.17)   |
| ELF                        | -0.601<br>(-1.45)    | -0.991**<br>(-2.01)  | -0.636<br>(-1.52)    | -0.495<br>(-1.20)    | -0.755*<br>(-1.87)   | -0.590<br>(-1.26)    |
| Military                   | 0.131***<br>(2.88)   | 0.172***<br>(2.89)   | 0.149***<br>(3.32)   | 0.125***<br>(2.78)   | 0.173***<br>(2.81)   | 0.146***<br>(3.23)   |
| Democracy                  | 0.022**<br>(2.33)    | 0.090***<br>(5.01)   | 0.021**<br>(2.45)    | 0.019**<br>(2.07)    | 0.081***<br>(4.74)   | 0.020**<br>(2.49)    |
| Inflation                  | -0.011<br>(-0.19)    | -0.041<br>(-0.47)    | 0.038<br>(0.51)      | -0.012<br>(-0.22)    | -0.050<br>(-0.66)    | 0.039<br>(0.52)      |
| Finance                    | 0.003<br>(1.54)      | 0.003*<br>(1.84)     | 0.004**<br>(1.97)    | 0.003<br>(1.47)      | 0.002<br>(1.63)      | 0.004**<br>(2.01)    |
| Latitude                   | -1.046<br>(-1.33)    | -1.764**<br>(-2.01)  | -1.096<br>(-1.33)    | -1.096<br>(-1.41)    | -1.661**<br>(-1.96)  | -1.025<br>(-1.27)    |
| Share of Muslims           | 0.001<br>(0.26)      | -0.002<br>(-0.74)    | 0.001<br>(0.27)      | 0.001<br>(0.37)      | -0.001<br>(-0.46)    | 0.000<br>(0.03)      |
| Share of Catholics         | 0.001<br>(0.30)      | -0.001<br>(-0.47)    | 0.001<br>(0.31)      | 0.001<br>(0.55)      | -0.001<br>(-0.43)    | 0.000<br>(0.17)      |
| Observations               | 1142                 | 1142                 | 1142                 | 1142                 | 1142                 | 1142                 |
| Hansen J test <sup>a</sup> | 0.382                | 0.411                | 0.283                | 0.382                | 0.411                | 0.283                |
| AR(2) test <sup>a</sup>    | 0.082                | 0.435                | 0.217                | 0.071                | 0.329                | 0.330                |
| Lag restriction?           | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Instruments/Countries      | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                | 66/67                |

*Notes:* Table 3.12 reports estimation results of equation (3.3) using the one step GMM estimator (Columns (1) to (3)) and the two step GMM estimator (Columns (4) to (6)) and adding other explanatory variables. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

## Appendix 3.A

### An insight into the aid-investment nexus

The so called aid-financed investment theoretical model suggests that aid foments economic growth thanks to investment (see [Dollar and Easterly \(1999\)](#)). As summarized in Table 3.A.1, aid has globally been found to promote economic growth through investment, particularly through physical capital investment.

Table 3.A.1: An insight into the aid-investment literature

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| Authors                                         | Dataset                         | Findings                                                                                                                       |
|-------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Levy (1987)</a>                     | 39 countries, 1968-1980         | Most of concessionary aid (instrumented) is transferred to investment.                                                         |
| <a href="#">Boone (1996)</a>                    | 96 countries, 1971-1990         | The effect of aid (instrumented) on investment and growth is not significant, aid goes to consumption.                         |
| <a href="#">Lensink and Morrissey (2000)</a>    | 75 countries, 1970-1995         | Aid increases more investment when aid is not volatile and when aid can be accurately anticipated by the recipient government. |
| <a href="#">Hansen and Tarp (2001)</a>          | 56 countries, 1974-1993         | Aid (instrumented) increases growth via investment (but not via TFP).                                                          |
| <a href="#">Gomance et al. (2005)</a>           | 25 African countries, 1970-1997 | Aid (instrumented) increase growth mainly through investment.                                                                  |
| <a href="#">Payne and Kumazawa (2005)</a>       | 29 African countries, 1980-2001 | Aid (instrumented) increases investment despite a possible share of foreign aid lost in unproductive consumption.              |
| <a href="#">Arndt et al. (2011)</a>             | 78 countries, 1970-2007         | Aid (instrumented) affect growth through investment.                                                                           |
| <a href="#">Chatterjee and Turnovsky (2005)</a> | Theoretical framework           | Aid tied to public investment (in countries with low elasticity of substitution in production) foments capital accumulation.   |

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## Appendix 3.B

### The issue of instrumentation

When we apply system GMM estimators, we use only internal instruments, namely the lagged values of endogenous variables. To check whether our results are dependent on this choice, we should provide instrumental variables estimations using external instruments, namely variables that are highly correlated with aid but not with efficiency. We therefore introduce here the issue of panel instrumental variables fixed-effects methods and discuss the concern of finding good instruments.

#### Finding instruments

The evident issue of an Instrumental Variables (IV) estimation is to identify instruments for the endogenous variable, which is foreign aid. The literature on aid motives and aid allocations is sufficient enough to find covariates that are supposed to be highly correlated with foreign aid (see Appendices B and C for an insight into this literature). Yet, these instruments need also to be uncorrelated with macroeconomic efficiency in order to only measure the exogenous effect of aid on macroeconomic efficiency. Instruments are required to be orthogonal to the underlying factors affecting macroeconomic efficiency in aid-recipient countries. In other words, a regressor can be used as an instrument for aid (i) if the instrument is uncorrelated with the residuals of the efficiency equation and, by extension, with the dependent variable (macroeconomic efficiency); and (ii) if the correlation between aid and this instrument is different from zero (and preferably sufficiently high).

For instance, [Alvi and Senbeta \(2012a\)](#) used as external instruments for aid the size of the population, regional dummies and income per capita, which are indeed good predictors of aid allocations ([Djankov et al., 2008](#); [Rajan and Subramanian, 2008](#)) but, also, which may have an effect on the macroeconomic efficiency of the recipient country. This is clearly the case of GDP per capita. The crucial point for an IV estimation is therefore to find valid instruments. The validity of instruments relies in particular on persuasive arguments and on what was established in prior related empirical studies. In this vein, economic and political interests of donors have been shown to explain a significant part of aid donors' allocations ([Alesina and Dollar, 2000](#); [Berthélemy and Tichit, 2004](#)). As a result, they may provide interesting instruments for foreign aid (see, in particular, [Fleck and Kilby \(2006b\)](#) and [Dreher and Sturm \(2012\)](#)). Accordingly, United Nations voting allegiance can play an important role in determining aid allocations and amounts. Countries voting in the same

way as the G7 indeed tend to receive higher aid amounts. In the same way, temporary members (two-year terms for the ten rotating seats) of the United Nations Security Council (UNSC) receive significantly higher inflows of aid, specifically when diplomatic events are observed (Kuziemko and Werker, 2006; Dreher et al., 2009).

We have followed two instrumentation strategies to run our IV regressions. First, following Alvi and Senbeta (2012a), we instrument aid with regional dummies (for Africa, South Asia and Latin America), the size of the population ( $Pop$ ) and the level of income per capita ( $GDP$ ) in order to have a comparison with their study. Second, in the vein of Dreher and Sturm (2012) in particular, we instrument aid allocations with the same regional dummies,  $Pop$ , the recipient country percentage of votes within a year that are in line with the G7 countries at the UN General Assembly ( $UNGA$ ), and a non-permanent member of the UN Security Council dummy variable ( $UNSC$ ). All variables are described in Table 3.4. Each of these instruments is supposed to give, separately, an unbiased estimate of the true value of aid. But each estimate of aid may also be quite different (because no one is able, alone, to cover all motives for aid allocations). Using all available instruments simultaneously should, theoretically, lead to the most efficient estimator in large sample (Hahn and Hausman, 2002). We therefore run the following reduced form regression, named equation (3.B.1):

$$Aid = \alpha_0 + \phi W_{it} + \omega Z_{it} + \epsilon_{0it} \quad (3.B.1)$$

where  $Aid$  is the dependent variable and all exogenous variables including the instruments for aid and the explanatory variables of equation (3.2) are the regressors;  $Z_{it}$  is the set of instruments,  $W_{it}$  is the set of regressors used in equation (3.2) and  $\epsilon_{0it}$  is the error term. Correlation between  $Aid$  and  $Z$  needs to be strong or else IV estimates are worse than OLS estimates. Results are reported in Table 3.B.2. The predicted value of aid, which will be used as an instrument for aid in equation (3.2), needs to be clearly correlated with aid and needs to be an average of exogenous variables with respect to macroeconomic efficiency. This makes the predicted value of aid presumably uncorrelated with the residual of the macroeconomic efficiency equation.

### Is aid really endogenous to efficiency?

The next step before using the instrumented value of aid is to verify whether aid is really endogenous to macroeconomic efficiency. We take the residuals of the reduced form equation and we include them back into the structural equation, which is the original

macroeconomic efficiency equation, namely equation (3.2):

$$\begin{aligned} Efficiency_{it} &= \alpha_i + \rho Efficiency_{it-1} \\ &+ \gamma Aid_{it} + \gamma' ResidAid_{it} + \phi' X_{it} + \lambda_t + \varepsilon_{it} \end{aligned} \quad (3.B.2)$$

where  $Efficiency_{it}$  indicates our macroeconomic efficiency score for the country  $i$  at time  $t$ ,  $\alpha_i$  indicates the fixed individual effects on each country,  $Efficiency_{it-1}$  is the lagged value of the dependent variable,  $Aid_{it}$  is foreign aid divided by GDP,  $X_{it}$  is a vector of control variables,  $\lambda_t$  indicates temporal dummies,  $\varepsilon_{it}$  is the error term, and  $\gamma'$  is the coefficient of aid residuals ( $ResidAid$ ). We then test for the statistical significance of the coefficient on the residuals ( $\gamma'$ ) in the augmented structural equation (3.B.2) using an Hausman Test, where the null hypothesis is that aid is exogenous and does not need to be instrumented. This hypothesis can be rejected at the one per cent level. There is evidence that aid is endogenous to macroeconomic efficiency, no matter the instrumentation strategy (see Table 3.B.3).

### How good are instruments?

Once instruments are found for the endogenous variable, another point is whether instruments are *good* instruments. If an instrument is weak, one of the first consequence is that standard errors become very large making estimations much less precise. To be valid, an instrument for aid has to be not statistically significant in the macroeconomic efficiency equation but highly correlated with aid. While the correlation with aid is only low with *UNGA* and *UNSC* (see Table 3.B.1, which reports the correlation coefficients between aid and its instruments), we cast doubt on the validity of all the instruments. The Sargan statistics only confirm that the instruments are valid instruments (uncorrelated with the error term) in half of our empirical regressions. Results are reported in Table 3.B.4. Indeed, we test the assumption that our instruments are excluded instruments looking at the Sargan-Hansen test obtained when running a 2SLS regression. This test tests for overidentifying restrictions. The joint null hypothesis is that the instruments are valid instruments (uncorrelated with the error term) and that the excluded instruments are correctly excluded from the estimated equation. The p-value of this test is equal to zero for both IV strategies in one of the two regressions, which leads to a rejection of the null, casting doubts on the validity of our instrumentation.

To conclude, even if our IV estimates tend to confirm our GMM results (aid increases efficiency in aid recipient countries), we assume that internal instruments are much more

valid in our study than the external instruments used in [Alvi and Senbeta \(2012a\)](#) in particular. We therefore keep the discussion focused on the GMM estimates in Chapter 3 because, based on tests over the alternative instrumentation strategies, GMM estimates seemingly offer greater reliability.

Table 3.B.1: Correlation matrix of aid and instruments for aid

|                  | Aid     | Multilateral aid | Bilateral aid | South Asia | Africa  | Latin America | UNSC   | Pop     | GDPPC  | UNGA   |
|------------------|---------|------------------|---------------|------------|---------|---------------|--------|---------|--------|--------|
| Aid              | 1.0000  |                  |               |            |         |               |        |         |        |        |
| Multilateral aid | 0.9015  | 1.0000           |               |            |         |               |        |         |        |        |
| Bilateral aid    | 0.8938  | 0.6307           | 1.0000        |            |         |               |        |         |        |        |
| South Asia       | -0.1026 | -0.0771          | -0.1036       | 1.0000     |         |               |        |         |        |        |
| Africa           | 0.5044  | 0.4537           | 0.4655        | -0.2384    | 1.0000  |               |        |         |        |        |
| Latin America    | -0.3056 | -0.2567          | -0.2777       | -0.1585    | -0.5761 | 1.0000        |        |         |        |        |
| UNSC             | -0.0706 | -0.0588          | -0.0724       | 0.0329     | -0.0684 | 0.0512        | 1.0000 |         |        |        |
| Pop              | -0.1535 | -0.1161          | -0.1562       | 0.5651     | -0.2204 | -0.0664       | 0.0655 | 1.0000  |        |        |
| GDPPC            | -0.4307 | -0.3526          | -0.4208       | -0.1449    | -0.4373 | 0.3239        | 0.0437 | -0.0634 | 1.0000 |        |
| UNGA             | -0.0172 | 0.0661           | -0.0593       | -0.0584    | -0.0613 | 0.1830        | 0.0232 | -0.0182 | 0.1233 | 1.0000 |

Table 3.B.2: Estimates of the reduced form

|                | (1)                  | (2)                 |
|----------------|----------------------|---------------------|
| Africa         | 10.345***<br>(5.04)  | 12.605***<br>(5.95) |
| South Asia     | 0.140<br>(0.10)      | 3.290**<br>(2.47)   |
| Latin America  | -0.665<br>(-0.51)    | -0.495<br>(-0.33)   |
| GDPPC          | -0.000***<br>(-3.84) |                     |
| Pop            | -0.004***<br>(-3.55) | -0.008**<br>(-2.23) |
| UNSC           |                      | -0.035<br>(-0.04)   |
| UNGA           |                      | 5.758<br>(1.30)     |
| Constant       | 6.509***<br>(5.58)   | 0.779<br>(0.35)     |
| Observations   | 2020                 | 1830                |
| R <sup>2</sup> | 0.3087               | 0.2595              |

*Notes:* Column (1) reports the results of estimating the reduced form equation (3.B.1) using the [Alvi and Senbeta \(2012a\)](#) instrumentation strategy. Column (2) reports the estimates of the reduced form equation using the alternative instrumentation strategy. *Aid* is the dependent variable. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.B.3: Test for aid endogeneity

|                 | (1)                  | (2)                   |
|-----------------|----------------------|-----------------------|
| Openness        | 9.642***<br>(2.84)   | 8.227**<br>(2.24)     |
| Aid             | 0.058<br>(1.32)      | 0.056*<br>(1.78)      |
| <i>ResidAid</i> | -7.501***<br>(-4.05) | 9.237***<br>(6.15)    |
| Military        | -1.440<br>(-0.70)    | -0.551<br>(-0.33)     |
| Inflation       | -2.473<br>(-1.59)    | 0.125<br>(0.08)       |
| Finance         | 0.079<br>(1.30)      | 0.052<br>(1.17)       |
| Democracy       | -0.624*<br>(-1.81)   | -0.604**<br>(-2.19)   |
| Constant        | 82.480***<br>(3.51)  | -51.137***<br>(-3.69) |
| Observations    | 1037                 | 975                   |
| R <sup>2</sup>  | 0.364                | 0.461                 |

*Notes:* *ResidAid* stands for the linear prediction of aid. The macroeconomic efficiency score is the dependent variable. Column (1) reports the results of estimating equation (3.2) using the [Alvi and Senbeta \(2012a\)](#) instrumentation strategy and adding the linear prediction of aid. Column (2) reports the estimates of the structural form equation using the alternative instrumentation strategy and adding the linear prediction of aid. Robust standard errors in parentheses. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 3.B.4: Preliminary IV estimates

|                                   | (1)       | (2)      | (3)               | (4)      |
|-----------------------------------|-----------|----------|-------------------|----------|
|                                   | Total aid |          | Disaggregated aid |          |
| Aid                               | 0.018*    | 0.106**  |                   |          |
|                                   | (1.73)    | (2.09)   |                   |          |
| Bilateral aid                     |           |          | 0.032*            | 0.119*   |
|                                   |           |          | (1.65)            | (1.87)   |
| Multilateral aid                  |           |          | -0.049**          | 0.121    |
|                                   |           |          | (-2.00)           | (1.53)   |
| Efficiency <sub>t-1</sub>         | 0.990***  | 0.987*** | 0.997***          | 0.985*** |
|                                   | (967.87)  | (240.74) | (424.05)          | (147.98) |
| Openness                          | -0.012    | -0.265   | 0.067             | -0.258   |
|                                   | (-0.27)   | (-1.35)  | (0.92)            | (-1.16)  |
| Military                          | 0.023     | -0.339   | -0.019            | -0.380   |
|                                   | (0.44)    | (-1.46)  | (-0.21)           | (-1.35)  |
| Inflation                         | -0.029    | -0.470*  | -0.005            | -0.530   |
|                                   | (-0.51)   | (-1.74)  | (-0.05)           | (-1.60)  |
| Finance                           | 0.002**   | 0.011**  | 0.001             | 0.012*   |
|                                   | (1.96)    | (2.06)   | (0.54)            | (1.83)   |
| Democracy                         | -0.001    | 0.064    | -0.021            | 0.074    |
|                                   | (-0.16)   | (1.63)   | (-1.35)           | (1.45)   |
| Observations                      | 975       | 1037     | 975               | 1037     |
| Sargan (p-value) <sup>a</sup>     | 0.000     | 0.698    | 0.922             | 0.003    |
| AR(2) test (p-value) <sup>a</sup> | 0.999     | 0.992    | 0.999             | 0.990    |

*Notes:* Columns (1) and (3) report 2SLS estimates of equation (3.2) when instruments for aid are regional dummies, *Pop*, and *GDPPC*. Columns (2) and (4) report 2SLS estimates of equation (3.2) when instruments are regional dummies, *Pop*, *UNGA*, and *UNSC*. <sup>a</sup> See footnotes in Table 3.5 for description. Robust standard errors in parentheses. Efficiency scores are estimated with stochastic frontier approach in a first stage.

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*“Migration presents policy challenges - but also represents an opportunity to enhance human development, promote decent work, and strengthen collaboration.”*

Ban Ki-moon, UN Secretary-General

**Chapter 4 | The Aid – Migration  
Link: How does  
Unemployment Affect  
Donors' Policies?**

*Joint work with Aurore Gary*

## Chapter Abstract

The final Chapter of this dissertation aims at explaining how aid, migration and unemployment in developed nations are connected. It relates to a new strand of the aid allocation literature, which aims at determining how donors' domestic policies and political environment can delineate bilateral aid allocations (Lundsgaarde et al., 2007; Berthélemy et al., 2009; Azam and Berlinschi, 2009). We use a gravity model framework to jointly determine bilateral aid and migration between pairs of countries and their relation to unemployment in OECD nations. Namely, we focus on the core determinants (domestic or not) of aid and migration with the particular aim of determining whether aid, migration and unemployment policies are interdependent or not. We apply a three-stage least squares method on a data set covering 22 Development Assistance Committee (DAC) countries and 153 recipient countries from 2000 and 2010.

First, we find that migrants pressure for higher aid allocations while bilateral aid relationships strengthen incentives for migration. This positive correlation makes migration policies tightly connected to aid policies: generous aid policies may bring restrictive migration policies in order to keep constant the migration inflow. Second our gravity-based predictors are highly relevant to explain how the unemployment burden also leads to adjustments in aid and migration policies. In times of economic crisis, the unemployment burden in OECD countries raises the demand for more protection and encourages policy makers to harden their migration policies. Donors may also want to increase aid allocations to give less incentives to potential migrants to migrate and to reduce pressure on the labor market. However, this policy also requires that migration policies become more restrictive because additional assistance attracts more migrants. Finally, our estimates confirm other domestic supports for aid allocations, which already have been raised in the existing literature. In particular, donors' trade with developing countries decreases aid allocations when donors have trade deficits with these partner countries.

## 4.1 Introduction

Foreign aid is one donors' policy among many others, including migration and employment policies.<sup>1</sup> Aid allocations towards developing countries may therefore be dependent on other public restrictions. [Berthélemy et al. \(2009\)](#) documented that aid flows increase migration pressures in countries below a critical income threshold, making migration policy more restrictive. We extend their study by including unemployment as a measure of economic health of donors. We argue that the tightness of the labor market (namely an increase in unemployment rates) may not only exert downward pressures on both migration flows (directly) and aid flows (indirectly) as suggested by [Azam and Berlinschi \(2009\)](#) but also may directly increase aid allocations. First, governments of industrialized nations are more likely to tighten their migration policies when unemployment rates are high. In turn, due to lower pressure from the migrant population, aid flows may decrease. Second, donors may want to expand their assistance in order to slow down incentives for migrating from aid recipient countries. Our main contribution includes a greater understanding of a donor's decisions, especially at a time of economic crisis. The literature on aid effectiveness would benefit from a thorough knowledge of OECD policies by considering a set of several policies.

Few studies have examined how donors' domestic policies, which affect developing countries, are jointly determined or at least interdependent. Firstly, [Lundsgaarde et al. \(2007\)](#) showed that trade and aid policies are substitutes, suggesting that imports from developing countries are likely to reduce aid flows. Other studies have addressed how donors use tied aid with the aim of supporting their own trade exports. [Osei et al. \(2004\)](#) found that donors allocating important aid flows tend to trade more with their aid recipient partners. [Wagner \(2003\)](#) indicated that aid induces exports of goods while New Zealand, Australia, the United States and France face the highest export returns to aid. Secondly, donors may use foreign assistance as a policy instrument for limiting inflows of migrants ([Azam and Berlinschi, 2009](#)), provided that aid reduces income differentials between origin and destination countries ([Angelucci, 2004](#)). [Berthélemy et al. \(2009\)](#) found that this effect hold in countries above a critical income threshold equal to USD 7,300 per capita in PPP 2000 prices. Otherwise, aid flows increase migration pressures in OECD countries, encouraging thereafter restrictive migration policies. Based on data from Greece, Spain, Portugal and Greece, [Faini and Venturini \(1993\)](#) confirmed that aid, which increases revenues and lowers financial constraints to leave, encourages migration

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<sup>1</sup>Unemployment policy has mainly the goal of reducing unemployment but may also aim at reducing budget deficits. Investing aid, migration and unemployment policies is of particular interest all the more during election periods. Migration and aid policies may therefore be instruments to control unemployment.

from relatively poor countries. Bilateral aid may also strengthen contacts between the two countries and may diffuse information on donor countries, easing in turn potential migration. Thirdly, [Fleck and Kilby \(2006a\)](#) and [Milner and Tingley \(2010\)](#) argued that aid efforts and commitments are influenced by politics in donor countries (such as government priorities or ideological positions of political parties), in particular in times of economic crisis. As the economic health in donor nations degrades (whether related to the trade position or to the economic growth), aid flows tend to decline, mainly towards low income countries ([Tingley, 2010](#)).

We precisely focus our attention on the domestic determinants of aid allocations and subsequently on how donors' aid policies are connected with other donors' policies. We investigate what are the linkages between OECD countries' aid, migration and unemployment in order to understand how the related policies are jointly determined and decided and how they may affect each other. Our gravity-based predictors appear to be highly relevant to explain (i) how migration and aid policies in destination countries are interrelated, (ii) how the unemployment burden encourages donors to adjust aid and migration policies, and (iii) how donors' trade decisions also influence aid and migration policies. Our results endorse previous findings as well as contribute to the literature in the following ways.

First, we observe that higher unemployment is associated with greater aid allocations. This result makes sense if donors tend to use foreign aid allocation as an instrument designed to serve their unemployment policy interests. Donors, facing increasing rates in unemployment, may want to allocate additional aid towards developing countries in order to lower incentives to migrate and protect their labor market from potential incomers. Second, accounting for the simultaneous determination of aid and migration policies, we observe that aid and migration are positively correlated in OECD countries. Our results are indeed consistent with the "lobbying activities" (immigrants pressure donor countries in favor of their country of origin) highlighted by [Lahiri and Raimondos-Møller \(2000\)](#) and [Berthélemy et al. \(2009\)](#), and with the "attraction effect" (bilateral aid intensifies bilateral relationships) underlined by [Berthélemy et al. \(2009\)](#). This correlation makes aid and migration policies tightly connected. For that reason, generous aid policies should be at odd with restrictive migration policies to keep constant migrants inflows.

Third, turning to aid and trade policies, we find that donors' commercial interests play a major role in determining the amount of aid allocations. Aid flows are partly designed to promote trade and market opportunities, and trade deficits in OECD countries make aid policies more restrictive (which is what [Lundsgaarde et al. \(2007\)](#) referred to a displacement effect). Specifically, trading partners with whom rich nations have positive trade balances are rewarded with higher aid flows at the expense of relatively closed economies with whom

donors have trade deficits. Aid and trade can therefore be either complement or substitute, depending on the donors' trade position. Fourth, concerning the trade-off between trade and migration policies, we find that two opposite effects are at stake. To explain this puzzle, we rely on the Markusen's model and [Berthélemy et al. \(2009\)](#). Accordingly, migration and trade policies are complement only when skilled migrants meet labor needs and fill employment gaps in technological sectors. Trade and migration policies become substitute in more open economies (in both donors and recipient countries), implying that complementarities between trade and migration policies only hold for skilled migrants and seem to be at the expense of unskilled migrants. Finally, we find that unemployment reduces migration. OECD countries with high unemployment rates are less attractive for potential migrants. Besides, owing to deteriorating job market conditions, policy makers would be more likely to tighten their migration policies. Unemployment policies, designed to absorb the rise of unemployment, and migration policies, often designed to control migrants inflows, seem to be linked together.

The remainder of Chapter 4 is organized as follows. Section 4.2 outlines the econometric methodology and the issue of simultaneity. Section 4.3 displays our empirical results and presents policy implications. Section 4.4 discusses the robustness of the main results and Section 4.5 concludes.

## **4.2 Empirical strategy**

We base our analysis of the determinants of aid and migration on [Berthélemy et al. \(2009\)](#), by applying a gravity model of migration in which we include the labor market. We employ a simultaneous equations model, whose parameters are estimated using the three-stage least squares method to address the issue of endogeneity.

### **4.2.1 The panel gravity model**

In order to estimate the connections between aid, unemployment and migration, we make use of a panel gravity model, common in the study of migration. Our gravity model presents a geographic view of aid and migration, which enables us to investigate the potential of interactions between pairs of countries. Using panel data gives also various advantages: (i) using both time and cross-sectional dimensions allows to account for all the information and increases the precision of empirical estimates; (ii) it is possible to consider countries' heterogeneity and (iii) we can control for omitted biases, in particular country specific effects. This can be interesting because there will be probably a number of country-specific factors that cannot be directly included into the model. The data contains

22 DAC countries and 153 recipient countries and cover 11 years, from 2000 to 2010.<sup>2</sup>

We estimate the following system of equations:

$$\begin{cases} Aid_{ijt} = \beta_0 + \beta_1 X_{ijt} + \beta_2 Migration_{ijt} + \beta_3 Unemployment_{jt} + \epsilon_{ijt} \\ Migration_{ijt} = \theta_0 + \theta_1 X'_{ijt} + \theta_2 Aid_{it} + \theta_3 Unemployment_{jt} + \epsilon'_{ijt} \end{cases} \quad (4.1)$$

where  $i$  stands for the recipient country,  $j$  the donor,  $t$  for the year,  $X_{ijt}$  and  $X'_{ijt}$  for the control variables, and  $\epsilon_{it}$  and  $\epsilon'_{ijt}$  for error terms.  $Aid_{ijt}$  refers to the log of bilateral Official Development Assistance (ODA) allocated to recipient  $i$  by donor  $j$  at time  $t$ ,  $Migration_{ijt}$  to the log of bilateral migration inflows from the origin country  $i$  to the destination country  $j$  at time  $t$ , and  $Unemployment_{jt}$  to the unemployment rate in the developed country  $j$  at time  $t$ .<sup>3,4</sup> Descriptive statistics of variables are reported in Table 4.5 for information. Appendix 4.A provides some key elements on migration, aid and unemployment in OECD countries. Table 4.6 provides a detailed description of the variables and their sources. The lists of countries (both donors and recipients) in our sample are presented in Tables 4.7, 4.8 and 4.9.

$X'_{ijt}$  in model (4.1) are variables that control for the potential for migration (in line with [Hatton and Williamson \(2003\)](#) and [Berthélemy et al. \(2009\)](#)). Income per capita (*GDP South*) measures the fact that higher income in origin countries gives greater possibilities to migrate. The population from both the origin (*Population South*) and the destination countries (*Population North*) is expected to increase bilateral migration due to higher opportunities. We introduce trade (measured by *Recipient Trade Openness*, *Donor Trade Openness* and *Imports*, the log of bilateral imports from a donor to a recipient country) to test whether trade and migration are complement (positive sign) or substitutes (negative sign). Geographical variables (*Distance*, *Japan*, *Western Offshoots*, and *USA-Latin America*) and historical variables (colonial dummies and *Common Language*) control for bilateral relationships that may strengthen bilateral migration owing to greater spatial or cultural proximity. Finally, this gravity equation is augmented by *Aid* as in [Berthélemy et al. \(2009\)](#), *Unemployment* (as in [Azam and Berlinschi \(2009\)](#)) and the unemployment rates of young people in the origin country (*Youth Unemployment*

<sup>2</sup>We deal with a three-dimensional panel data set of potentially 30,726 observations. The data availability taken into account, we have almost 12,000 observations.

<sup>3</sup>Because migration cannot be negative, migration is a censored variable. To avoid biases in estimation, we follow [Berthélemy et al. \(2009\)](#) by taking the log of variables to have positive variables. According to [Berthélemy et al. \(2009\)](#), the selection bias (say the fact that variables affecting the amount of aid allocated can also influence the selection of the recipient country) that can result from this treatment is considered to be not significant.

<sup>4</sup>Donor and recipient are respectively used as substitutes for developed and developing countries.

(*South*)) because young people are the most likely to migrate (Hatton and Williamson, 2003; Clark et al., 2007; Mayda, 2010).<sup>5</sup> Aid inflows are assumed to influence migration via an income effect (aid provides additional revenues) or a networking effect (aid promotes contact networks and vehicles information about the donor country), while unemployment rates provide information on the likelihood of being employed in the destination country.

$X_{ijt}$  are the control variables for the aid allocation equation and are derived from the traditional literature (see, for example, Alesina and Weder (2002) and Berthélemy (2006)). Geopolitical variables (*Japan*, colonial dummies and *Common Language*) measure bilateral friendship and cooperation, which are likely to influence the allocation of aid. Motives for giving foreign aid may be also driven by recipient needs (measured by the log of GDP per capita), by donors' interests (measured by the log of bilateral exports from a donor to a recipient country (*Exports*), *Recipient Trade Openness* and *Population South*) as well as by the recipient country's quality of governance (*Governance Quality*).<sup>6</sup> We include the total amount of ODA received by a country (*Total Aid Received*), which may affect each bilateral aid allocation depending on the influence a donor wants to have in the recipient country (Berthélemy, 2006). To investigate the aid-migration nexus, we also add the stock of migrants to this equation, assuming that migrants in the destination country will exert pressure to increase the amount of aid allocated to their origin countries (lobbying effect). Finally, we add to the aid allocation equation the donor's unemployment rate to uncover whether OECD countries allocate more aid when they face higher unemployment rates. We indeed expect that donors would be prone to allocate more aid towards developing countries in the aim of controlling their domestic labor market via a decrease of migration inflows.

#### 4.2.2 The issue of simultaneity

In model (4.1), aid and migration equations are seemingly related regressions. Our empirical model presents a situation where feedback relationships among foreign aid and migration are undeniably plausible and expected. For instance, we presume that aid allocations are influenced by the stock of migrants ("lobbying effect") while migrants are more likely to migrate in donor countries than elsewhere ("attractiveness effect"). In other words, each equation contains an endogenous variable among the explanatory variables, which causes a correlation of cross-equation disturbances. We take such feedback relationships into account by proceeding with a simultaneous estimation of system (4.1) thanks to

<sup>5</sup>Clark et al. (2007) explained that young migrants have much greater incentives to migrate because the present discounted value of net benefits will be higher the longer the remaining work life time is.

<sup>6</sup>*Imports* and *Exports* are not scaled by GDP to retain the highest number of observations. We follow Egger et al. (2012) and use the log of imports and the log of exports.

a three-stage least squares (3SLS) estimation procedure (see Zellner and Theil (1962)).<sup>7</sup> The 3SLS uses an instrumental variable (IV) approach to produce consistent estimates and a Generalized Least Squares (GLS) procedure to solve the fact that residuals of the three equations are correlated. Namely, as the Seemingly Unrelated Equations (SUR) generalizes Ordinary Least Squares (OLS), the 3SLS procedure generalizes the 2SLS procedure by taking into account the correlations between residuals across equations of system (4.1).

In addition to *Aid* and *Migration*, *Unemployment*, *Exports* and *Imports* are assumed to be endogenous to either *Aid* or *Migration*. First, *Unemployment* is assumed to be affected by the stock of migrants. More migrants (through their supply of labor and demand of goods or via their labor complementarities) are prone to have an effect on the unemployment rate (Boubtane et al., 2013). Second, *Exports* is assumed to be endogenous to *Aid* because donors possibly use assistance (tied aid) to promote their own exports (Wagner, 2003; Vijil and Wagner, 2012; Hühne et al., 2014). Finally, we also suspect *Imports* to be endogenous to *Migration*. Bilateral imports can increase thanks to immigrants inflows because transaction costs may be lower between the two countries and because immigrants are prone to demand products from their origin countries (Mundra, 2005).<sup>8</sup> Each equation  $k$  ( $k = 1$  to 2) of our system satisfies the order condition of identification (the number of exogenous variables excluded in equation  $k$  is higher than the number of endogenous variables included in equation  $k$ ). As our equations are all over-identified, we can employ the 3SLS estimator to obtain consistent, asymptotically normal and asymptotically efficient estimates (Wooldridge, 2010).

Our estimates are produced via the following procedure. Firstly, endogenous variables are instrumented. Predicted values are determined through a regression of each endogenous variable on all exogenous variables used in the system of equations (4.1).<sup>9</sup> We also add a set of external instruments assumed to be determinants of *Unemployment*. *Union Density*, employment protection legislation (*EPL*) and trade (measured by *Terms of Trade Adjustment*) are expected to reduce unemployment rates (Dutt et al., 2009). More inflation, measured by the annual change of inflation (*Inflation Change*), would also

<sup>7</sup>Azam and Berlinschi (2009) controlled for the possible endogeneity of aid when estimating their migration equation via the use of one-period lags, which, however, may cause problems of a serial correlation because the lagged value can be correlated with the error term.

<sup>8</sup>There is, nonetheless, no unanimous evidence for reverse causality between *Migration* and *Imports*. According to Egger et al. (2012), for example, migration can affect trade for very low levels of migrants only. Migrants do not affect trade anymore once immigration exceeds a certain threshold. Bruder (2004) has investigated the migration-trade relationship in both directions between Germany on the one hand and Turkey, Spain, Italy, Greece and Portugal on the other hand. Both are substitutes but only trade affects migration. Additional estimation results are presented in Table 4.B.1, where *Imports* are treated as exogenous to *Migration*. Size and significance of estimates hold.

<sup>9</sup>*Unemployment*, *Exports* and *Imports*, assumed to be correlated with error terms, are therefore not taken to be instruments for endogenous variables.

be associated to less unemployment (Mankiw, 2001). Higher interest rates (*Real Interest Rate*) are expected to increase the price of capital and hence to decrease employment, as does the burden of taxation (*Tax Wedge*) due to higher rigidities on the labor market (Daveri and Tabellini, 2000). Finally, the extent of *Rural Population* is believed to increase the rate of unemployment due to lower probabilities to find an occupation (Lindsay et al., 2003). Secondly, the residuals from the 2SLS estimation of the two equations of model (4.1) are used to obtain a consistent estimate of the covariance matrix of the disturbances. Thirdly, the covariance matrix and instruments from the first stage are employed in a GLS estimation to give consistent estimates of the parameters of model (4.1). These estimates are more precise than those of a simple 2SLS (standard errors of the three-stage estimates are smaller than those for the two-stage estimates) given the second stage that enables us to control for the correlation of the cross-equation disturbances.

### 4.3 Empirical results

This section presents our empirical analysis of the joint determination of bilateral aid and migration and displays the gravity estimates of alternative specifications. This analysis is designed to (i) exhibit the determinants of aid and migration (in particular unemployment) and compare to the existing literature ; (ii) infer policy implications from step (i) suggesting how donors' policies appear to be interrelated. Table 4.1 reports the related results.

Table 4.1: Gravity estimates of aid and migration (3SLS)

|                          | (1)                   | (2)                   | (3)                   |
|--------------------------|-----------------------|-----------------------|-----------------------|
| Aid                      |                       |                       |                       |
| Migration                | 0.232***<br>(4.13)    | 0.203***<br>(3.62)    | 0.282***<br>(5.10)    |
| Unemployment             | 0.079***<br>(9.08)    | 0.062***<br>(6.53)    | 0.077***<br>(8.90)    |
| Exports                  | 0.149***<br>(11.40)   | 0.140***<br>(10.56)   | 0.157***<br>(12.10)   |
| Recipient trade openness | 0.001***<br>(2.70)    | 0.001**<br>(2.44)     | 0.001***<br>(2.76)    |
| GDP (South)              | -0.583***<br>(-36.51) | -0.604***<br>(-36.90) | -0.600***<br>(-37.85) |
| Population (South)       | 0.000***<br>(3.71)    | 0.000***<br>(2.86)    | 0.000**<br>(2.54)     |
| Former colony            | 1.324***<br>(16.38)   | 1.304***<br>(16.09)   | 1.283***<br>(16.00)   |
| Total aid of donor       | 0.000***              | 0.000***              | 0.000***              |

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|                            | (1)                   | (2)                   | (3)                   |
|----------------------------|-----------------------|-----------------------|-----------------------|
|                            | (26.07)               | (24.00)               | (25.57)               |
| Japan-Asia                 | 1.993***<br>(17.35)   | 1.997***<br>(17.30)   | 1.978***<br>(17.21)   |
| Former colony of Spain     | 0.424*<br>(1.90)      | 0.433*<br>(1.91)      | 0.328<br>(1.46)       |
| Common language            | 0.148***<br>(3.85)    | 0.142***<br>(3.70)    | 0.144***<br>(3.76)    |
| Governance quality         | -0.003<br>(-0.75)     | -0.007<br>(-1.61)     | 0.001<br>(0.28)       |
| Trade balance              |                       | -0.118***<br>(-4.94)  |                       |
| Constant                   | 2.233***<br>(11.07)   | 2.782***<br>(11.99)   | 2.240***<br>(11.12)   |
| <b>Migration</b>           |                       |                       |                       |
| Aid                        | 0.170***<br>(9.99)    | 0.158***<br>(9.20)    | 0.139***<br>(8.26)    |
| Imports                    | 0.079***<br>(12.05)   | 0.077***<br>(11.64)   | 0.069***<br>(10.85)   |
| Recipient trade openness   | -0.000**<br>(-2.02)   | -0.000**<br>(-2.05)   | -0.000***<br>(-2.64)  |
| GDP (South)                | 0.019*<br>(1.65)      | 0.016<br>(1.26)       | 0.440***<br>(7.61)    |
| Population (South)         | 0.001***<br>(15.36)   | 0.001***<br>(15.68)   | 0.001***<br>(17.52)   |
| Population (North)         | -0.000*<br>(-1.69)    | -0.000<br>(-1.17)     | 0.000<br>(0.48)       |
| Distance                   | -0.000***<br>(-13.37) | -0.000***<br>(-13.80) | -0.000***<br>(-14.82) |
| Former colony              | -0.095*<br>(-1.83)    | -0.067<br>(-1.28)     | -0.017<br>(-0.34)     |
| Former colony of the UK    | 0.607***<br>(9.97)    | 0.601***<br>(9.76)    | 0.617***<br>(10.33)   |
| Japan                      | -0.345***<br>(-8.21)  | -0.348***<br>(-8.21)  | -0.294***<br>(-7.10)  |
| Western offshoots          | 0.104***<br>(6.48)    | 0.102***<br>(6.25)    | 0.113***<br>(7.15)    |
| USA-Latin America          | 0.778***<br>(18.30)   | 0.791***<br>(18.39)   | 0.754***<br>(18.08)   |
| Common language            | 0.081***<br>(4.71)    | 0.084***<br>(4.89)    | 0.093***<br>(5.55)    |
| Unemployment               | -0.023***<br>(-4.54)  | -0.023***<br>(-4.56)  | -0.018***<br>(-3.63)  |
| Donor trade openness       | -0.004***<br>(-12.51) | -0.004***<br>(-12.67) | -0.004***<br>(-11.52) |
| Youth unemployment (South) | 0.002***              | 0.002***              | 0.001**               |

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|                            | (1)                  | (2)                  | (3)                                           |
|----------------------------|----------------------|----------------------|-----------------------------------------------|
| GDP (South) squared        | (5.08)               | (4.80)               | (2.18)                                        |
| Constant                   | -0.753***<br>(-9.24) | -0.668***<br>(-8.08) | -0.029***<br>(-7.46)<br>-2.113***<br>(-11.52) |
| Observations               | 11678                | 11678                | 11678                                         |
| R <sup>2</sup> (Aid)       | 0.4445               | 0.4467               | 0.4436                                        |
| R <sup>2</sup> (Migration) | 0.4384               | 0.4736               | 0.4496                                        |

*Notes:* Table 4.1 reports basic results. *Exports*, *Imports* and *Unemployment* are assumed to be endogenous. Column (1) reports the gravity estimates of model (4.1). Column (2) reports estimates of model (4.1) when *Trade balance* is included in the aid equation to test whether trade deficits in OECD nations make aid policies more restrictive. *Trade balance* is treated as endogenous because of *Exports*. Column (3) reports estimates of model (4.1) considering the “hump-shaped pattern” hypothesis (income per capita and emigration are negatively correlated for high levels of GDP per capita). Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

### 4.3.1 Aid allocation

#### Determinants of aid allocations

In the aid allocation equation, GDP per capita in recipient countries enters with a negative sign, suggesting that donors are altruistic and tend to provide higher assistance to poorer countries. This poverty-based allocation is in accordance with previous findings (Dollar and Levin, 2006; Berthélemy, 2006; Claessens et al., 2009; Dreher et al., 2011).<sup>10</sup> In line with Alesina and Weder (2002) and Clist et al. (2012), we find no evidence that better governed countries receive more aid since *Governance quality* remains insignificant in all our specifications.<sup>11</sup>

Conversely, donors' self-interests are apparently significant motives for bilateral aid allocations, which confirms the existing literature (Dollar and Levin, 2006; Younas, 2008; Rajan and Subramanian, 2008; Hoeffler and Outram, 2011; Klasen and Davies, 2011). Dummy variables for former colonial links, for specific former Spanish colonies and for a common language between origin and destination countries indeed enter with a positive sign. Donors seem to reward their geopolitical friends (according to either historical ties or

<sup>10</sup>Results hold when *GDP (South)* is treated as endogenous to *Aid*, namely if we consider that aid may have a simultaneous impact on the recipient's GDP. See Table 4.B.1 in Appendix 4.B.

<sup>11</sup>Results hold when we address the potential endogeneity of *Governance quality*, which may arise if we consider that bilateral aid has a simultaneous impact on the recipient's quality of governance. See Table 4.B.1 in Appendix 4.B.

geographical and cultural proximity). Our data also advocate for the strong link between Japan and Asian countries emphasized by [Berthélemy et al. \(2009\)](#). Finally, the coefficient on population size in recipient countries is positive and lower than one, corroborating a population bias in aid allocations, namely that small countries tend to receive larger per capita aid flows ([Dollar and Levin, 2006](#)).

Trade variables seem to be highly significant in determining the amount of aid allocated towards developing countries. Bilateral donors are prone to reward trade partners (as supported by [Canavire-Bacarreza et al. \(2006\)](#), [Berthélemy \(2006\)](#), [Dollar and Levin \(2006\)](#) and [Claessens et al. \(2009\)](#)). Our measure of bilateral exports from a donor to a recipient country corroborates the commercial motive for allocating aid. The positive sign of *Exports* to developing countries indeed denotes that aid flows reward new market opportunities for donors. Our results are robust to the inclusion of the same variable with a five year lag (see Column (3) in Table 4.2).<sup>12</sup> Furthermore, our findings support the displacement effect found in [Lundsgaarde et al. \(2007\)](#) when we add a measure of *Trade Balance* (OECD exports to developing countries minus OECD imports from developing countries) designed to capture a “trade not aid” effect (see Column (2) in Table 4.1). The “trade not aid” concept is the idea that the best way to promote economic development is through trade and not through the provision of foreign aid. The negative sign of our coefficient means that an increase in trade deficits in OECD nations (higher OECD imports from developing countries) can result in restrictive aid policies. In other words, trade decreases aid amounts when donors have trade deficits with partner countries. This displacement effect gives support to the idea that “trade not aid” has been translated into actual policy choices (increasing imports from developing countries instead of increasing foreign assistance). Additionally, trade deficits with recipient countries may betray a loss of jobs from donor countries to developing countries, which in turn may lower the donors’ willingness to allocate foreign assistance ([Lundsgaarde et al., 2007](#)). We finally observe that more open economies tend to receive higher financial assistance from OECD donors.

### **The interdependence with migration and unemployment policies**

We now turn to the critical domestic policy determinants of aid allocation decisions, namely unemployment and migration policies. First, the unemployment rate has a direct effect on the allocation of foreign aid. The coefficient of *Unemployment* is significantly positive. Specifically, unemployment in OECD countries is associated to higher amounts of foreign assistance, which conveys the idea that aid and unemployment policies may be connected. We explain that donors are prone to use foreign assistance in times of crisis

<sup>12</sup>We follow [Berthélemy et al. \(2009\)](#) who applied this procedure to avoid simultaneity biases.

(say when unemployment rates are increasing) in the aim of reducing the unemployment rate thanks to the development effect of foreign aid. Actually, allocating aid to developing countries is awaited to reduce the difference between origin and destination countries' incomes, lowering migration incentives and potential entrants into the labor market. [Azam and Berlinschi \(2009\)](#) evidenced that foreign aid can be indeed seen as a tool to control for immigration. We therefore interpret this original causal relationship as the fact that aid policy can be a donor's instrument serving unemployment policies interests. In other words, the allocation of aid by an OECD country may be influenced by its economic health.

Second, our data reveal that the geographical shape of foreign aid allocations is influenced by the stock of migrants living in the donor country. Our results are consistent with the "lobbying activities" and the "networking effect" highlighted in [Berthélemy et al. \(2009\)](#) and [Lahiri and Raimondos-Møller \(2000\)](#): migration inflows in OECD nations increase the amount of aid provided to countries from which migrants originate. While the natives are supposed to be rather impartial about the destination of foreign assistance, migrants (residing in the donor country) are found to lobby the government in favor of their country of origin. As for networks, they reduce the costs and uncertainty for new potential migrants (in particular for accommodation and job search) but also reinforce links between the host and origin countries, resulting in higher assistance. This result implies that if donors want to open their migration policy they also will face increasing pressure for enlarging their aid policy: aid and migration policies are linked together.

### **4.3.2 Migration flows**

#### **The interdependence with aid and unemployment policies**

Aid flows enter with a positive sign in the migration equation, supporting the "attraction effect" underlined by [Berthélemy et al. \(2009\)](#) and [Azam and Berlinschi \(2009\)](#). Attraction implies that recipient countries benefit from financial aid flows, contact networks, and more information about the donor economy making migration to the donor country easier for citizens of aid recipient countries ([Berthélemy et al., 2009](#)). The presence of a donor country in a developing economy may create opportunities for migration and may make easier the possibility to migrate to the donor country due to particular links relating the two countries. Aid for education, which may attract migrants for scholarships, or aid to refugees, participate to this attraction effect. If OECD donors want to both control the entry of migrants (as it is common according to [Pedersen et al. \(2008\)](#)) and provide generous assistance they need to implement restrictive migration policies due to the attraction effect of foreign assistance. Since aid and migration are positively correlated, a

“Big Push” aid policy would counterbalance restraining migration policies, reducing their effectiveness.

Unemployment in donor countries enters with an expected negative sign, implying that working migrants choose their destination according to the probability of being employed, which is consistent with [Pope and Withers \(1993\)](#), [Islam \(2007\)](#), [Mayda \(2010\)](#) and [Damette and Fromentin \(2013\)](#). The negative sign of *Unemployment*, augmented by the positive sign of *Youth Unemployment (South)* in recipient countries, suggests that an increase (respectively a decrease) in unemployment rates in destination (respectively origin) countries reduces the probability of migrating due to fewer job opportunities (respectively due to better opportunities in the origin country). This effect holds using total unemployment rates in developing countries (see Column (4), Table 4.2). Alternatively, higher unemployment rates may result in lower entries of migrants owing to the willingness of the OECD country. Indeed, the government efforts to reduce unemployment may include restrictive migration policies (because of internal pressures for protecting job) lowering migration inflows.<sup>13</sup>

### The determinants of the migration inflow

We now move to the other determinants of migration in OECD countries. In accordance with [Berthélemy et al. \(2009\)](#) and [Ortega and Peri \(2013\)](#), the estimated coefficient on *Distance* between a donor and a recipient country indicates that geographical distance may dissuade citizens of developing countries from migrating given financial and social costs of migration. Furthermore, higher distance between two countries also induces higher travel risks. Most highly-populated origin countries and former colonies (and in particular former British colonies) tend to send more migrants to OECD countries. The dummy for a *Common Language* between pairs of countries is significant in all specifications and enters with a positive sign, suggesting that sharing a common language with the destination country is a strong incentive to migrate. As expected, Western offshoots (namely Australia, Canada, New Zealand and the United States) attract more migrants than Western Europe or Japan, whose estimated coefficient is even significantly negative due to notable restrictive migration policies ([Berthélemy et al., 2009](#); [Ortega and Peri, 2009](#)). Results also confirm strong migratory links between the United States and Latin American countries.

An increase in income per capita in origin countries seems to induce higher migration rates. Given initial fixed costs of migration (be they financial or social costs), extremely poor citizens in developing countries are not necessarily able to afford such costs to migrate to rich and distant nations. Furthermore, rich countries are less willing to accept poorer

<sup>13</sup>These pressures are notable in times of economic crisis and elections ([Azam and Berlinschi, 2009](#)).

immigrants since they are less likely to be skilled. Other explanations have been offered for this effect including the lack of information about migration opportunities (Rowlands, 1999). We also found support for the “hump-shaped pattern” intuitive empirical hypothesis, which suggests that income per capita and emigration flows are negatively correlated for high levels of GDP per capita (Faini and Venturini, 1993; Hatton and Williamson, 2003; Clark et al., 2007). Indeed, the square of GDP per capita enters with a negative sign (see Column (3) in Table 4.1). For higher income countries increases in income per capita do not turn into migration due to better local conditions.

The estimated coefficient of the *Recipient Trade Openness* variable is negative, revealing that more open economies are less likely to send migrants. Such effect usually holds in middle income countries having reached sufficient levels of economic development, and facing diminishing incentives to migrate (Berthélemy et al., 2009). Using more precise data on bilateral trade, we find strong support for the Markusen’s model, suggesting that trade and migrants flows are complements if the destination country has superior technology for production and if trade is liberalized (Markusen, 1983). Higher OECD imports from developing countries increase migration inflows. In Berthélemy et al. (2009), this effect is found to be higher for skilled migrants because they match with the donors’ needs of their exporting sectors. Controlling for trade openness in donor countries, we suggest that more open OECD economies are prone to implement restrictive migration policies: complementarities arising from technological superiority in exporting sectors in rich countries are achieved at the detriment of unskilled migrants. To sum up, trade boosts migration for skilled migrants whereas there is a trade-off between the two for unskilled migrants.

### 4.3.3 Summary of our policy implications

All in all, aside from providing the determinants of aid and migration, our study yields support for a complex aid-migration-unemployment nexus suggesting that these OECD policies are indeed interdependent. A policy for reducing unemployment may influence aid and migration implying a reversal in the aid and migration policies for example. The simultaneous determination of aid and migration accounting for unemployment indicates several policy implications for OECD economies (derived from our estimates as presented below in brackets), that maybe useful for donors to implement coherent, consistent and efficient policies.

**Policy implication 4.1** *Flexible migration policies require to adjust aid policies (because more migrants in the donor country increase pressure for aid allocations).*

**Policy implication 4.2** *Generous aid policies and restrictive migration policies are substitutes (higher aid reduces migration) only for countries above a certain income per capita (because aid may increase sufficiently the origin country's income dissuading citizens from migrating). Otherwise, generous aid policies counterbalance restrictive migration policies (because of a networking effect) and are not suitable to alleviate migration pressures.*

**Policy implication 4.3** *In times of economic crisis (meaning higher unemployment rates), donors may implement generous aid policies (because donors may aim at reducing incentives for migrating thanks to a reduction in the difference between origin and destination countries' incomes) instead of carrying out unemployment policies.*

**Policy implication 4.4** *Policies for reducing unemployment tend to attract migrants (because of better job opportunities). Restrictive migration policies are required to keep constant the migration flow.*

**Policy implication 4.5** *The unemployment burden in OECD countries may raise demands for domestic job market protection and encourage policy makers to tighten their migration policies. Restrictive migration policies can be substitute for unemployment policies.*

## 4.4 Robustness Checks

This section provides a sensitive analysis of our benchmark results using alternative data, sampling techniques, and alternative specifications.

To flatten out possible aid fluctuations, we average the data over five years and ten years (see Columns (1) and (2) in Table 4.2). A potential shortcoming is that foreign aid may fluctuate annually to some extent due to donors' constraints or budgetary plans (Bulír and Hamann, 2008). To smooth out the effects of aid volatility, we re-estimate our model (4.1) using data based on five years averages and ten years averages, which allows us to have a comparison with the findings of Berthélemy et al. (2009). We also alleviate the possible biases in estimation due to aid volatility and possible omitted variables that are common to all countries by incorporating year dummies.<sup>14</sup> No matter these changes in our

<sup>14</sup>We are able to include specific time effects (namely common shocks to all the pairs of countries) but specific country (either developed or developing countries) effects and specific time invariant effects of each

specification, results perfectly hold. Our results are robust to the inclusion of alternative time spans of aid.

Table 4.3 tests for regional disparities and divides the sample into six sub-samples of recipient countries by excluding one region in each regression (each one corresponding to one column). It allows us to verify whether our results are sensitive to sample selection. To retain enough data, we chose to drop alternatively each region from the whole sample.<sup>15</sup> These groupings of countries corresponds to (i) former Soviet countries, (ii) South Asia, (iii) East Asia and Pacific, (iv) Sub-Saharan Africa, (v) the MENA region, (vi) Latin America, and (vii) Europe and Central Asia. Our results are very similar for all sub-samples, except for *Governance quality* in the aid equation and for *GDP (South)* in the migration equation. First, aid seems to be selective in terms of governance in all recipient countries except South Asian countries while aid seems to be provided to poorly governed countries in all countries but former Soviet countries and Sub-Saharan African countries. Second, *GDP (South)* becomes statistically insignificant in samples excluding alternatively Latin American countries, MENA countries and Sub-Saharan African countries. We run alternative estimations of model (4.1) including for these sub sets of countries *GDP (South) Squared* to test whether potential migrants decide to leave their countries only for low levels of GDP per capita. Indeed they do. Results reported in Table 4.B.2 in Appendix 4.B confirm the “hump-shaped pattern” described in Section 4.3.

Furthermore, extreme deviations from the main sample of estimates can possibly be problematic for our analysis. We test whether our results are driven by extreme values or not. We delete some excessive outliers using the [Billor et al. \(2000\)](#) procedure, in particular their blocked adaptive computationally efficient outlier nominators (BACON) algorithm. Inspecting for remarkable values for *Aid*, *Migration* and *Unemployment*, 735 observations were dropped.<sup>16</sup> The exclusion of outliers does not alter any estimate (see Column (1) in Table 4.4). Results are also dependent neither on countries that host the higher number of migrants nor on countries that provide extensive aid allocations. Column (5) in Table 4.4 reports the estimates of our model (4.1) excluding the United States, Spain, Germany and Italy, the four countries welcoming the largest number of migrants and two of the main aid donors.<sup>17</sup> Additionally, we considered the 2000-2008 period, before the

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pair of countries cannot be all together included with our version of Stata because of too many variables. Our estimates can, however, have comparison with those of [Berthélemy et al. \(2009\)](#) because they do neither include country specific effects. Besides, Table 4.B.3 in Appendix 4.B reports estimates of model (4.1) when time fixed effects are included alone and when both time and recipient fixed effects are alongside included. Estimates corroborate our benchmark results.

<sup>15</sup>When looking at each region separately, observations are insufficient.

<sup>16</sup>We use the 0.90 percentile of the chi-squared distribution as a threshold to separate outliers from non-outliers.

<sup>17</sup>Results reported in Table 4.B.1 in Appendix 4.B confirm our findings when excluding Norway and

economic crisis and the sharp rise in unemployment rates. Results are not sensitive to the 2008 crisis (see Column (5) in Table 4.4). Finally, removing from the sample Spain and Greece, which record the highest rates of unemployment among our OECD countries, has any influence on our estimated parameters (see Column (5) in Table 4.B.1). The aid-migration-unemployment pattern in the 22 OECD countries remains unchanged despite the exclusion of diverse potential outliers.<sup>18</sup>

Our findings also hold with an alternative estimation strategy. Estimates of our model (4.1) using the two-stage least squares also account for the endogeneity issue of our dependent variables. Exogenous variables of model (4.1) are still taken to be instruments for *Aid*, *Migration* and *Unemployment* (as well as for *Imports* and *Exports*). However, while the 3SLS method combines the 2SLS and Seemingly Unrelated Regressions methods, the 2SLS procedure treats error terms in each equation as uncorrelated. Though less efficient, the 2SLS estimates confirm the results obtain when applying the 3SLS (see Column (3) in Table 4.4).

Finally, we use the six individual indicators of governance (instead of our overall measure of *Governance Quality*) provided by the World Bank Institute (see Table 4.6 for a definition of these variables). We also add a dummy variable coding one if the destination country of migration from former Spanish colonies is Spain to account for the fact that Spain is very open to immigration (see [Berthélemy et al. \(2009\)](#)). Results reported in Column (2) in Table 4.4 show expected signs and significance for these additional explanatory variables while all other estimated coefficients remain unchanged. In particular, for the governance indicators, we observe that foreign aid is not selective in terms of corruption (in line with [De la Croix and Delavallade, 2014](#)) but seems to be correctly targeted in terms of voice and accountability, government effectiveness, and regulatory quality. Aid is also allocated to unstable countries (as usual for humanitarian aid) and in countries where rule of law is weaker.

## 4.5 Conclusion

This essay has introduced the labor market in the aid-migration analysis of [Berthélemy et al. \(2009\)](#) in order to simultaneously address the aid-migration nexus among OECD countries and their relation to unemployment. In particular, we have investigated the determinants of aid and migration within their joint determination and the influence of OECD unemployment rates on aid and migration. We have then derived several policy

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Switzerland, the two OECD countries recording the highest *share* of migrants inflows.

<sup>18</sup>See Figures 4.A.2, 4.A.4 and 4.A.5 in Appendix 4.A. for illustration of possible extreme values.

implications on how donors' aid, migration and unemployment policies are interrelated.

First, aid and migration are positively correlated. Our findings give support to both the networking and lobbying effects. Migrants in host countries are likely to exert upward pressures on aid allocated to their origin countries. Furthermore, migrants are more likely to move towards countries from which they receive aid inflows, even after controlling for cultural links and geographical conditions. Indeed, migration is made easier both in host countries with contact networks and between countries sharing an aid pattern. Aid and migration policies are likely to be connected in OECD countries. Open migration policies would pressure for more generous aid policies. Conversely, generous aid policies attract more migrants, at least when migrants come from low income countries. From a certain level of GDP per capita in the developing country, higher assistance would decrease emigration, due to improvements in income per capita and better local conditions. These results convey the idea that more generous aid policies towards low income countries, claimed by the international community, will call for restrictive migration policies if the destination country wants to keep constant the migration inflow.

Second, and in accordance with the aid-migration nexus, our study has contributed to the literature as follows. Our results gave support to our hypothesis following which donors may use foreign aid policies as an instrument to control the expansion of unemployment. Because migration may be expected to increase the labor supply, donors may want to reduce incentives for migrating by improving local conditions, in particular by increasing income in origin countries. Above a certain level of income, aid is indeed likely to reverse the decision to migrate. Otherwise, such a policy would not have expected outcomes and would not serve donors' interests in terms of controlling their unemployment rate.

Third, our findings suggested that the unemployment burden encourages donors to adjust migration policies. When job market conditions are getting worse in developed economies, policy makers may tighten their migration policies. Migration and unemployment policies should not be decided separately because policies designed to slow down the increase of unemployment will require restrictive migration policies if the destination country wants to keep constant the migration inflow.

Aid policies cannot be formulated independently of other policy choices (as migration and unemployment policies). Understanding the challenges faced by donor countries and the global shape of bilateral aid allocations is important to make aid as effective as possible. While we focus here on traditional aid donors, further research can integrate new emerging donors who have gained in importance since the last decade (in particular China as evidenced by [Dreher et al. \(2011\)](#), [Zimmermann and Smith \(2011\)](#) and [Bräutigam \(2011\)](#)).

Table 4.2: Robustness regressions (1) – Alternative measures

|                          | (1)                   | (2)                   | (3)                   | (4)                   |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <hr/> Aid <hr/>          |                       |                       |                       |                       |
| Migration                | 0.215***<br>(4.22)    | 0.248***<br>(5.12)    | 0.192***<br>(3.45)    | 0.202***<br>(3.57)    |
| Unemployment             | 0.096***<br>(10.72)   | 0.100***<br>(11.68)   | 0.068***<br>(7.86)    | 0.080***<br>(9.18)    |
| Exports                  | 0.154***<br>(12.35)   | 0.153***<br>(12.85)   |                       | 0.156***<br>(12.02)   |
| Recipient trade openness | 0.001***<br>(3.21)    | 0.001***<br>(3.30)    | 0.001*<br>(1.82)      | 0.001***<br>(2.66)    |
| GDP (South)              | -0.571***<br>(-37.91) | -0.570***<br>(-39.43) | -0.603***<br>(-43.74) | -0.586***<br>(-36.88) |
| Population (South)       | 0.000***<br>(3.65)    | 0.000***<br>(3.52)    | 0.000***<br>(3.61)    | 0.000***<br>(3.88)    |
| Former colony            | 1.346***<br>(17.77)   | 1.385***<br>(19.03)   | 1.215***<br>(15.62)   | 1.327***<br>(16.44)   |
| Total aid of donor       | 0.000***<br>(26.28)   | 0.000***<br>(26.64)   | 0.000***<br>(27.38)   | 0.000***<br>(26.30)   |
| Japan-Asia               | 2.063***<br>(19.89)   | 1.971***<br>(20.19)   | 1.987***<br>(17.26)   | 1.996***<br>(17.35)   |
| Former colony of Spain   | 0.340*<br>(1.71)      | 0.183<br>(0.96)       | 0.413*<br>(1.83)      | 0.419*<br>(1.87)      |
| Common language          | 0.150***<br>(4.09)    | 0.153***<br>(4.33)    | 0.187***<br>(4.82)    | 0.155***<br>(4.03)    |
| Governance quality       | -0.006<br>(-1.46)     | -0.003<br>(-0.82)     | -0.005<br>(-1.10)     | -0.003<br>(-0.77)     |
| Exports <sub>t-5</sub>   |                       |                       | 0.177***<br>(23.06)   |                       |
| Constant                 | 1.877***<br>(9.51)    | 1.865***<br>(9.91)    | 2.084***<br>(12.67)   | 2.148***<br>(10.67)   |
| <hr/> Migration <hr/>    |                       |                       |                       |                       |
| Aid                      |                       |                       | 0.153***<br>(10.26)   | 0.170***<br>(9.86)    |
| Aid averaged (5 years)   |                       | 0.223***<br>(11.98)   |                       |                       |
| Aid averaged (10 years)  | 0.200***<br>(10.99)   |                       |                       |                       |
| Imports                  | 0.093***<br>(13.99)   | 0.088***<br>(13.41)   | 0.074***<br>(18.03)   | 0.079***<br>(12.09)   |
| Recipient trade openness | -0.000<br>(-1.31)     | -0.000<br>(-1.43)     | -0.000**<br>(-2.22)   | -0.000**<br>(-1.97)   |
| GDP (South)              | 0.015<br>(1.21)       | 0.029**<br>(2.25)     | 0.019<br>(1.58)       | 0.023*<br>(1.91)      |
| Population (South)       | 0.001***              | 0.001***              | 0.001***              | 0.001***              |

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Table 4.2 – Continued from previous page

|                            | (1)                   | (2)                   | (3)                   | (4)                   |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                            | (13.03)               | (13.16)               | (28.30)               | (15.36)               |
| Population (North)         | -0.001***<br>(-4.14)  | -0.001***<br>(-4.61)  | -0.000<br>(-0.72)     | -0.000*<br>(-1.71)    |
| Distance                   | -0.000***<br>(-11.24) | -0.000***<br>(-11.67) | -0.000***<br>(-17.05) | -0.000***<br>(-13.38) |
| Former colony              | -0.190***<br>(-3.54)  | -0.225***<br>(-4.18)  | -0.047<br>(-1.10)     | -0.094*<br>(-1.80)    |
| Former colony of the UK    | 0.603***<br>(9.70)    | 0.599***<br>(9.72)    | 0.614***<br>(10.15)   | 0.612***<br>(10.03)   |
| Japan                      | -0.418***<br>(-9.96)  | -0.431***<br>(-10.53) | -0.321***<br>(-8.93)  | -0.349***<br>(-8.28)  |
| Western offshoots          | 0.085***<br>(5.12)    | 0.087***<br>(5.35)    | 0.117***<br>(7.45)    | 0.105***<br>(6.53)    |
| USA-Latin America          | 0.748***<br>(17.54)   | 0.713***<br>(17.13)   | 0.772***<br>(18.14)   | 0.774***<br>(18.18)   |
| Common language            | 0.079***<br>(4.45)    | 0.075***<br>(4.17)    | 0.088***<br>(5.09)    | 0.079***<br>(4.59)    |
| Unemployment               | -0.028***<br>(-4.84)  | -0.031***<br>(-5.51)  | -0.020***<br>(-4.49)  | -0.023***<br>(-4.60)  |
| Donor trade openness       | -0.005***<br>(-14.82) | -0.005***<br>(-15.23) | -0.004***<br>(-15.19) | -0.004***<br>(-12.62) |
| Youth unemployment (South) | 0.003***<br>(5.96)    | 0.003***<br>(6.10)    | 0.002***<br>(4.87)    |                       |
| Unemployment (South)       |                       |                       |                       | 0.003***<br>(3.68)    |
| Constant                   | -0.936***<br>(-11.26) | -0.966***<br>(-11.89) | -0.685***<br>(-10.65) | -0.763***<br>(-9.27)  |
| Observations               | 11904                 | 11984                 | 11448                 | 11678                 |
| Including time dummies     | Yes                   | Yes                   | No                    | No                    |
| R <sup>2</sup> (Aid)       | 0.4668                | 0.4838                | 0.4479                | 0.4443                |
| R <sup>2</sup> (Migration) | 0.4101                | 0.4050                | 0.4621                | 0.4382                |

Notes: Table 4.2 reports estimates of model (4.1) using alternative measures and variables. *Exports*, *Imports* and *Unemployment* are treated as possibly endogenous to either *Aid* or *Migration*. Column (1) reports the gravity estimates of model (4.1) when aid is averaged over five years. Column (2) reports the gravity estimates of model (4.1) when aid is averaged over ten years. Column (3) reports the joint estimates of model (4.1) considering the lagged value (five years) of exports in the aid allocation to control for its endogeneity as done in [Berthélemy et al. \(2009\)](#). Column (4) reports the joint estimates of model (4.1) using an alternative measure of *Youth Unemployment (South)*, namely total *Unemployment (South)*. Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 4.3: Robustness regressions (2) – Alternative samples

|                          | (1)                   | (2)                   | (3)                   | (4)                     | (5)                   | (6)                   | (7)                   |
|--------------------------|-----------------------|-----------------------|-----------------------|-------------------------|-----------------------|-----------------------|-----------------------|
|                          | Former Sovi-ets       | East Asia and Pacific | South Asia            | Europe and Central Asia | Latin America         | MENA                  | Sub-Saharan Africa    |
| Aid                      |                       |                       |                       |                         |                       |                       |                       |
| Migration                | 0.295***<br>(4.95)    | 0.245***<br>(4.27)    | 0.235***<br>(3.95)    | 0.065<br>(1.00)         | 0.153**<br>(2.08)     | 0.278***<br>(4.91)    | 0.315***<br>(5.17)    |
| Unemployment             | 0.098***<br>(10.41)   | 0.078***<br>(8.39)    | 0.085***<br>(9.51)    | 0.120***<br>(12.27)     | 0.071***<br>(7.12)    | 0.073***<br>(8.23)    | 0.044***<br>(4.27)    |
| Exports                  | 0.161***<br>(11.07)   | 0.162***<br>(12.50)   | 0.160***<br>(11.98)   | 0.221***<br>(13.62)     | 0.137***<br>(9.57)    | 0.130***<br>(9.86)    | 0.122***<br>(7.87)    |
| Recipient trade openness | 0.001**<br>(2.36)     | 0.001***<br>(3.37)    | 0.001***<br>(2.89)    | 0.001<br>(1.64)         | 0.001**<br>(1.99)     | 0.001**<br>(2.30)     | 0.001*<br>(1.93)      |
| GDP (South)              | -0.566***<br>(-33.20) | -0.579***<br>(-35.37) | -0.589***<br>(-37.04) | -0.609***<br>(-33.05)   | -0.572***<br>(-33.65) | -0.579***<br>(-35.35) | -0.659***<br>(-28.69) |
| Population (South)       | 0.000*<br>(1.79)      | -0.000<br>(-0.27)     | 0.001***<br>(5.60)    | 0.000**<br>(2.30)       | 0.001***<br>(4.99)    | 0.000***<br>(3.88)    | 0.000**<br>(2.21)     |
| Former colony            | 1.259***<br>(15.04)   | 1.293***<br>(14.71)   | 1.256***<br>(14.80)   | 1.240***<br>(14.27)     | 1.482***<br>(17.01)   | 1.325***<br>(15.72)   | 1.208***<br>(11.48)   |
| Total aid of donor       | 0.000***<br>(22.10)   | 0.000***<br>(25.58)   | 0.000***<br>(25.19)   | 0.000***<br>(20.99)     | 0.000***<br>(26.74)   | 0.000***<br>(24.41)   | 0.000***<br>(18.30)   |
| Japan-Asia               | 2.055***<br>(16.76)   | 1.530***<br>(9.58)    | 1.954***<br>(14.38)   | 2.150***<br>(16.68)     | 2.094***<br>(17.44)   | 1.990***<br>(17.47)   | 1.904***<br>(17.24)   |
| Former colony of Spain   | 0.322<br>(1.43)       | 0.382*<br>(1.70)      | 0.368<br>(1.64)       | 0.221<br>(0.95)         | 0.221<br>(0.95)       | 0.565**<br>(2.53)     | 0.337<br>(1.48)       |
| Common language          | 0.074*<br>(1.86)      | 0.167***<br>(4.09)    | 0.205***<br>(5.20)    | 0.109***<br>(2.65)      | 0.199***<br>(4.82)    | 0.121***<br>(3.09)    | 0.239***<br>(3.56)    |
| Governance quality       | -0.010**<br>(-2.25)   | -0.002<br>(-0.48)     | 0.007*<br>(1.77)      | 0.001<br>(0.21)         | -0.003<br>(-0.71)     | 0.001<br>(0.25)       | -0.015***<br>(-2.94)  |

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Table 4.3 – Continued from previous page

|                          | (1)                   | (2)                   | (3)                   | (4)                  | (5)                   | (6)                   | (7)                  |
|--------------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|
| Constant                 | 1.870***<br>(8.42)    | 1.949***<br>(9.59)    | 2.046***<br>(9.65)    | 1.152***<br>(4.87)   | 2.347***<br>(10.17)   | 2.576***<br>(12.46)   | 3.537***<br>(15.01)  |
| Migration                |                       |                       |                       |                      |                       |                       |                      |
| Aid                      | 0.192***<br>(10.63)   | 0.199***<br>(12.44)   | 0.149***<br>(8.44)    | 0.158***<br>(8.49)   | 0.132***<br>(7.13)    | 0.170***<br>(9.88)    | 0.185***<br>(7.35)   |
| Imports                  | 0.073***<br>(10.44)   | 0.078***<br>(12.39)   | 0.062***<br>(9.85)    | 0.061***<br>(9.02)   | 0.093***<br>(13.19)   | 0.082***<br>(11.49)   | 0.103***<br>(11.19)  |
| Recipient trade openness | -0.000*<br>(-1.91)    | -0.000<br>(-1.54)     | -0.000*<br>(-1.91)    | -0.000**<br>(-1.97)  | -0.000**<br>(-2.15)   | -0.000*<br>(-1.82)    | -0.000<br>(-0.91)    |
| GDP (South)              | 0.041***<br>(3.20)    | 0.026**<br>(2.23)     | 0.030**<br>(2.53)     | 0.030**<br>(2.52)    | -0.008<br>(-0.59)     | 0.011<br>(0.85)       | -0.013<br>(-0.63)    |
| Population (South)       | 0.001***<br>(14.92)   | 0.001***<br>(12.91)   | 0.001***<br>(15.48)   | 0.001***<br>(17.74)  | 0.001***<br>(13.27)   | 0.001***<br>(14.18)   | 0.001***<br>(10.10)  |
| Population (North)       | -0.000*<br>(-1.90)    | -0.001***<br>(-4.28)  | 0.000<br>(0.04)       | -0.000<br>(-0.44)    | -0.000**<br>(-2.07)   | -0.000**<br>(-2.09)   | 0.000<br>(0.63)      |
| Distance                 | -0.000***<br>(-10.80) | -0.000***<br>(-14.64) | -0.000***<br>(-15.75) | -0.000***<br>(-8.70) | -0.000***<br>(-10.74) | -0.000***<br>(-12.30) | -0.000***<br>(-7.78) |
| Former colony            | -0.123**<br>(-2.26)   | -0.060<br>(-1.22)     | 0.010<br>(0.20)       | -0.000<br>(-0.00)    | -0.213***<br>(-3.46)  | -0.150***<br>(-2.82)  | -0.139*<br>(-1.79)   |
| Former colony of the UK  | 0.613***<br>(9.95)    | 0.485***<br>(7.56)    | 0.353***<br>(5.13)    | 0.618***<br>(10.54)  | 0.774***<br>(11.86)   | 0.693***<br>(10.99)   | 0.655***<br>(7.31)   |
| Japan                    | -0.346***<br>(-7.49)  | -0.381***<br>(-9.73)  | -0.276***<br>(-6.63)  | -0.329***<br>(-6.72) | -0.338***<br>(-7.08)  | -0.338***<br>(-7.82)  | -0.417***<br>(-7.56) |
| Western offshoots        | 0.094***<br>(5.26)    | 0.127***<br>(8.12)    | 0.098***<br>(6.29)    | 0.083***<br>(4.47)   | 0.163***<br>(7.55)    | 0.070***<br>(4.28)    | 0.082***<br>(4.10)   |
| USA-Latin America        | 0.779***<br>(17.96)   | 0.803***<br>(19.00)   | 0.832***<br>(20.23)   | 0.893***<br>(21.20)  | 0.644***<br>(3.50)    | 0.824***<br>(19.32)   | 0.553***<br>(10.97)  |
| Common language          | 0.098***<br>(17.96)   | 0.085***<br>(19.00)   | 0.068***<br>(20.23)   | 0.118***<br>(21.20)  | 0.041**<br>(3.50)     | 0.075***<br>(19.32)   | 0.250***<br>(10.97)  |

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Table 4.3 – Continued from previous page

|                            | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  | (7)                  |
|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Unemployment               | (5.53)<br>-0.021***  | (4.81)<br>-0.023***  | (3.92)<br>-0.020***  | (7.02)<br>-0.024***  | (2.17)<br>-0.024***  | (4.21)<br>-0.032***  | (7.63)<br>-0.011*    |
| Donor trade openness       | (-3.93)<br>-0.004*** | (-3.98)<br>-0.005*** | (-3.94)<br>-0.004*** | (-4.54)<br>-0.004*** | (-4.44)<br>-0.004*** | (-5.99)<br>-0.004*** | (-1.89)<br>-0.004*** |
| Youth unemployment (South) | (-11.24)<br>0.002*** | (-12.58)<br>0.003*** | (-10.84)<br>0.002*** | (-10.64)<br>0.001*** | (-11.89)<br>0.002*** | (-12.37)<br>0.003*** | (-10.46)<br>0.004*** |
| Constant                   | (4.31)<br>-0.885***  | (6.01)<br>-0.792***  | (4.86)<br>-0.596***  | (2.71)<br>-0.613***  | (3.92)<br>-0.678***  | (4.78)<br>-0.689***  | (5.36)<br>-1.066***  |
| Observations               | (-9.97)<br>10375     | (-11.35)<br>10557    | (-7.73)<br>10853     | (-6.98)<br>9443      | (-6.63)<br>9558      | (-8.31)<br>10626     | (-6.71)<br>7930      |
| R <sup>2</sup> (Aid)       | 0.4455               | 0.4321               | 0.4346               | 0.4482               | 0.4450               | 0.4485               | 0.4748               |
| R <sup>2</sup> (Migration) | 0.4410               | 0.3767               | 0.4356               | 0.5136               | 0.4179               | 0.4382               | 0.4715               |

Notes: Table 4.3 reports estimates of model (4.1) using alternative samples. Each column reports estimates when, from the whole sample, we subtract all the countries from a particular region (given at the top of each column). Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 4.4: Robustness regressions (3) – Alternative specifications

|                          | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <hr/>                    |                       |                       |                       |                       |                       |
| Aid                      |                       |                       |                       |                       |                       |
| Migration                | 0.205***<br>(3.56)    | 0.142**<br>(2.52)     | 0.109*<br>(1.92)      | 0.220***<br>(2.68)    | 0.313***<br>(4.87)    |
| Unemployment             | 0.083***<br>(9.52)    | 0.086***<br>(9.91)    | 0.086***<br>(9.89)    | 0.021***<br>(2.65)    | 0.082***<br>(9.67)    |
| Exports                  | 0.154***<br>(11.88)   | 0.163***<br>(12.85)   | 0.159***<br>(12.14)   | 0.085***<br>(6.95)    | 0.093***<br>(6.24)    |
| Recipient trade openness | 0.001**<br>(2.51)     | 0.001**<br>(2.51)     | 0.001***<br>(2.61)    | 0.000<br>(1.07)       | 0.002***<br>(4.84)    |
| GDP (South)              | -0.584***<br>(-36.54) | -0.620***<br>(-38.73) | -0.600***<br>(-37.20) | -0.519***<br>(-32.18) | -0.528***<br>(-28.83) |
| Population (South)       | 0.000***<br>(4.09)    | 0.000***<br>(3.43)    | 0.001***<br>(5.15)    | 0.001***<br>(5.59)    | 0.001***<br>(5.48)    |
| Former colony            | 1.340***<br>(16.51)   | 1.346***<br>(16.91)   | 1.416***<br>(17.45)   | 1.340***<br>(15.05)   | 1.356***<br>(15.54)   |
| Total aid of donor       | 0.000***<br>(25.75)   | 0.000***<br>(27.02)   | 0.000***<br>(27.74)   | 0.000***<br>(29.72)   | 0.000***<br>(24.27)   |
| Japan-Asia               | 1.942***<br>(16.36)   | 2.069***<br>(17.89)   | 2.014***<br>(17.15)   | 1.386***<br>(11.77)   | 2.017***<br>(12.19)   |
| Former colony of Spain   | 0.244<br>(1.05)       | -0.127<br>(-0.56)     | -0.051<br>(-0.22)     |                       | 0.179<br>(0.78)       |
| Common language          | 0.153***<br>(3.96)    | 0.188***<br>(4.91)    | 0.164***<br>(4.25)    | 0.169***<br>(3.90)    | 0.134***<br>(2.96)    |
| Governance quality       | -0.003<br>(-0.66)     |                       | 0.004<br>(1.02)       | 0.005<br>(1.10)       | 0.000<br>(0.10)       |
| Control of corruption    |                       | 0.021<br>(0.48)       |                       |                       |                       |
| Government effectiveness |                       | 0.291***<br>(5.34)    |                       |                       |                       |
| Political stability      |                       | -0.139***<br>(-6.37)  |                       |                       |                       |
| Regulatory quality       |                       | 0.156***<br>(4.25)    |                       |                       |                       |
| Rule of law              |                       | -0.352***<br>(-6.93)  |                       |                       |                       |
| Voice and accountability |                       | 0.066***<br>(2.89)    |                       |                       |                       |
| Constant                 | 2.145***              | 2.233***              | 2.178***              | 2.938***              | 2.634***              |

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Table 4.4 – Continued from previous page

|                            | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                            | (10.69)               | (10.93)               | (10.70)               | (15.53)               | (11.94)               |
| Migration                  |                       |                       |                       |                       |                       |
| Aid                        | 0.156***<br>(9.47)    | 0.112***<br>(7.95)    | 0.129***<br>(7.40)    | 0.128***<br>(10.21)   | 0.107***<br>(6.49)    |
| Imports                    | 0.075***<br>(12.06)   | 0.077***<br>(15.61)   | 0.086***<br>(12.90)   | -0.010<br>(-0.91)     | 0.073***<br>(10.78)   |
| Recipient trade openness   | -0.000*<br>(-1.92)    | -0.000***<br>(-2.96)  | -0.000*<br>(-1.79)    | 0.000<br>(0.25)       | -0.000***<br>(-3.00)  |
| GDP (South)                | 0.012<br>(0.98)       | -0.009<br>(-0.78)     | -0.007<br>(-0.59)     | 0.093***<br>(5.50)    | -0.001<br>(-0.12)     |
| Population (South)         | 0.001***<br>(14.43)   | 0.001***<br>(24.84)   | 0.001***<br>(15.29)   | 0.001***<br>(23.22)   | 0.001***<br>(15.84)   |
| Population (North)         | -0.000<br>(-0.84)     | 0.000<br>(1.14)       | -0.000<br>(-0.87)     | 0.006***<br>(8.87)    | 0.000<br>(0.49)       |
| Distance                   | -0.000***<br>(-13.04) | -0.000***<br>(-18.06) | -0.000***<br>(-13.26) | -0.000***<br>(-17.26) | -0.000***<br>(-13.69) |
| Former colony              | -0.096*<br>(-1.94)    | -0.105**<br>(-2.32)   | -0.038<br>(-0.72)     | 0.182***<br>(4.49)    | 0.066<br>(1.28)       |
| Former colony of the UK    | 0.684***<br>(11.69)   | 0.743***<br>(12.06)   | 0.609***<br>(9.72)    | 0.737***<br>(16.11)   | 0.548***<br>(8.39)    |
| Japan                      | -0.343***<br>(-8.55)  | -0.293***<br>(-8.24)  | -0.397***<br>(-9.19)  | -0.505***<br>(-9.74)  | -0.112**<br>(-2.25)   |
| Western offshoots          | 0.116***<br>(7.53)    | 0.125***<br>(8.07)    | 0.098***<br>(5.91)    | 0.293***<br>(17.28)   | 0.142***<br>(8.12)    |
| USA-Latin America          | 0.803***<br>(19.69)   | 0.783***<br>(18.54)   | 0.787***<br>(18.00)   |                       | 0.855***<br>(16.92)   |
| Common language            | 0.077***<br>(4.71)    | 0.078***<br>(4.67)    | 0.085***<br>(4.95)    | 0.074***<br>(5.11)    | 0.106***<br>(5.49)    |
| Unemployment               | -0.020***<br>(-4.09)  | -0.022***<br>(-4.97)  | -0.025***<br>(-4.79)  | -0.024***<br>(-8.30)  | -0.010**<br>(-2.15)   |
| Donor trade openness       | -0.004***<br>(-11.85) | -0.004***<br>(-14.51) | -0.005***<br>(-13.58) | 0.000<br>(0.92)       | -0.004***<br>(-8.98)  |
| Youth unemployment (South) | 0.002***<br>(5.20)    | 0.002***<br>(5.15)    | 0.002***<br>(4.23)    | -0.000<br>(-0.08)     | 0.002***<br>(4.79)    |
| Former colony of Spain     |                       | 0.959***<br>(9.81)    |                       |                       |                       |
| Constant                   | -0.701***<br>(-8.98)  | -0.451***<br>(-6.86)  | -0.574***<br>(-6.89)  | -0.411***<br>(-6.81)  | -0.587***<br>(-7.31)  |
| Observations               | 11648                 | 11678                 | 11678                 | 9691                  | 9087                  |

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Table 4.4 – Continued from previous page

|                            | (1)    | (2)    | (3)    | (4)    | (5)    |
|----------------------------|--------|--------|--------|--------|--------|
| R <sup>2</sup> (Aid)       | 0.4412 | 0.4524 | 0.4399 | 0.4344 | 0.4197 |
| R <sup>2</sup> (Migration) | 0.4490 | 0.4796 | 0.4557 | 0.4960 | 0.4658 |

*Notes:* Table 4.4 reports estimates of model (4.1) using alternative specifications and methodology. Column (1) reports estimates of our model (4.1) when some problematic outliers are excluded from the basic sample. Column (2) reports estimates of model (4.1) when we add a set of other explanatory variables. Column (3) reports estimates of model (4.1) applying a 2SLS estimator. Column (4) reports the results of the gravity estimates of model (4.1) excluding the four OECD countries welcoming the higher number of migrants. Column (5) reports estimates of model (4.1) limiting our sample to the 2000-2008 period. Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 4.5: Summary statistics

| Variable                   | Obs.  | Mean      | Std. Dev. | Min.      | Max.     |
|----------------------------|-------|-----------|-----------|-----------|----------|
| Aid                        | 35072 | 1.16      | 1.51      | -4.61     | 9.46     |
| Common language            | 37026 | 0.13      | 0.33      | 0         | 1        |
| Control of corruption      | 35882 | -0.42     | 0.65      | -1.92     | 1.55     |
| Distance                   | 37026 | 7929.08   | 4206.26   | 59.62     | 19629.50 |
| Donor trade openness       | 37026 | 77.26     | 35.48     | 20.26     | 183.81   |
| <i>EPL</i>                 | 23694 | 0.64      | 1.42      | 0         | 17.60    |
| Exports                    | 35115 | 16.40     | 3.02      | 2.56      | 25.73    |
| Former colony              | 37026 | 0.04      | 0.20      | 0         | 1        |
| Former colony of Spain     | 37026 | 0.01      | 0.07      | 0         | 1        |
| Former colony of the UK    | 37026 | 0.02      | 0.12      | 0         | 1        |
| GDP (South)                | 34804 | 7.44      | 1.22      | 4.78      | 10.19    |
| Governance quality         | 35486 | -2.30     | 4.08      | -14.95    | 7.68     |
| Government effectiveness   | 35882 | -0.42     | 0.69      | -2.45     | 1.53     |
| Imports                    | 34051 | 15.55     | 3.88      | 0.16      | 25.76    |
| <i>Inflation change</i>    | 37026 | 0.03      | 1.43      | -8.53     | 3.92     |
| Japan                      | 37026 | 0.05      | 0.21      | 0         | 1        |
| Japan Asia                 | 37026 | 0.01      | 0.10      | 0         | 1        |
| Migration                  | 23824 | 0.36      | 0.70      | 0         | 5.57     |
| Political stability        | 35728 | -0.30     | 0.96      | -3.32     | 1.54     |
| Population (North)         | 35816 | 42.22     | 63.61     | 3.81      | 309.33   |
| Population (South)         | 35618 | 36.04     | 143.26    | 0.01      | 1337.70  |
| <i>Real interest rate</i>  | 25245 | 3.20      | 2.53      | -5.81     | 10.67    |
| Recipient trade openness   | 32775 | 74.80     | 37.63     | 6.32      | 280.36   |
| Regulatory stability       | 35882 | -0.39     | 0.77      | -2.68     | 1.54     |
| Rule of law                | 36256 | -0.42     | 0.75      | -2.67     | 1.42     |
| <i>Rural population</i>    | 37026 | 22.45     | 9.78      | 2.54      | 45.60    |
| <i>Tax wedge</i>           | 37026 | 36.95     | 10.60     | 16.11     | 57.10    |
| Terms of trade adjustment  | 36873 | -3.36e+11 | 6.26e+12  | -5.26e+13 | 2.26e+13 |
| Total aid received         | 37026 | 2407.48   | 3399.76   | 109.72    | 23127.07 |
| Trade balance              | 33631 | 0.98      | 2.43      | -11.02    | 13.68    |
| Unemployment               | 34336 | 6.54      | 2.62      | 2.53      | 20.08    |
| <i>Union density</i>       | 37026 | 31.57     | 19.78     | 7.54      | 79.08    |
| USA-Latin America          | 37026 | 0.01      | 0.10      | 0         | 1        |
| Voice and accountability   | 36256 | -0.30     | 0.87      | -2.28     | 1.31     |
| Western Offshoots          | 37026 | 0.18      | 0.39      | 0         | 1        |
| Youth unemployment (South) | 37026 | 18.34     | 11.99     | 0.7       | 65.9     |

*Notes:* Italics stand for instruments used for *Unemployment*.

Table 4.6: Data sources and definitions of variables

| <b>Variables for the aid equation</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <i>Common language</i>                | The dummy is equal to one if two countries share a common language                                                                                                                                                                                                                                                                                                                                                                                                              | CEPII            |
| <i>Exports</i>                        | (Log of) bilateral exports of goods and services from developed countries (expressed in current USD)                                                                                                                                                                                                                                                                                                                                                                            | OECD             |
| <i>Former colony</i>                  | The dummy is equal to one if two countries have ever had a colonial link                                                                                                                                                                                                                                                                                                                                                                                                        | CEPII            |
| <i>Former colony of Spain</i>         | The dummy is equal to one if the developing country is a former colony of Spain                                                                                                                                                                                                                                                                                                                                                                                                 | Own calculations |
| <i>GDP (South)</i>                    | Log of GDP per capita (constant 2005 USD)                                                                                                                                                                                                                                                                                                                                                                                                                                       | WDI              |
| <i>Distance</i>                       | Average distance between DAC country and the region (in kilometers)                                                                                                                                                                                                                                                                                                                                                                                                             | CEPII            |
| <i>Governance quality</i>             | Sum of the six governance indicators provided by the WBI: control of corruption, voice and accountability, government effectiveness, political stability, regulatory quality and rule of law (see Table D.1 in Appendix D for detailed definitions)                                                                                                                                                                                                                             | WDI              |
| <i>Japan-Asia</i>                     | The dummy is equal to one if the developing country is an Asian country and the OECD country is Japan                                                                                                                                                                                                                                                                                                                                                                           | Own Calculations |
| <i>Migration</i>                      | Inflows of foreign population by nationality                                                                                                                                                                                                                                                                                                                                                                                                                                    | IMD              |
| <i>Population (South)</i>             | Size of the population in the developing country (in millions of inhabitants)                                                                                                                                                                                                                                                                                                                                                                                                   | WDI              |
| <i>Recipient trade openness</i>       | Average of total recipient's trade (sum of exports and imports of goods and services) relative to recipient's GDP; Trade openness usually measures the importance of international transactions relative to domestic transactions, namely the country's integration into the world economy. Small countries tend to be more integrated because their exporting sectors are more limited and they import more goods and services than larger countries for their domestic demand | OECD             |
| <i>Total aid received</i>             | Sum of all aid amounts received by each recipient country                                                                                                                                                                                                                                                                                                                                                                                                                       | Own calculations |
| <i>Trade balance</i>                  | Exports to developing countries minus imports from developing countries                                                                                                                                                                                                                                                                                                                                                                                                         | Own calculations |
| <i>Unemployment</i>                   | Harmonized unemployment rate: number of unemployed persons as a percentage of the labor force based on the International Labor Organization (ILO) recommended definition                                                                                                                                                                                                                                                                                                        | OECD             |

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Table 4.6 – Continued from previous page

| Variables                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Sources          |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Variables for the migration equation</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |
| <i>Aid</i>                                  | Bilateral Official Development Assistance, Net disbursements, Constant prices (in 2012 USD Millions)                                                                                                                                                                                                                                                                                                                                                                    | DAC, OECD        |
| <i>Common language</i>                      | The dummy is equal to one if two countries share a common language                                                                                                                                                                                                                                                                                                                                                                                                      | CEPII            |
| <i>Distance</i>                             | Distance between OECD nations and developing countries (in kilometers)                                                                                                                                                                                                                                                                                                                                                                                                  | CEPII            |
| <i>Donor trade openness</i>                 | Average of total donor's trade (sum of exports and imports of goods and services) relative to donor's GDP; Trade openness usually measures the importance of international transactions relative to domestic transactions, namely the country's integration into the world economy. Small countries tend to be more integrated because their exporting sectors are more limited and they import more goods and services than larger countries for their domestic demand | OECD             |
| <i>Former colony</i>                        | The dummy is equal to one if two countries have ever had a colonial link                                                                                                                                                                                                                                                                                                                                                                                                | CEPII            |
| <i>Former colony of the UK</i>              | The dummy is equal to one if the developing country is a former colony of the UK                                                                                                                                                                                                                                                                                                                                                                                        | Own calculations |
| <i>GDP (South)</i>                          | Log of GDP per capita (constant 2005 USD)                                                                                                                                                                                                                                                                                                                                                                                                                               | WDI              |
| <i>Imports</i>                              | (Log of) bilateral imports of goods and services from developed countries (expressed in current USD)                                                                                                                                                                                                                                                                                                                                                                    | OECD             |
| <i>Japan</i>                                | The dummy is equal to one if the OECD country is Japan                                                                                                                                                                                                                                                                                                                                                                                                                  | Own Calculations |
| <i>Population (South)</i>                   | Size of the population in developing countries (in millions of inhabitants)                                                                                                                                                                                                                                                                                                                                                                                             | WDI              |
| <i>Population (North)</i>                   | Size of the population in OECD countries (in millions of inhabitants)                                                                                                                                                                                                                                                                                                                                                                                                   | WDI              |
| <i>Recipient trade openness</i>             | Average of total recipient's trade (sum of exports and imports of goods and services) relative to recipient's GDP                                                                                                                                                                                                                                                                                                                                                       | OECD             |
| <i>Unemployment</i>                         | Harmonized unemployment rate: number of unemployed persons as a percentage of the labor force based on the International Labor Organization (ILO) recommended definition                                                                                                                                                                                                                                                                                                | OECD             |
| <i>Youth (South)</i>                        | Youth unemployment refers to the share of the labor force ages 15-24 without work but available for and seeking employment                                                                                                                                                                                                                                                                                                                                              | WDI              |

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| Variables                           | Description                                                                                                                                                                                                                                                                                                                                            | Sources                 |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <i>Unemployment (South)</i>         | Unemployment refers to the share of the labor force that is without work but available for and seeking employment                                                                                                                                                                                                                                      | WDI                     |
| <i>USA-Latin America</i>            | The dummy is equal to one if the developing country is a Latin American country and the OECD country is the United States of America                                                                                                                                                                                                                   | Own Calculations        |
| <i>Western Offshoots</i>            | The dummy is equal to one if the OECD country is Australia, New Zealand, Canada, or the United States of America                                                                                                                                                                                                                                       | Own Calculations        |
| <b>Instruments for Unemployment</b> |                                                                                                                                                                                                                                                                                                                                                        |                         |
| <i>Donor trade openness</i>         | Average of total donor's trade (sum of exports and imports of goods and services) relative to donor's GDP                                                                                                                                                                                                                                              | OECD                    |
| <i>EPL</i>                          | Strictness of employment and labor protection (individual and collective dismissals procedures)                                                                                                                                                                                                                                                        | OECD                    |
| <i>Inflation change</i>             | Inflation, consumer prices (annual percentage change)                                                                                                                                                                                                                                                                                                  | WDI                     |
| <i>Migration</i>                    | Inflows of foreign population by nationality                                                                                                                                                                                                                                                                                                           | IMD                     |
| <i>Real interest rate</i>           | Lending interest rate adjusted for inflation as measured by the GDP deflator                                                                                                                                                                                                                                                                           | WDI                     |
| <i>Rural population</i>             | Share of the population (South) living in rural areas                                                                                                                                                                                                                                                                                                  | WDI                     |
| <i>Tax wedge</i>                    | Average Tax Wedge (%), sum of personal income tax and employee plus employer social security contributions together with any payroll tax less cash transfers, expressed as a percentage of labor costs                                                                                                                                                 | OECD                    |
| <i>Terms of trade adjustment</i>    | Terms of trade adjustment (constant LCU) measure the capacity to import less capacity to exports of goods and services in constant prices; a decrease in terms of trade means that the increase in the price of exports is lower than the one of imports (the country gains in price-competitiveness but can import less for a given level of exports) | WDI                     |
| <i>Union density</i>                | Trade union density rate, ratio of wage and salary earners that are trade union members, divided by the total number of wage and salary earners                                                                                                                                                                                                        | Labour force Statistics |

Table 4.6 – Continued from previous page

Table 4.7: List of developing countries – Aid recipients

|                             |                                  |                                  |
|-----------------------------|----------------------------------|----------------------------------|
| Afghanistan                 | Georgia                          | Pakistan                         |
| Albania                     | Ghana                            | Palau                            |
| Algeria                     | Grenada                          | Palestine                        |
| Angola                      | Guatemala                        | Panama                           |
| Antigua and Barbuda         | Guinea                           | Papua New Guinea                 |
| Argentina                   | Guinea-Bissau                    | Paraguay                         |
| Armenia                     | Guyana                           | Peru                             |
| Aruba                       | Haiti                            | Philippines                      |
| Azerbaijan                  | Honduras                         | Romania                          |
| Bangladesh                  | Hungary                          | Russian Federation               |
| Belarus                     | India                            | Rwanda                           |
| Belize                      | Indonesia                        | Saint Kitts and Nevis            |
| Benin                       | Iran                             | Saint Lucia                      |
| Bhutan                      | Iraq                             | Saint Vincent and the Grenadines |
| Bolivia                     | Jamaica                          | Samoa                            |
| Bosnia and Herzegovina      | Jordan                           | Sao Tome and Principe            |
| Botswana                    | Kazakstan                        | Senegal                          |
| Brazil                      | Kenya                            | Serbia and Montenegro            |
| Brunei Darussalam           | Kiribati                         | Seychelles                       |
| Bulgaria                    | Korea, Dem. People's Rep.        | Sierra Leone                     |
| Burkina Faso                | Kyrgyzstan                       | Slovakia                         |
| Burundi                     | Lao People's Democratic Republic | Slovenia                         |
| Cambodia                    | Latvia                           | Solomon Islands                  |
| Cameroon                    | Lebanon                          | Somalia                          |
| Cape Verde                  | Lesotho                          | South Africa                     |
| Central African Republic    | Liberia                          | Sri Lanka                        |
| Chad                        | Libyan Arab Jamahiriya           | Sudan                            |
| Chile                       | Lithuania                        | Suriname                         |
| China                       | Macedonia (former Yugoslav Rep.) | Swaziland                        |
| Colombia                    | Madagascar                       | Syrian Arab Republic             |
| Comoros                     | Malawi                           | Tajikistan                       |
| Congo                       | Malaysia                         | Tanzania, United Rep. of         |
| Congo (Democratic Republic) | Maldives                         | Thailand                         |
| Costa Rica                  | Mali                             | Togo                             |
| Croatia                     | Marshall Islands                 | Tokelau                          |
| Cuba                        | Mauritania                       | Tonga                            |
| Cyprus                      | Mauritius                        | Trinidad and Tobago              |
| Côte d'Ivoire               | Mexico                           | Tunisia                          |
| Djibouti                    | Micronesia (Federated States)    | Turkey                           |
| Dominica                    | Moldova, Rep.of                  | Turkmenistan                     |
| Dominican Republic          | Mongolia                         | Tuvalu                           |
| East Timor                  | Morocco                          | Uganda                           |
| Ecuador                     | Mozambique                       | Ukraine                          |
| Egypt                       | Namibia                          | Uruguay                          |
| El Salvador                 | Nauru                            | Uzbekistan                       |
| Eritrea                     | Nepal                            | Vanuatu                          |
| Estonia                     | Nicaragua                        | Venezuela                        |
| Ethiopia                    | Niger                            | Viet Nam                         |
| Fiji                        | Nigeria                          | Yemen                            |
| Gabon                       | Niue                             | Zambia                           |
| Gambia                      | Oman                             | Zimbabwe                         |

Table 4.8: List of developing countries – Aid recipients by region

| East Asia and Pacific | South Asia  | Europe and Central Asia | Latin America and Caribbean | MENA     | Sub-Saharan Africa    |
|-----------------------|-------------|-------------------------|-----------------------------|----------|-----------------------|
| Cambodia              | Afghanistan | Albania                 | Antigua and Barbuda         | Algeria  | Angola                |
| China                 | Bangladesh  | Armenia                 | Argentina                   | Djibouti | Benin                 |
| East Timor            | Bhutan      | Azerbaijan              | Belize                      | Egypt    | Botswana              |
| Fiji                  | India       | Belarus                 | Bolivia                     | Iran     | Burkina Faso          |
| Indonesia             | Maldives    | Bosnia                  | Brazil                      | Iraq     | Burundi               |
| Kiribati              | Nepal       | Bulgaria                | Chile                       | Jordan   | Cameroon              |
| Korea, Dem. Rep.      | Pakistan    | Estonia                 | Colombia                    | Lebanon  | Cape Verde            |
| Lao PDR               | Sri Lanka   | Georgia                 | Costa Rica                  | Libya    | Central African Rep.  |
| Malaysia              |             | Hungary                 | Cuba                        | Morocco  | Chad                  |
| Marshall Islands      |             | Kazakhstan              | Dominica                    | Syria    | Comoros               |
| Micronesia            |             | Kyrgyz Rep.             | Dominican Rep.              | Tunisia  | Congo, Dem. Rep.      |
| Mongolia              |             | Lithuania               | Ecuador                     | Yemen    | Congo, Rep.           |
| Nauru                 |             | Macedonia               | El Salvador                 |          | Cote d'Ivoire         |
| Niue                  |             | Moldova                 | Grenada                     |          | Eritrea               |
| Papua New Guinea      |             | Romania                 | Guatemala                   |          | Ethiopia              |
| Philippines           |             | Russian Federation      | Guyana                      |          | Gabon                 |
| Samoa                 |             | Serbia-Montenegro       | Haiti                       |          | Gambia                |
| Solomon Islands       |             | Slovak Rep.             | Honduras                    |          | Ghana                 |
| Thailand              |             | Slovenia                | Jamaica                     |          | Guinea                |
| Tokelau               |             | Slovenia                | Mexico                      |          | Guinea-Bissau         |
| Tonga                 |             | Tajikistan              | Nicaragua                   |          | Kenya                 |
| Tuvalu                |             | Turkey                  | Panama                      |          | Lesotho               |
| Vanuatu               |             | Turkmenistan            | Paraguay                    |          | Liberia               |
| Vietnam               |             | Ukraine                 | Peru                        |          | Madagascar            |
|                       |             | Uzbekistan              | St Kitts and Nevis          |          | Malawi                |
|                       |             |                         | St Lucia                    |          | Mali                  |
|                       |             |                         | St Vincent and Grenadines   |          | Mauritania            |
|                       |             |                         | Suriname                    |          | Mauritius             |
|                       |             |                         | Uruguay                     |          | Mozambique            |
|                       |             |                         | Venezuela                   |          | Namibia               |
|                       |             |                         |                             |          | Niger                 |
|                       |             |                         |                             |          | Nigeria               |
|                       |             |                         |                             |          | Rwanda                |
|                       |             |                         |                             |          | Sao Tome and Principe |
|                       |             |                         |                             |          | Senegal               |
|                       |             |                         |                             |          | Seychelles            |
|                       |             |                         |                             |          | Sierra-Leone          |
|                       |             |                         |                             |          | Somalia               |
|                       |             |                         |                             |          | South Africa          |
|                       |             |                         |                             |          | Sudan                 |
|                       |             |                         |                             |          | Swaziland             |
|                       |             |                         |                             |          | Tanzania              |
|                       |             |                         |                             |          | Togo                  |
|                       |             |                         |                             |          | Uganda                |
|                       |             |                         |                             |          | Zambia                |
|                       |             |                         |                             |          | Zimbabwe              |

Table 4.9: List of OECD countries – DAC Donors

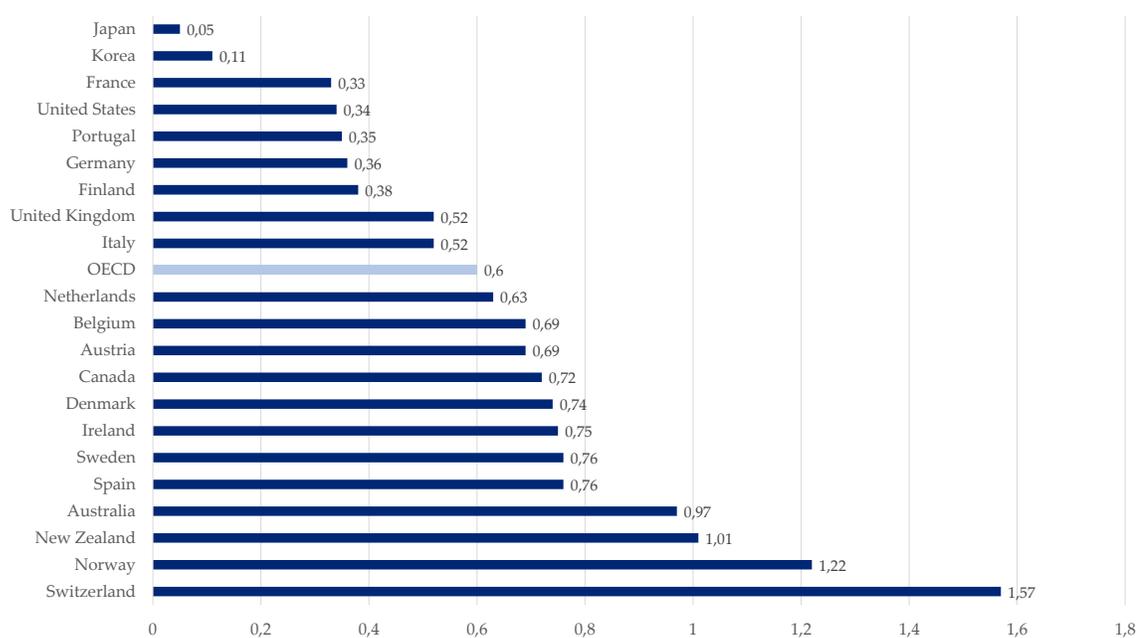
|           |         |         |             |             |                    |
|-----------|---------|---------|-------------|-------------|--------------------|
| Australia | Denmark | Greece  | Korea       | Portugal    | The United Kingdom |
| Austria   | Finland | Ireland | Netherlands | Spain       | The United States  |
| Belgium   | France  | Italy   | New Zealand | Sweden      |                    |
| Canada    | Germany | Japan   | Norway      | Switzerland |                    |

## Appendix 4.A

### Descriptive analysis

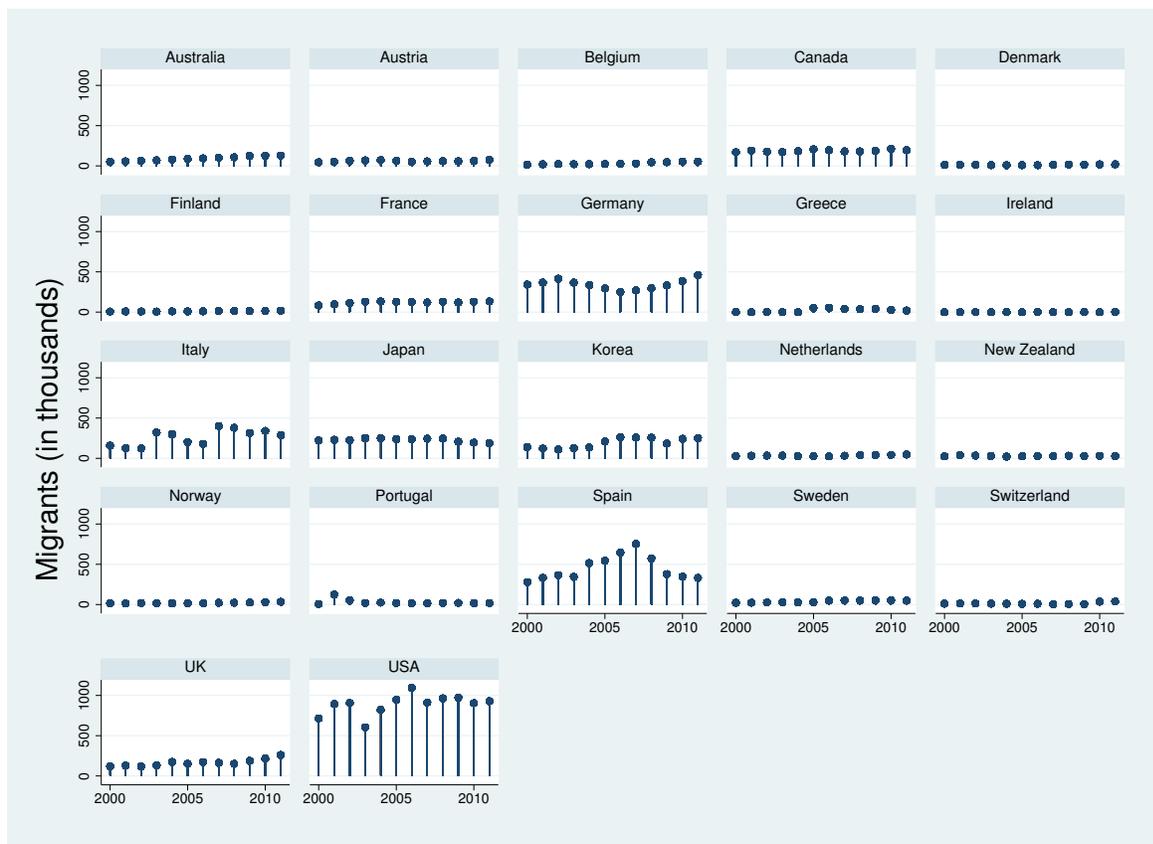
We provide some features on migration flows, aid allocations and unemployment rates in OECD countries between 2000 and 2012 to present a brief overview on the evolution of these variables. The United States of America, Spain and Germany record in average the highest entries of migrants. Italy also welcomes an important share of OECD migrants, in particular since the Arabic spring. However, as a percentage of the destination country population, Switzerland and Norway have been the biggest destination countries in 2011 (see Figure 4.A.1), including also migration from North countries. In spite of the economic and financial crisis of 2008, migration starts to increase again in 2012 for some of OECD countries (the United Kingdom, Korea, Germany and Australia) and to recover the levels observed before 2008 (see graphs in Figure 4.A.2 and Figure 4.A.1 for more detailed data).

The United Kingdom, the United States of America, Japan, France and Germany clearly appear as the biggest OECD aid donors while Spain, Italy and Australia are of second order (see graphs in Figure 4.A.3). Donors' positions are relatively stable throughout the decade. As far as unemployment is concerned, Greece, Spain, Ireland and Portugal have experienced sensitive increase in their unemployment rates after the last economic crisis of 2008 (see Figure 4.A.4). While the average level of the unemployment rate has increased by almost thirty per cent between 2008 and 2009 in OECD countries (see Figure 4.A.5), disparities among OECD countries have been deepened by the 2008 financial crisis. Norway, Australia and Korea have very low unemployment rates, even after 2008, whereas those of Spain and Greece have risen above the 20 per cent mark in 2010.



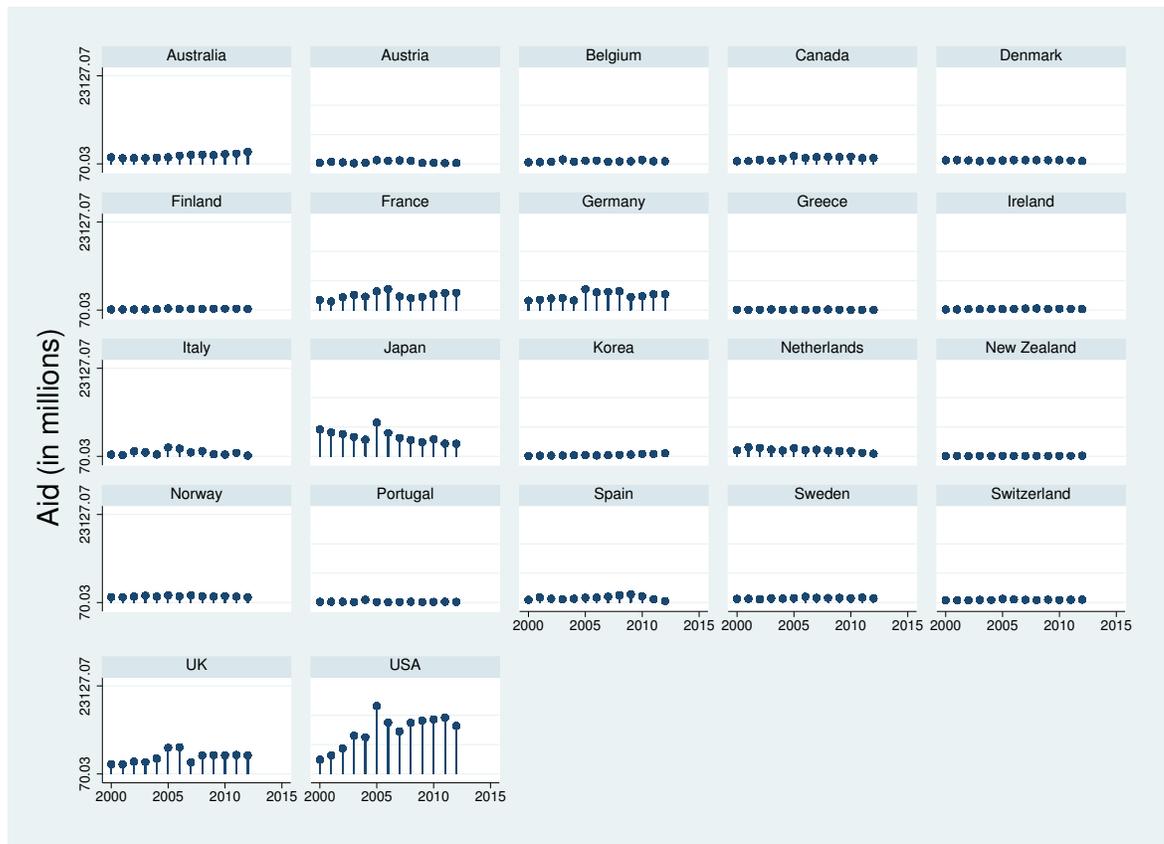
Note: Data, as a percentage of the destination population, are available on line at: [www.oecd.org/els/mig/keystat.htm](http://www.oecd.org/els/mig/keystat.htm).

Figure 4.A.1: Stock of migrants in OECD countries in 2011



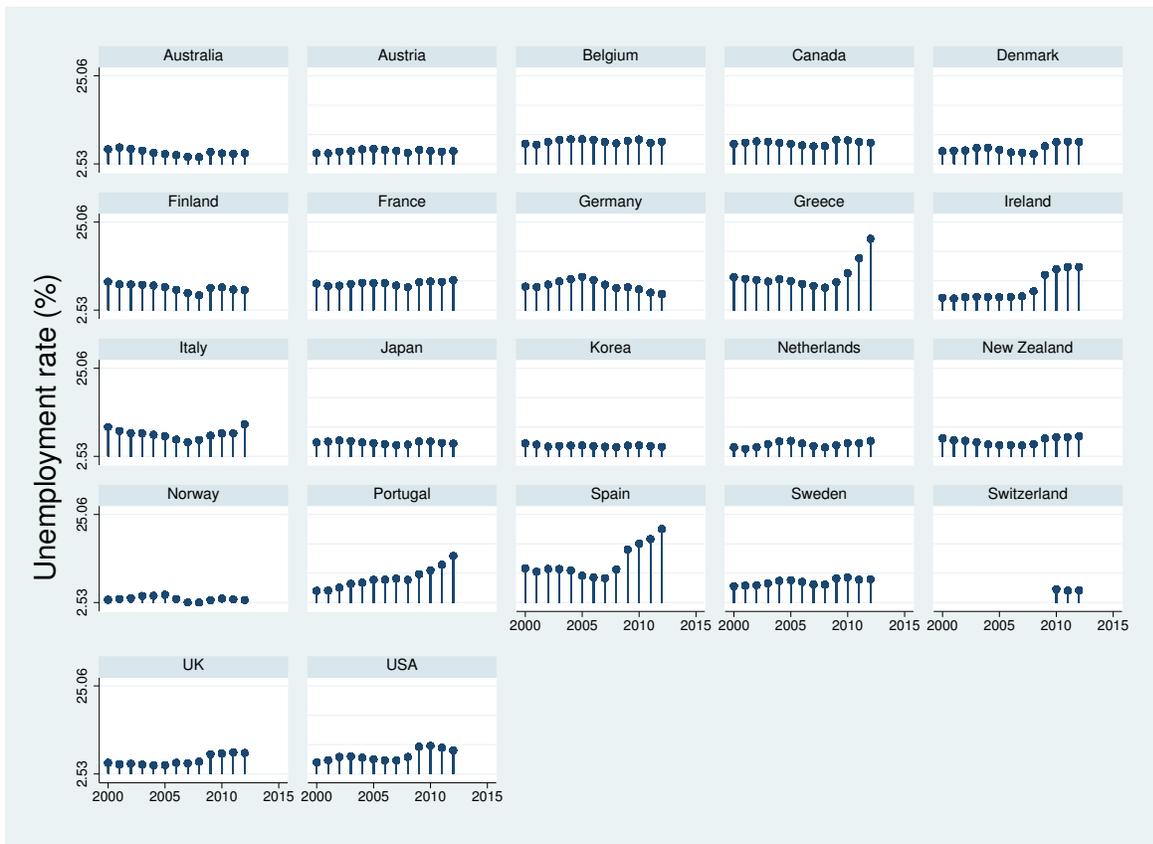
Note: Graphs are based on the data of our sample.

Figure 4.A.2: Stock of migrants in OECD countries (2000-2012)



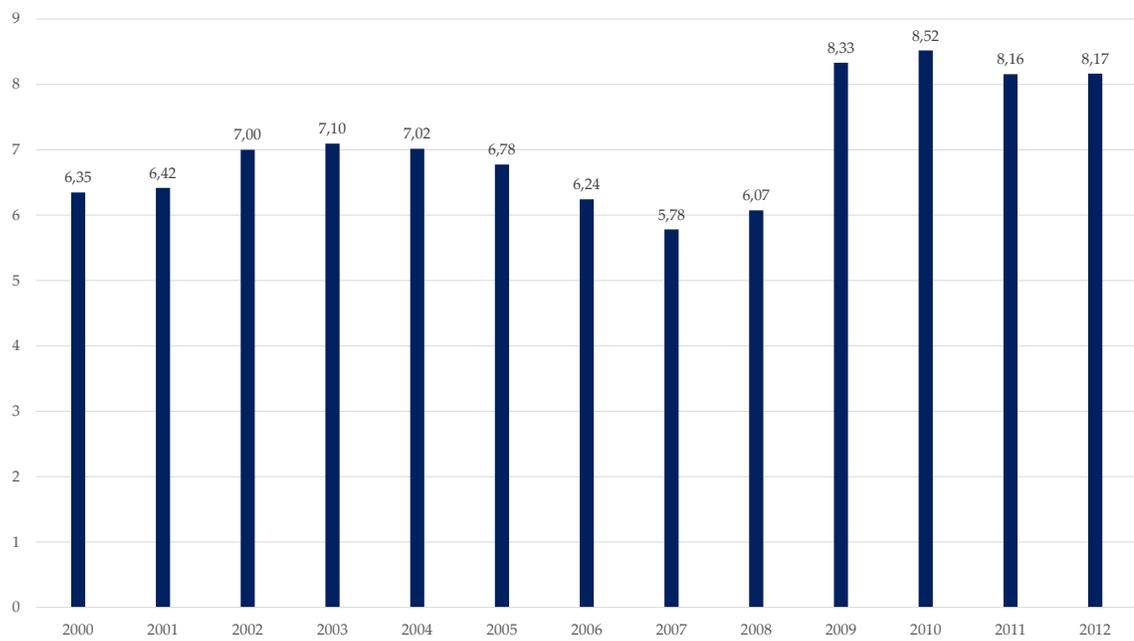
Note: Graphs are based on the data of our sample.

Figure 4.A.3: Aid from OECD countries (2000-2012)



Note: Graphs are based on the data of our sample.

Figure 4.A.4: Unemployment rates in OECD countries (2000-2012)



Note: Data on the unemployment rate as a percentage of the labor force (15-64) are available on line at: [www.oecd.org/employment/](http://www.oecd.org/employment/). Data are OECD weighted averages.

Figure 4.A.5: Average unemployment rate in OECD countries (2000-2012)

## Appendix 4.B

### Additional robustness checks

Table 4.B.1: Additional estimation results (1)

|                          | (1)                  | (2)                   | (3)                   | (4)                   | (5)                   |
|--------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <hr/>                    |                      |                       |                       |                       |                       |
| Aid                      |                      |                       |                       |                       |                       |
| Migration                | 0.217***<br>(3.63)   | 0.132**<br>(2.20)     | 0.200***<br>(3.55)    | 0.201***<br>(3.66)    | 0.200***<br>(3.55)    |
| Unemployment             | 0.080***<br>(9.01)   | 0.086***<br>(9.61)    | 0.081***<br>(9.32)    | 0.064***<br>(7.96)    | 0.102***<br>(10.86)   |
| Exports                  | 0.151***<br>(11.18)  | 0.172***<br>(12.24)   | 0.220***<br>(20.86)   | 0.203***<br>(14.75)   | 0.162***<br>(12.29)   |
| Recipient trade openness | 0.001***<br>(2.67)   | 0.001***<br>(2.85)    | 0.001***<br>(2.64)    | 0.001***<br>(4.57)    | 0.001***<br>(3.63)    |
| GDP (South)              | -0.561***<br>(-7.40) | -0.440***<br>(-11.48) | -0.645***<br>(-44.27) | -0.610***<br>(-37.46) | -0.603***<br>(-37.44) |
| Population (South)       | 0.000***<br>(3.75)   | 0.000***<br>(4.35)    | 0.000<br>(0.74)       | 0.000<br>(1.35)       | 0.000***<br>(3.47)    |
| Former colony            | 1.334***<br>(16.16)  | 1.334***<br>(16.25)   | 1.177***<br>(15.03)   | 1.260***<br>(15.89)   | 1.333***<br>(16.40)   |
| Total aid of donor       | 0.000***<br>(25.85)  | 0.000***<br>(25.79)   | 0.000***<br>(25.15)   | 0.000***<br>(26.07)   | 0.000***<br>(24.93)   |
| Japan-Asia               | 2.002***<br>(17.13)  | 2.037***<br>(17.35)   | 1.951***<br>(16.85)   | 1.965***<br>(17.57)   | 2.004***<br>(17.39)   |
| Former colony of Spain   | 0.381*<br>(1.66)     | 0.288<br>(1.25)       | 0.302<br>(1.33)       | 0.547**<br>(2.53)     |                       |
| Common language          | 0.158***<br>(3.29)   | 0.253***<br>(5.57)    | 0.186***<br>(4.84)    | 0.262***<br>(6.77)    | 0.130***<br>(3.36)    |
| Governance quality       | -0.014<br>(-0.38)    | -0.031***<br>(-3.43)  | 0.002<br>(0.53)       | -0.003<br>(-0.81)     | -0.002<br>(-0.37)     |
| Constant                 | 2.016***<br>(2.83)   | 0.685*<br>(1.65)      | 1.536***<br>(8.19)    | 1.492***<br>(7.03)    | 2.059***<br>(10.03)   |
| <hr/>                    |                      |                       |                       |                       |                       |
| Migration                |                      |                       |                       |                       |                       |
| Aid                      | 0.159***<br>(9.35)   | 0.159***<br>(9.27)    | 0.132***<br>(8.36)    | 0.190***<br>(8.34)    | 0.160***<br>(9.43)    |
| Imports                  | 0.076***<br>(11.72)  | 0.076***<br>(11.67)   | 0.042***<br>(16.86)   | 0.066***<br>(9.77)    | 0.084***<br>(13.00)   |
| Recipient trade openness | -0.000**<br>(-2.19)  | -0.000**<br>(-2.40)   | -0.000***<br>(-3.70)  | -0.001***<br>(-3.39)  | -0.000**<br>(-2.40)   |
| GDP (South)              | 0.017<br>(1.37)      | -0.032**<br>(-2.40)   | 0.045***<br>(4.11)    | 0.044***<br>(2.83)    | 0.005<br>(0.40)       |
| <hr/>                    |                      |                       |                       |                       |                       |

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APPENDIX 4

Table 4.B.1 – *Continued from previous page*

|                            | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Population (South)         | 0.001***<br>(16.00)   | 0.001***<br>(15.78)   | 0.001***<br>(36.53)   | 0.001***<br>(17.97)   | 0.001***<br>(16.11)   |
| Population (North)         | -0.000<br>(-1.02)     | -0.000<br>(-1.25)     | 0.001***<br>(5.53)    | -0.000*<br>(-1.90)    | -0.000*<br>(-1.85)    |
| Distance                   | -0.000***<br>(-13.77) | -0.000***<br>(-13.69) | -0.000***<br>(-18.97) | -0.000***<br>(-13.16) | -0.000***<br>(-14.06) |
| Former colony              | -0.068<br>(-1.32)     | -0.063<br>(-1.21)     | 0.071<br>(1.61)       | -0.137**<br>(-2.32)   | -0.213***<br>(-4.11)  |
| Former colony of the UK    | 0.613***<br>(10.08)   | 0.625***<br>(10.20)   | 0.656***<br>(11.16)   | 0.612***<br>(9.97)    | 0.738***<br>(12.05)   |
| Japan                      | -0.333***<br>(-7.95)  | -0.333***<br>(-7.86)  | -0.268***<br>(-7.21)  | -0.365***<br>(-6.72)  | -0.343***<br>(-8.68)  |
| Western offshoots          | 0.106***<br>(6.59)    | 0.120***<br>(7.33)    | 0.123***<br>(8.07)    | 0.082***<br>(4.02)    | 0.115***<br>(7.38)    |
| USA-Latin America          | 0.781***<br>(18.44)   | 0.817***<br>(19.01)   | 0.778***<br>(18.82)   | 0.778***<br>(18.10)   | 0.778***<br>(18.49)   |
| Common language            | 0.082***<br>(4.83)    | 0.048***<br>(2.76)    | 0.078***<br>(4.76)    | 0.063***<br>(3.54)    | 0.069***<br>(4.04)    |
| Unemployment               | -0.021***<br>(-4.21)  | -0.022***<br>(-4.37)  | -0.010**<br>(-2.35)   | -0.017***<br>(-2.94)  | -0.027***<br>(-5.40)  |
| Donor trade openness       | -0.004***<br>(-12.24) | -0.004***<br>(-12.16) | -0.003***<br>(-12.32) | -0.004***<br>(-10.90) | -0.004***<br>(-13.97) |
| Youth unemployment (South) | 0.002***<br>(4.78)    | 0.004***<br>(7.18)    | 0.001***<br>(2.88)    | 0.003***<br>(4.91)    | 0.003***<br>(5.49)    |
| Constant                   | -0.697***<br>(-8.60)  | -0.359***<br>(-4.00)  | -0.442***<br>(-6.54)  | -0.728***<br>(-8.71)  | -0.685***<br>(-8.53)  |
| Observations               | 11678                 | 11678                 | 11678                 | 10749                 | 11429                 |
| R <sup>2</sup> (Aid)       | 0.4376                | 0.4300                | 0.4761                | 0.4332                | 0.4338                |
| R <sup>2</sup> (Migration) | 0.3086                | 0.4844                | 0.3263                | 0.2625                | 0.4252                |

*Notes:* Table 4.B.1 reports supplemental estimation results, all consistent with our benchmark results (presented in Table 4.1). Column (1) reports the joint estimates of model (4.1) assuming that *Governance quality* is endogenous to *Aid*. Column (2) reports the joint estimates of model (4.1) assuming that *GDP (South)* is endogenous to *Aid*. Column (3) reports the joint estimates of model (4.1) assuming that *Imports* is not endogenous to *Migration*. Column (4) reports the joint estimates of model (4.1) excluding Norway and Switzerland, the two OECD countries with the highest shares of migrants. Column (5) reports the joint estimates of model (4.1) excluding Spain and Greece, the two OECD countries with the highest unemployment rates over the period. Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 4.B.2: Additional estimation results (2)

|                          | (1)                   | (2)                   | (3)                   |
|--------------------------|-----------------------|-----------------------|-----------------------|
| <hr/>                    |                       |                       |                       |
| Aid                      |                       |                       |                       |
| Migration                | 0.196***<br>(2.76)    | 0.338***<br>(6.07)    | 0.291***<br>(4.78)    |
| Unemployment             | 0.069***<br>(6.97)    | 0.072***<br>(8.08)    | 0.045***<br>(4.40)    |
| Exports                  | 0.139***<br>(9.76)    | 0.135***<br>(10.25)   | 0.117***<br>(7.65)    |
| Recipient trade openness | 0.001**<br>(2.06)     | 0.001**<br>(2.37)     | 0.001*<br>(1.90)      |
| GDP (South)              | -0.581***<br>(-34.55) | -0.594***<br>(-36.36) | -0.657***<br>(-28.73) |
| Population (South)       | 0.001***<br>(4.51)    | 0.000***<br>(2.72)    | 0.000***<br>(2.85)    |
| Former colony            | 1.451***<br>(16.88)   | 1.287***<br>(15.36)   | 1.237***<br>(11.77)   |
| Total aid of donor       | 0.000***<br>(26.97)   | 0.000***<br>(23.77)   | 0.000***<br>(19.12)   |
| Japan-Asia               | 2.073***<br>(17.35)   | 1.979***<br>(17.36)   | 1.922***<br>(17.35)   |
| Former colony of Spain   |                       | 0.455**<br>(2.03)     | 0.300<br>(1.31)       |
| Common language          | 0.193***<br>(4.69)    | 0.116***<br>(2.98)    | 0.249***<br>(3.71)    |
| Governance quality       | -0.001<br>(-0.11)     | 0.005<br>(1.20)       | -0.014***<br>(-2.82)  |
| Constant                 | 2.392***<br>(10.40)   | 2.619***<br>(12.68)   | 3.606***<br>(15.34)   |
| <hr/>                    |                       |                       |                       |
| Migration                |                       |                       |                       |
| Aid                      | 0.118***<br>(6.44)    | 0.139***<br>(8.25)    | 0.175***<br>(7.01)    |
| Imports                  | 0.086***<br>(12.24)   | 0.073***<br>(10.37)   | 0.095***<br>(10.67)   |
| GDP (South)              | 0.473***<br>(7.62)    | 0.380***<br>(6.56)    | 0.361***<br>(3.63)    |
| GDP (South) squared      | -0.032***<br>(-7.96)  | -0.025***<br>(-6.56)  | -0.024***<br>(-3.96)  |
| Recipient trade openness | -0.000**<br>(-2.46)   | -0.000**<br>(-2.42)   | -0.000<br>(-1.17)     |
| Population (South)       | 0.001***<br>(14.29)   | 0.001***<br>(16.22)   | 0.001***<br>(11.09)   |
| <hr/>                    |                       |                       |                       |

*Continued on next page*

Table 4.B.2 – *Continued from previous page*

|                            | (1)                   | (2)                   | (3)                   |
|----------------------------|-----------------------|-----------------------|-----------------------|
| Population (North)         | -0.000<br>(-0.89)     | -0.000<br>(-0.09)     | 0.000<br>(1.55)       |
| Distance                   | -0.000***<br>(-11.46) | -0.000***<br>(-13.67) | -0.000***<br>(-8.60)  |
| Former colony              | -0.163***<br>(-2.69)  | -0.073<br>(-1.41)     | -0.108<br>(-1.41)     |
| Former colony of the UK    | 0.770***<br>(12.06)   | 0.705***<br>(11.41)   | 0.677***<br>(7.63)    |
| Japan                      | -0.309***<br>(-6.56)  | -0.288***<br>(-6.78)  | -0.400***<br>(-7.29)  |
| Western offshoots          | 0.164***<br>(7.82)    | 0.080***<br>(4.93)    | 0.090***<br>(4.49)    |
| USA-Latin America          | 0.691***<br>(3.84)    | 0.802***<br>(19.24)   | 0.527***<br>(10.45)   |
| Common language            | 0.051***<br>(2.76)    | 0.085***<br>(4.91)    | 0.245***<br>(7.56)    |
| Unemployment               | -0.020***<br>(-3.88)  | -0.027***<br>(-5.19)  | -0.010*<br>(-1.70)    |
| Donor trade openness       | -0.004***<br>(-11.31) | -0.004***<br>(-11.46) | -0.004***<br>(-10.27) |
| Youth unemployment (South) | 0.000<br>(0.75)       | 0.001**<br>(2.37)     | 0.003***<br>(3.32)    |
| Constant                   | -2.302***<br>(-11.49) | -1.863***<br>(-10.23) | -2.357***<br>(-6.80)  |
| Observations               | 9558                  | 10626                 | 7930                  |
| R <sup>2</sup> (Aid)       | 0.4472                | 0.4502                | 0.4738                |
| R <sup>2</sup> (Migration) | 0.4435                | 0.4756                | 0.4876                |

*Notes:* Table 4.B.2 reports estimation results of model (4.1) when *GDP (South) squared* is included in the migration equation to test the “hump-shaped pattern”. Column (1) reports the joint estimates of model (4.1) excluding Latin American countries. Column (2) reports the joint estimates of model (4.1) excluding MENA countries. Column (3) reports the joint estimates of model (4.1) excluding Sub-Saharan African countries. Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

Table 4.B.3: Additional estimation results (3)

|                          | (1)                  | (2)                   |
|--------------------------|----------------------|-----------------------|
| <hr/>                    |                      |                       |
| Aid                      |                      |                       |
| Migration                | 0.087*<br>(1.70)     | 0.270***<br>(4.88)    |
| Unemployment             | 0.106***<br>(12.76)  | 0.091***<br>(9.53)    |
| Exports                  | 0.240***<br>(21.47)  | 0.155***<br>(11.61)   |
| Recipient trade openness | 0.001***<br>(2.99)   | 0.001***<br>(3.66)    |
| GDP (South)              | -0.481***<br>(-4.52) | -0.595***<br>(-37.28) |
| Population (South)       | -0.002<br>(-1.20)    | 0.000***<br>(2.86)    |
| Former colony            | 1.234***<br>(17.50)  | 1.311***<br>(16.21)   |
| Total aid of donor       | 0.000***<br>(25.08)  | 0.000***<br>(24.12)   |
| Japan-Asia               | 1.720***<br>(16.64)  | 1.951***<br>(17.05)   |
| Former colony of Spain   | -0.116<br>(-0.58)    | 0.454**<br>(2.04)     |
| Common language          | 0.241***<br>(6.06)   | 0.125***<br>(3.20)    |
| Governance quality       | 0.028**<br>(2.13)    | -0.001<br>(-0.35)     |
| Constant                 | 2.180***<br>(3.32)   | 2.035***<br>(9.66)    |
| <hr/>                    |                      |                       |
| Migration                |                      |                       |
| Aid                      | 0.161***<br>(8.18)   | 0.199***<br>(10.84)   |
| Imports                  | 0.065***<br>(11.51)  | 0.087***<br>(13.20)   |
| Recipient trade openness | -0.000<br>(-1.59)    | -0.000<br>(-1.56)     |
| GDP (South)              | 0.062<br>(1.35)      | 0.022*<br>(1.75)      |
| Population (South)       | 0.007***<br>(9.37)   | 0.001***<br>(13.20)   |
| Population (North)       | -0.000<br>(-0.12)    | -0.001***<br>(-3.60)  |
| <hr/>                    |                      |                       |

*Continued on next page*

Table 4.B.3 – *Continued from previous page*

|                                        | (1)                   | (2)                   |
|----------------------------------------|-----------------------|-----------------------|
| Distance                               | -0.000***<br>(-5.59)  | -0.000***<br>(-11.62) |
| Former colony                          | -0.057<br>(-1.11)     | -0.173***<br>(-3.21)  |
| Former colony of the UK                | 0.597***<br>(10.49)   | 0.594***<br>(9.66)    |
| Japan                                  | -0.385***<br>(-9.04)  | -0.403***<br>(-9.47)  |
| Western offshoots                      | 0.037**<br>(2.31)     | 0.091***<br>(5.56)    |
| USA-Latin America                      | 0.922***<br>(21.68)   | 0.771***<br>(17.89)   |
| Common language                        | 0.167***<br>(8.57)    | 0.078***<br>(4.44)    |
| Unemployment                           | -0.016***<br>(-3.19)  | -0.027***<br>(-4.80)  |
| Donor trade openness                   | -0.004***<br>(-13.48) | -0.005***<br>(-13.92) |
| Youth unemployment (South)             | 0.001<br>(0.85)       | 0.003***<br>(5.80)    |
| Constant                               | -0.976***<br>(-3.62)  | -0.909***<br>(-11.00) |
| Observations                           | 11678                 | 11678                 |
| Time fixed effects (not reported)      | Yes                   | Yes                   |
| Recipient fixed effects (not reported) | No                    | Yes                   |
| R <sup>2</sup> (Aid)                   | 0.4443                | 0.5814                |
| R <sup>2</sup> (Migration)             | 0.3996                | 0.5525                |

*Notes:* Table 4.B.3 reports estimation results of model (4.1) when it includes specific effects. Column (1) reports estimates of model (4.1) when time effects (namely common shocks to all countries) are added to the model. Column (2) reports estimates of model (4.1) when time effects and recipient country effects are added to the model. We do not include donor country effects because our model becomes mis-specified (the R<sup>2</sup> becomes negative). We cannot include specific effect to each pair of countries and common to all the periods because this would generate too many variables that cannot be handle with our version of Stata. Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

## Appendix 4.C

### Supplemental estimation results – The unemployment equation

#### The unemployment equation

We provide estimates of equation (4.C.1), an unemployment equation where the explanatory variables of *Unemployment* are those used as external instruments presented in Section 4.2:

$$Unemployment_{jt} = \zeta_0 + \zeta_1 X''_{jt} + \epsilon''_{jt} \quad (4.C.1)$$

where  $j$  stands for the OECD country,  $t$  for the year and  $\epsilon''_{jt}$  for the error term.  $Unemployment_{jt}$  refers to the unemployment rate in the OECD country  $j$  at time  $t$ .  $X''_{jt}$  refers to the set of explanatory variables used for the unemployment equation: *Union Density*, *EPL*, *Terms of Trade Adjustment*, *Inflation Change*, *Real Interest Rate*, *Tax Wedge* and *Rural Population*. Table 4.6 provides a detailed description of the variables and their sources. This equation cannot be added to model (4.1) to jointly estimate *Unemployment*, *Aid* and *Migration* because *Unemployment* is not a bilateral variable. In an extended work (still in progress), we enlarge model (4.1) with a third equation where *Exports of OECD nations* is the dependent variable.

#### An analysis of instruments used for unemployment

We analyze the determinants of unemployment in OECD nations used as additional instruments for estimating model (4.1). Union density enters with a negative sign. This result advises that the corporatist bargaining tradition plays a significant role for reducing unemployment in the majority of the countries in our sample, in particular through higher workers' productivity and willingness to train (Belot and Van Ours, 2004; Sturn, 2013). Contrary to Sturn (2013), high real interest rates are associated with lower unemployment rates. As expected, we also find that the short-term unemployment effect of changes in inflation is negative (in accordance with Belot and Van Ours (2004) or Baccaro and Rei (2007), and with the short-run Phillips curve). In line with Blanchard and Katz (1999), we find a non-effect of terms of trade adjustment on the rate on unemployment. The proportion of the rural population enters with a positive sign, indicating that job seekers in a rural context are more likely to be isolated from job opportunities. Lindsay et al. (2003) assessed that this causal link holds regardless of the unemployment duration or personal

employability assets. Finally, high tax wedges are likely to worsen unemployment rates, which corroborates the findings of [Belot and Van Ours \(2004\)](#) and [Blanchard and Wolfers \(2000\)](#).

Table 4.C.1: Additional estimation results (4) – The unemployment equation

|                           |                       |
|---------------------------|-----------------------|
| Union density             | -0.021***<br>(-10.48) |
| Tax wedge                 | 0.088***<br>(26.78)   |
| EPL                       | 0.284***<br>(7.34)    |
| Rural population          | 0.008**<br>(2.15)     |
| Inflation change          | -0.125***<br>(-43.73) |
| Real interest rate        | -0.108***<br>(-17.89) |
| Terms of trade adjustment | 0.000***<br>(34.28)   |
| Constant                  | 3.545***<br>(23.91)   |
| Observations              | 24864                 |
| R <sup>2</sup>            | 0.2216                |

*Notes:* Table 4.C.1 reports estimation results of equation (4.C.1) (a simple linear regression model for panel data) for information, namely estimates of the main determinants of unemployment used as external instruments for *Unemployment* in our study. Notice that we cannot add an unemployment equation in model (4.1) because *Unemployment* is not a bilateral variable. Robust standard errors in brackets. The asterisks \*\*\*, \*\*, and \* are 1%, 5%, and 10% of significant levels, respectively.

## Appendix 4.D

### Summary of hypotheses and implications

Table 4.D.1 reports a summary of our priors on aid, migration and unemployment linkages as well as their related policy implications.

Table 4.D.1: Hypotheses and implications of our study

| Link                     | Hypothesis for a positive link (a)                                                                                                                                                                                                                                                                                                                                 | Hypothesis for a negative link (b)                                                                                                                                                                                                  | Policy implication (all things equal)                                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Migration<br>→<br>Aid    | <p><i>Lobbying activities</i> (migrants in OECD countries press for increasing aid allocations towards their origin country), <a href="#">Berthélemy et al. (2009)</a>;<br/> <i>Networking effect</i> (migrants residing in the donor country strengthen links between destination and origin countries), <a href="#">Berthélemy et al. (2009)</a></p>             | <p><i>Income differential effect</i> (less incentives to leave because aid reduces differences between destination and origin countries' incomes), <a href="#">Angelucci (2004)</a>; <a href="#">Azam and Berlinschi (2009)</a></p> | Relaxing migration policies pressures for generous aid policies                                                                                                                |
| Aid<br>→<br>Migration    | <p><i>Attraction effect</i> (contact network, information on the donor country), <a href="#">Berthélemy et al. (2009)</a>; <a href="#">Azam and Berlinschi (2009)</a>; <i>Income effect</i> (aid releases financial constraints and unable migrants to bear the cost of leaving), <a href="#">Angelucci (2004)</a>; <a href="#">Azam and Berlinschi (2009)</a></p> | <p><i>Income differential effect</i> (less incentives to leave because aid reduces differences between destination and origin countries' incomes), <a href="#">Angelucci (2004)</a>; <a href="#">Azam and Berlinschi (2009)</a></p> | <p>(a) Generous aid policies need restrictive migration policies to keep constant inflows of migrants; (b) Generous aid policies strengthen restrictive migration policies</p> |
| Unemployment<br>→<br>Aid | <p>Due to internal pressure in times of crisis, donors increase aid allocations to developing countries to decrease incentive for migration (<i>our hypothesis</i>)</p>                                                                                                                                                                                            | <p>In time of economic crisis (worsening of economic health), OECD nations focus on domestic policies, <a href="#">Tingley (2010)</a></p>                                                                                           | <p>If aid indeed reduces migration, generous aid policies may serve donors' interests (they appease internal pressure for protecting the job market from new workers)</p>      |

*Continued on next page*

| Table 4.D.1 – <i>Continued from previous page</i> |                                    |                                                                                                                                                                                                                                                               |                                                                                                |
|---------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Link                                              | Hypothesis for a positive link (a) | Hypothesis for a negative link (b)                                                                                                                                                                                                                            | Policy implication (all things equal)                                                          |
| Unemployment<br>→ Migration                       |                                    | Migrants chose their destination country according to <i>job opportunities</i> , <a href="#">Islam (2007)</a> ; OECD nations with higher unemployment rates are willing to settle more restrictive migration policies, <a href="#">Boubtane et al. (2013)</a> | Unemployment policies need restrictive migration policies to keep constant inflows of migrants |

# General Conclusion

This dissertation contributes to a better understanding of foreign aid, either on its consequences or on the aid policy itself. The contribution of this analysis to the on-going debate about foreign aid is fourfold and brought throughout Chapters 1, 2, 3 and 4.

The first Chapter has been dedicated to the analysis of the governance effect of foreign assistance in Africa, the most aid-dependent continent, over the 1997-2008 period. While the post-Cold War period has undergone a change in the donor community towards greater attention over the quality of institutions, the governance efficiency of foreign aid remains controverted (see [Askarov and Doucouliagos \(2013\)](#)). The central contribution of this investigation has been to provide an explanation for the existing empirical discrepancies. We showed that the recipient's reliance on natural resources, prone to deteriorate economic and political outcomes ([Jensen and Wantchekon, 2004](#); [Djankov et al., 2008](#)), conditions the benefits of foreign aid. We evidenced that African countries that do not rely on their rents over natural resources are indeed more inclined to improve their quality of governance with new aid entries.

Our GMM estimates also confirmed that the positive effect of foreign assistance on domestic institutions is conditioned by the nature of aid inflows ([Charron, 2011](#)). When aid is allocated by multilateral agencies – assumed to be less tied to political and strategic interests than bilateral donors – aid exerts a positive influence on the quality of governance. Otherwise, when aid comes from bilateral donors, the aid-governance nexus is either statistically not significant or negative. In addition, these findings derived from a dynamic panel data analysis held even for the eighties, say before that the promotion of good governance became a central target, and held for the inclusion of the Middle East and North Africa region, highly oil-dependent. We hence provided support for (i) targeting aid towards countries with low rents derived from oil resources and (ii) for giving priority to multilateral aid allocations.

A better knowledge of the context in which aid may be efficient is important at a time when donors increasingly put emphasis on promoting good governance in developing

countries. When providing foreign aid to fight corruption and promote institutional reforms, donor countries should consider that their assistance would be much more efficient if allocated through a multilateral agency. Pooling bilateral aid funds may raise aid effectiveness. Careful attention should be also given to the size of rents derived from natural resources because governments lying on such funds would be less prone to improve their management. Otherwise, conditions on the use of foreign aid should be more unyielding.

The second Chapter of this dissertation re-examined the issue of causality between aid and corruption, a particular aspect of governance that has attracted much of donors' attention and policy makers' interest. Little of the literature has documented the possibility of a reverse causation between aid and corruption though it has often been assumed (Svensson, 2000; Alesina and Weder, 2002). We specifically extended the knowledge on the aid-corruption linkage applying a Granger causality approach to test for the *causal* relationship rather than for the *contemporaneous* effect.

We embedded these original Granger-causality estimations in GMM dynamic panel estimators using the widest sample data available, say data covering 71 countries from 1996 to 2008. Our findings can be summarized as follows. (i) There is no significant Granger causality in either direction; (ii) this result held for both bilateral and multilateral aid and for each continent; (iii) even in the post-Cold War period aid alone does not Granger cause corruption, neither corruption does help to predict amounts of foreign assistance.

We can draw (carefully) some important insights from this analysis, in particular in terms of aid allocations. Even though the international community stresses the importance of fighting corruption, aid alone appears to be not efficient to *cause* a decrease in corruption. Similarly, large inflows of foreign aid do not compulsorily result in higher corruption. The donor community should either dissociate both concepts or at least account for other characteristics and determinants that may condition the aid-corruption nexus in the long term. If donors are determined about fighting corruption over time, policy should be shifted in order to better allocate assistance: specific countries, conditions on the use of aid or intermediate channels, for example, should be targeted and accounted for to enable aid to lower corruption.

The third Chapter has contributed to the voluminous and discordant aid-economic growth literature by looking into the concept of technical efficiency. Our study, in the vein of those of Veiderpass and Andersson (2011) and Alvi and Senbeta (2012a), aimed at extending a new branch of the aid empirical literature interested in specific economic consequences of foreign assistance. Instead of targeting economic growth as a whole, we focused on the efficiency of production, which measures how well inputs are exploited and combined in a country compared to the best practice country. Improving efficiency does not

need any technological progress or productivity growth (as measured by TFP in [Alvi and Senbeta \(2012a\)](#)) but only a better use of existing inputs. In order to separate efficiency of production from random shocks, we applied a Stochastic Frontier Approach (SFA) instead of a Data Envelopment Analysis (DEA) employed in [Veiderpass and Andersson \(2011\)](#).

Based on the available data, efficiency scores have been computed for 67 countries over the period 1985-2010. We then have investigated the exogenous effect of foreign assistance on our estimated score of technical efficiency. Our essay displayed two main empirical findings. (i) Aid, either bilateral or multilateral, supports improvements in terms of efficiency, and (ii) the aid-efficiency nexus is strengthened in democratic and macroeconomic stable countries. While the economic growth effect of aid has been called into question ([Doucouliagos and Paldam, 2011](#)), the efficiency effect of aid seems to be sound and substantial.

The propitious aid-efficiency nexus may give support to aid allocations, in particular when donors target countries with solid policies. Given the determinant role of efficiency on economic growth for low income countries, recipient countries could grow without any technological progress but only with a better use of their resources enabled by additional assistance. Donors should also support aid recipient countries to devise appropriate policies, which are able to strengthen the benefits of foreign assistance and to avoid aid diversion away from the intended purpose. In particular, the fact that aid is more efficient in democracies suggests that political liberalization should also be important in the donors' policy agenda.

The fourth Chapter took a different approach from the traditional ones that grant interest on aid consequences and aid determinants. We have turned our attention to the following question: what are the donors' domestic sources of support for foreign aid? Aside aid motives in terms of development ([Alesina and Dollar, 2000](#); [Dreher et al., 2008](#)) and in terms of recipients needs and merits ([Burnside and Dollar, 2000](#); [Chauvet and Guillaumont, 2003](#)), other patterns may explain the amount of aid allocated. The donor's political, social and economic environment may also condition the size and direction of aid allocations. Although useful for ensuring the coherence of donors' policies, this discussion has not received systematic attention. To address this concern, we followed [Berthélemy et al. \(2009\)](#) and applied a gravity model where aid and migration were simultaneously determined. To this model, we added the burden of unemployment with the particular aim of evaluating how the donor's aid policy is dependent on its health and migration policy.

Our data covering 22 DAC countries and 153 recipient countries over the 2000 decade suggested that aid, migration and unemployment policies are tightly interconnected. Sev-

eral policy implications can be inferred. First, as unemployment is positively associated with foreign aid, we explained that donors may want to use their assistance as a tool designed to control their unemployment. Allocating aid to developing countries is supposed to reduce income differences that motivate migrants' decisions. In turn, the donor country would seemingly face less pressure on its labor market. However, we also found that migrants are attracted to countries facing lower unemployment rates. Restrictive migration policies should hence be implemented if such a strategy is considered by a developed economy. Second, we confirmed that aid and migration policies can be substitutes (as in [Lahiri and Raimondos-Møller \(2000\)](#) and [Berthélemy et al. \(2009\)](#)). The stock of migrants in a donor country may pressure for higher aid amounts towards their origin country as well as a donor country is more likely to attract migrants from countries to which they allocated foreign assistance. In other words, reducing aid allocations (restrictive aid policy) may have similar consequences as implementing a restrictive migration policy. Alternatively, OECD economies should restrain their migration policies if they settle generous aid policies to keep constant the inflow of migrants.

We briefly conclude by presenting the next direction we plan to take for future research. We foresee to pursue with a study of an aid allocation criteria.<sup>19</sup> Developing countries face important environmental stakes that could possibly be mitigated with foreign aid. Deforestation, carbon pollution, floods, rising sea levels, land degradation, soil erosion and droughts have increased in number and intensity with the evolution of environment (see [United Nations \(2006\)](#)). For example, according to the Millennium Development Goals (MDGs) report of 2013, more than fourteen million hectares of forest (meaning also potential food and wood) have disappeared in Africa and Latin America between 2005 and 2010. Developing countries are solicited to control their use of resources in order to preserve a sustainable environment. However, these countries presumably need to increase their use of energy in order to support their own economic growth ([Arvin and Kayani, 2009](#)). To compensate such effort and to enable developing countries to soften the consequences of the environmental change, donors have committed at the Monterrey consensus (2002) on targeting specifically the environmental issue. Yet, the MDGs are still far from being reached. Based on the work of [Collier and Dollar \(2002\)](#), our aim is to determine the optimal amount of aid allocated to each developing country accounting for their environmental situation.

According to [Collier and Dollar \(2002\)](#), an allocation of aid is optimal if it maximizes the poverty reduction in recipient countries. More aid should therefore be allocated to countries that use it more efficiently to reduce poverty. Our idea is that the effect of

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<sup>19</sup>This project is a joint one with Phu Nguyen Van and Kim Pham.

environment on economic growth and then on poverty reduction is an important matter to analyze how aid can be distributed in order to maximize poverty reduction. The care of environment in allocating aid reflects both donors and recipients' interests and needs. Because donors are concerned by the consequences of unstable environment, even outside their borders, donors may condition aid to the quality of recipients' environment and reward recipient countries making effort to preserve it. Donors can also enable countries to develop in a sustainable way and to improve their use of energy and natural resources. Our challenge is to study both theoretically and empirically the question of efficient and fair allocation of aid when the objective is not only to maximize the reduction of poverty but also to maximize the environmental protection.

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# General Appendices

The subsequent general Appendices provide additional information and details on key elements raised in this dissertation, as well as technical information.

Appendix A presents (i) a succinct history of foreign assistance and its definition, and (ii) general trends, patterns and attributes of aid allocations. This Appendix is purely descriptive and displays a brief overview of the shape of foreign aid. Appendix B offers a summary of the literature interested in the consequences (i) of different types of aid (say loans, grants, budget support, project aid and technical assistance) and (ii) of different types of donors (namely bilateral and multilateral donors). An apparent conclusion has emerged from the survey of this literature: bilateral aid and multilateral aid have presumably different consequences on aid recipient countries. This review has led us to consider that the distinction between bilateral and multilateral aid may be relevant in our studies. To justify why different types of donors may condition aid outcomes, Appendix C outlines the motives that may influence aid allocations, with a particular emphasis on the differences between bilateral and multilateral aid allocations. We summarize the literature findings on the motives driving donors' allocations, namely on (i) recipients needs, (ii) donors interests and (iii) recipients merits. Appendix D presents a glossary of the aid terms employed in the dissertation. Finally, Appendix E displays the websites from which the main data in our studies are extracted.

# Chapter A | A Succinct History and Grounding over Foreign Aid

Since the sixties, foreign aid has been one of the most important source of external finance for developing countries. These countries have received the equivalent of 3.000 billion US 2010 dollars between 1960 and 2012. To understand accurately what underlies such amounts of money, it is important to grasp the aid architecture and its origins. In this descriptive Appendix, we therefore present the definition and evolution of foreign assistance since 1944 as well as the main patterns of aid allocations.

## A.1 The birth and definition of foreign aid: A brief overview

In July 1944, the International Monetary Fund and the World Bank has bee, created during the international conference of Bretton Woods. These institutions were designed to provide assistance and promote development in developing countries and, in particular, to enable the recovery of European countries after World War II. The Marshall plan (1947) has provided such assistance with the aim of re-raising Europe infrastructure, reinforcing Europe economy and stabilizing the region.<sup>1</sup> In 1949, Harry Truman, president of the United States, additionally claimed the emergency to afford financial and technical assistance to developing countries. To this end, foreign aid has gathered financial operations and mechanisms among which donations, loans granted at a preferential rate and loans negotiated between donors and recipients (see Table D.1 for an overview of aid terms).

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<sup>1</sup>On April 29, 1812, the American House of Representatives already voted a resolution to provide assistance to the victims of the earthquake of Caracas. This act was the first in terms of foreign aid. But modern foreign aid, interlocked in an international cooperation, only started with the end of World War II.

Nonetheless, aid donors' motivations have not only covered the development of recipient countries. Aid, for example, has also been used as a foreign tool to contain the expansion of communism, to support new markets for the United States and to foster economic and political considerations. Donors ideologies, strategies, views and focuses have gradually changed over time from one objective to another, among which supporting economic growth, eradicating poverty, opening markets, stabilizing financial structures and promoting good governance in recipient countries (Table A.1 provides a brief summary of aid history and trends).<sup>2</sup>

At the end of the fifties, resources dedicated to the Europe recovery were not worthwhile any more, making developing countries the main matter of donors' attention (see [Kanbur \(2006\)](#) and [Hjertholm and White \(2000\)](#) for a detailed history of foreign aid). Created in 1960, the OECD Development Assistance Committee (DAC) aims at coordinating, shaping and improving the allocation of foreign assistance to developing countries. The DAC is an international forum composed of the largest aid donors. Since 1969, the DAC has defined foreign aid as Official Development Assistance (ODA). ODA is for that matter the main measure used in aid targets, assessments and studies. Aside from private aid, ODA delineates the flows provided by "official agencies, including state and local governments, or by their executive agencies; and each transaction of which is administered with the promotion of the economic development and welfare of developing countries as its main objective; and is concessional in character and conveys a grant element of at least 25 per cent (calculated at a rate of discount of 10 per cent)".<sup>3</sup> This definition of foreign aid includes grants for technical assistance, such as transfers of capacity and competences, but removes military assistance. The end of Cold War brought another kind of ODA, called Official Aid. Official Aid has specifically been designed to "richer" developing countries in transition after the collapse of the Soviet Union (1990) and for Eastern Europe countries up to 2004. As an alternative, [Chang et al. \(1999\)](#) proposed to measure only the grant equivalent of aid flows (the net present value of grants), excluding the part of loans that would have to be repaid (debt relief) and technical assistance. This measure, called Effective Development Assistance (EDA), aims at accounting for the financial cost the donor really incurs in allocating loans on concessional terms. According to [Dalgaard and Hansen \(2001\)](#) in particular, EDA is almost a linear transformation of the ODA measure, both being nearly perfectly correlated. Besides EDA underestimates the actual value of aid because it excludes technical assistance from its evaluation.

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<sup>2</sup>The United Nations has implemented decennial programs since the sixties, beginning with the United Nations Development Decade, which may partly explain why changes in the aid allocation and architecture are nearly observed each decade.

<sup>3</sup>The OECD definition of ODA is available on line at: [www.oecd.org/dac/stats/officialdevelopmentassistancedefinitionandcoverage](http://www.oecd.org/dac/stats/officialdevelopmentassistancedefinitionandcoverage).

This dissertation uses the conventional definition of ODA, and in particular the disbursements of ODA.<sup>4</sup> Commitments from a donor are a written obligation to allocate aid funds (generally over many years) whereas disbursements are the observed resources disbursed each year as foreign assistance by a donor. Aid commitments measures are standard in studies investigating the determinants of aid allocations because they better reflect donors' actual willingness to allocate foreign assistance (Berthélemy and Tichit, 2004; Dreher et al., 2011). Instead disbursements on aid can differ from commitments due to unexpected changes for example. Despite their commitments, donors may want to allocate more aid to countries making efforts to implement sound policies or to countries facing natural disasters and domestic instability. Donors may also be affected by their own domestic political cycles. Aid disbursements can therefore differ from aid commitments. Since aid disbursements measure how much a donor country is actually spending on aid, they are commonly used in studies examining the consequences of foreign aid.

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<sup>4</sup>ODA is often converted into USD to facilitate comparisons between countries.

Table A.1: Aid architecture by decade and the Cold War cutting point

| Period                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Phase                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Dates and Figures                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>Aid Architecture during the Cold War (1947-1990)</b>                                                                                                                                                                                                                                                                                                                                                                                                                           |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                  |
| <i>During the whole period, the world economy was anchored in a bipolar world led by the United States for the Western bloc and the Soviet Union for the Eastern bloc. Apart from these superpowers, developing countries have seen diverse forms of assistance and interference designed to draw them to one of these two blocs. But developing countries – many of them newly independent – remained on the sideline and experienced either stagnation or economic decline.</i> |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                  |
| 1946-1960                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Post-World War II security aid | <p>Marshall Plan (1947) for European recovery. In 1944, Western countries agreed to set up the International Bank for Reconstruction as well as an international Monetary Fund (IMF) to supply aid for international reconstruction and to provide assistance to poor countries. The Mutual Security Act (1951) is a United States federal law providing in particular foreign aid and military aid to American allies. Foreign aid is first designed to reconstruction (in particular due the success of the Marshall plan) and then to security. Aid (planned to be short term) is perceived to be sufficient to mitigate the lack of savings and to support economic growth (the main goal of aid). Containing Communism is as well officially at the heart of aid agenda.</p> | Bretton Woods agreements (1944). |

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Table A.1 – Continued from previous page

| Period    | Phase                                 | Description                                                                                                                                                                                                                                                                                                                                                                    | Dates and Figures                                                                                                                                                                                                                                                                                                                        |
|-----------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1960-1970 | Economic Development Aid              | Decolonization brought a new age of partnership and made the developed countries sensitive to the developing countries poverty. In parallel, the Western and Eastern blocs remain ideologically fighting (aid in exchange to political alliance). The emphasis is put on government and public policies.                                                                       | The United Nations claim for a foreign assistance reaching at least one per cent of each developed countries GDP (1960). The Donor Aid Committee (DAC) is created to coordinate foreign aid (1961).                                                                                                                                      |
| 1970-1980 | Commodity Shocks and Poverty target   | Crisis of the State model. The 1974 UN resolution establishes a New International Economic Order, which aims at promoting the opening markets of developed countries to products from developing countries and to stabilize prices of primary commodities exported by developing countries. Poverty also becomes an important target. A basic human need approach is stressed. | “Least Developed Countries” appears within the United Nations (1971). International Development and Food Assistance Act (1975): countries with less than an annual per capita income of 300 dollars should receive the three quarters of foreign food assistance.                                                                        |
| 1980-1990 | Structural and Commercial Adjustments | Policies are implemented in recipient countries to face economic and debt crises and stabilize currencies and financial systems. Such adjustments condition the renewal of loans and reduction of interest rates.                                                                                                                                                              | Debt crisis in Latin America started in Mexico (1982) questioning the process of development recorded by these countries during past decades. The Baker plan (1985) is designed to refinance developing countries debt. The DAC recognizes that the macroeconomic and political environment matters for sustaining economic development. |

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Table A.1 – Continued from previous page

| Period                                                                                                                                                                                                                                                                                | Phase                               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Dates and Figures                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Aid Architecture after the Cold War (since 1990)</b>                                                                                                                                                                                                                               |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                             |
| <i>The end of Cold War has conveyed the need to re-balance international forces and has laid the foundation of a multi-polar world. Tying up developing countries to growth and stability became eminent to enable the developing world to leave extreme poverty and instability.</i> |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                             |
| 1990-2000                                                                                                                                                                                                                                                                             | Post-Cold War Transition            | Human development, fighting corruption and the fight of poverty become important aid targets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Rio Declaration (1992) for a sustainable development. Debt cancellations for highly indebted countries (1996). Asian financial crisis (1997) questioning the Asian miracle. The World Bank report Assessing Aid (1998) advocates the importance of the quality of economic and government managements in aid effectiveness. |
| Since 2000                                                                                                                                                                                                                                                                            | Millennium Development Goals (MDGs) | International conferences encourage increases in aid and reassess its targets of sustainable development and ending poverty. The MDGs are eight goals (eighteen targets): eradication of extreme poverty, achieving universal primary education, promoting gender equality and empowering women, reducing child mortality, improving maternal health, combating HIV/AIDS, malaria and other communicable diseases, ensuring environmental sustainability and developing a global partnership for development. After September 11, donors have also integrated the importance for global security of the development of countries. | International Conference on Financing for Development (Monterrey, 2002 and Doha, 2008) on debt relief, private investment, governance and policy coherence. Paris declaration (2005) on aid coordination.                                                                                                                   |

## A.2 Trends and patterns of foreign aid: Some stylized facts

We now turn to present a description of major features on foreign assistance. In 2013, 138 countries were lying on foreign assistance (precisely on ODA disbursements). Detailed OECD statistics for ODA showed that Afghanistan and the Democratic Republic of Congo are the first aid recipients and that five of the ten first aid recipient countries are located in Africa (OECD, 2013). Sub-Saharan Africa has received a third of world aid allocations (see Table A.2). Since 1990, Africa has been the biggest aid recipient, closely followed by Asia (see Figures A.6, A.7 and A.8). Chapter 1 focuses precisely on the African continent to investigate the consequences of foreign aid on the highest aid-dependent area.

The United States have nearly allocated the highest part of this foreign assistance since 1970 (20 per cent in 2011 – see Figures A.3 and A.5) followed by the European institutions (nine per cent in 2011). 17 of the DAC countries have increased their ODA amounts in 2013, while 11 have recorded a decline. All in all, DAC countries have allocated 71.2 billion US dollars (0.41% of their combined GNI, see Figure A.1).<sup>5</sup> The share of bilateral ODA – allocated by one donor country to one recipient country – has remained relatively stable at 80 percent of total aid flows since the middle of the seventies. Such important bilateral flows are largely explained by the economic and geopolitical context. During the “Glorious Thirty” – from 1945 to 1975 – the industrialized world has experienced rapid growth, high productivity and prosperity. At the same time, the Cold War has brought into opposition two blocs, each one seeking for the wider influence over the world. Bilateral donors have their own incentives (aside the development of aid recipient countries) to allocate foreign assistance. Chapter 4 in particular extends this issue in investigating the determinants of bilateral aid allocations.

With the Millennium Development Goals (MDGs) and since the beginning of this century,<sup>6</sup> a growing number of studies provided by international organizations have also supported the need to increase aid allocations (up to 80 million dollars) and even to allocate seven times more aid to some African specific sectors (see, for details, Clemens et al. (2007)). ODA amounts have sharply increased since 1970, reaching in 2010 140 736 million dollars (see Figure A.2).<sup>7</sup> Since 1996, these aid amounts have targeted primarily the social sector (education and government) while far less than half of these aid has been aimed at improving economic development (see Figure A.3).

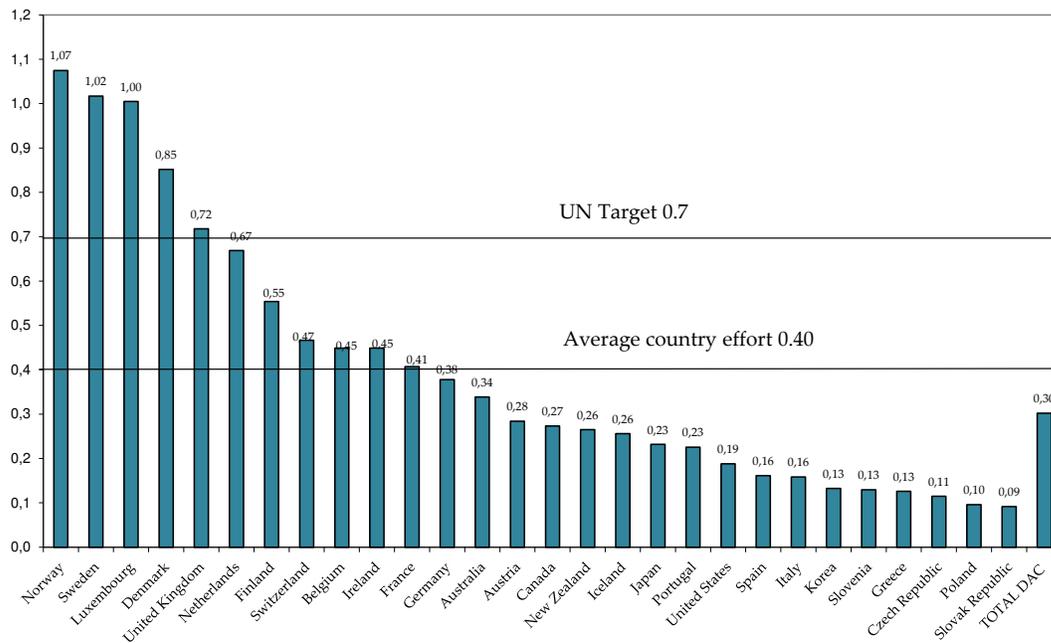
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<sup>5</sup>The data are available online at: [www.oecd.org](http://www.oecd.org).

<sup>6</sup>Years succeeding 2004 have seen an important increase in foreign assistance after the Asian tsunami devastated a part of this region. Besides, the two thirds of the increase in foreign assistance in 2005 is explained by high debt relieves allowed to recipient countries.

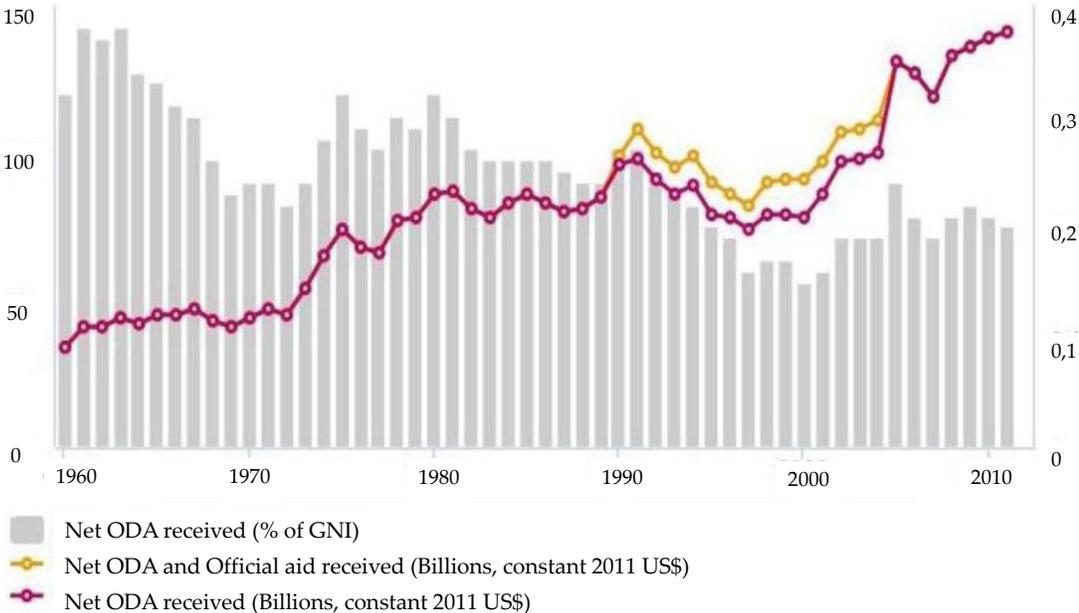
<sup>7</sup>ODA as a percentage of recipient GNI has decreased over the same period, indicating that low income countries have also experienced increases in terms of GNI.

A.2 Trends and patterns of foreign aid:  
Some stylized facts



Note: Data are available on line at: [www.oecd.org](http://www.oecd.org).

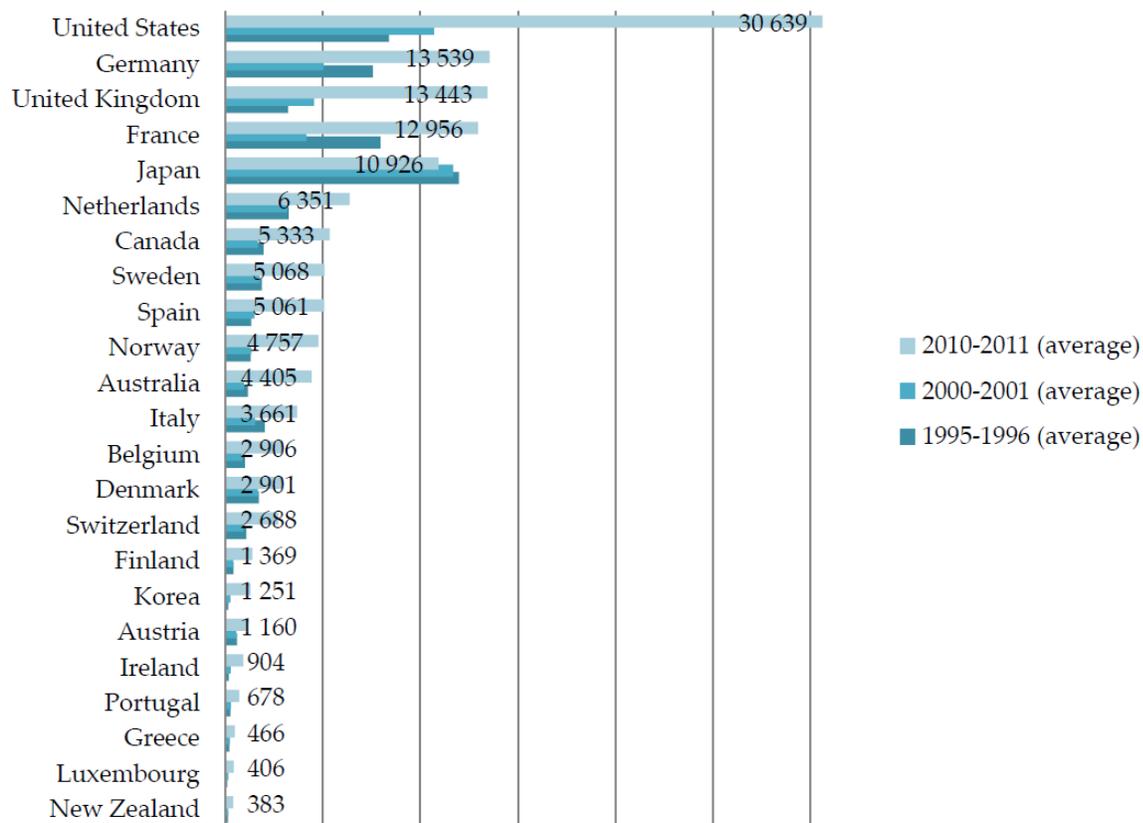
Figure A.1: Net ODA allocated in 2013 - as a percentage of GNI



Note: Data are available on line at: [databank.worldbank.org/data](http://databank.worldbank.org/data).

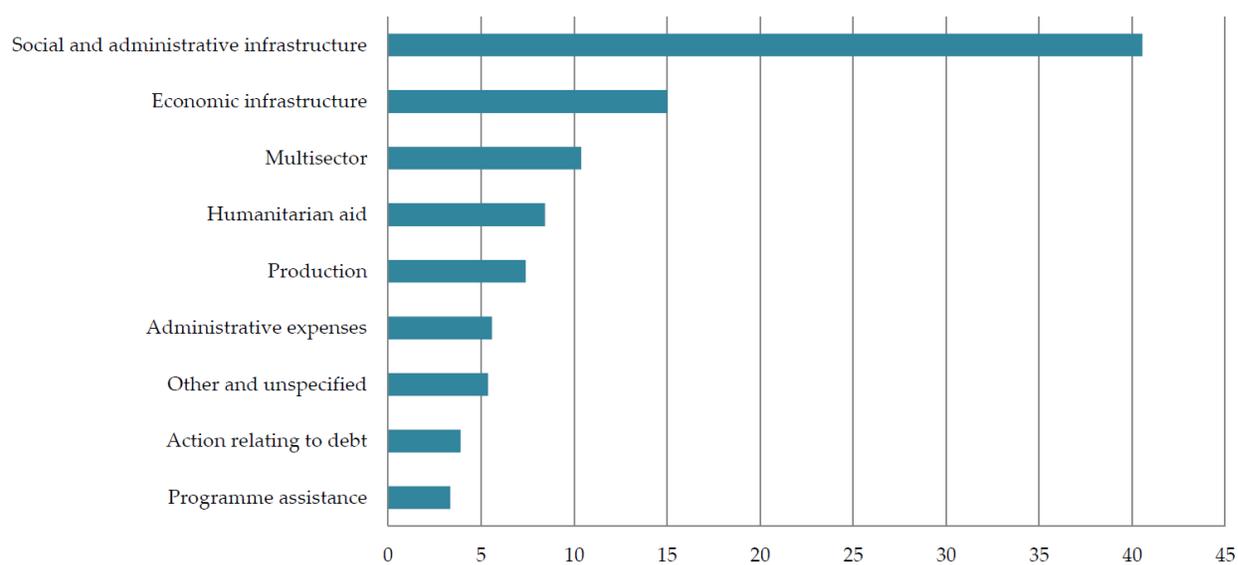
Figure A.2: Net ODA allocations (1960–2012)

A.2 Trends and patterns of foreign aid:  
Some stylized facts



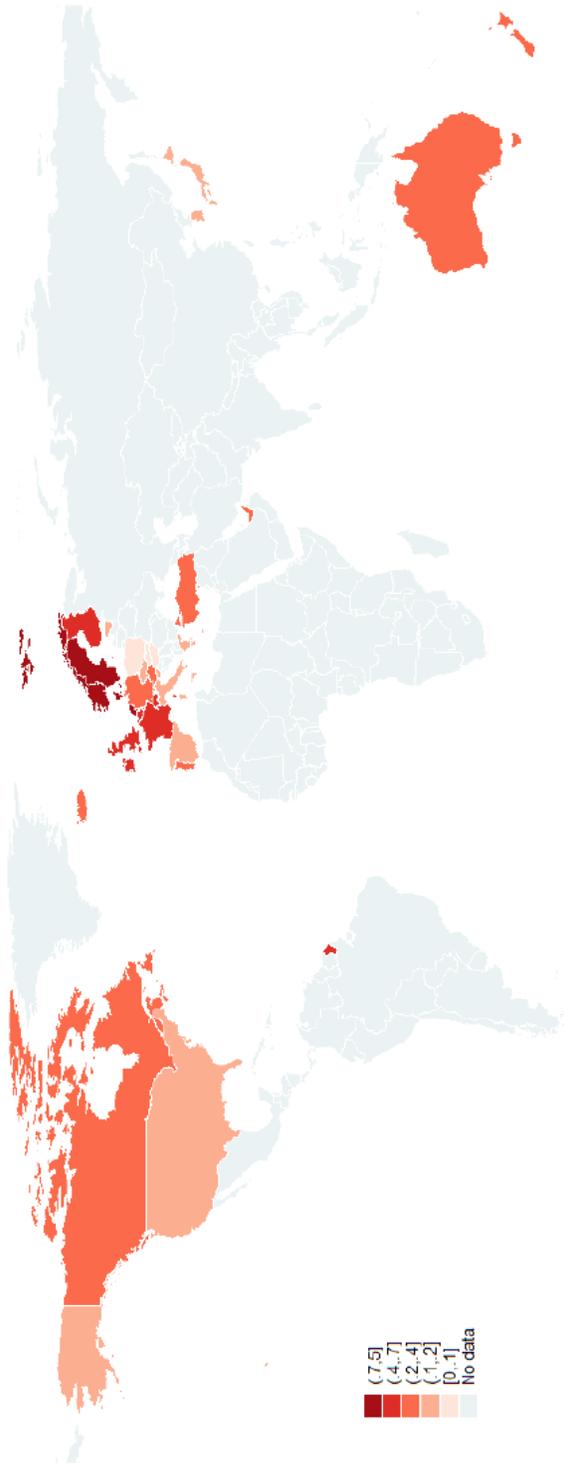
Note: Net disbursements at current prices and exchange rates (in USD million). Data are available on line at: [www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline).

Figure A.3: Net ODA by OECD DAC countries



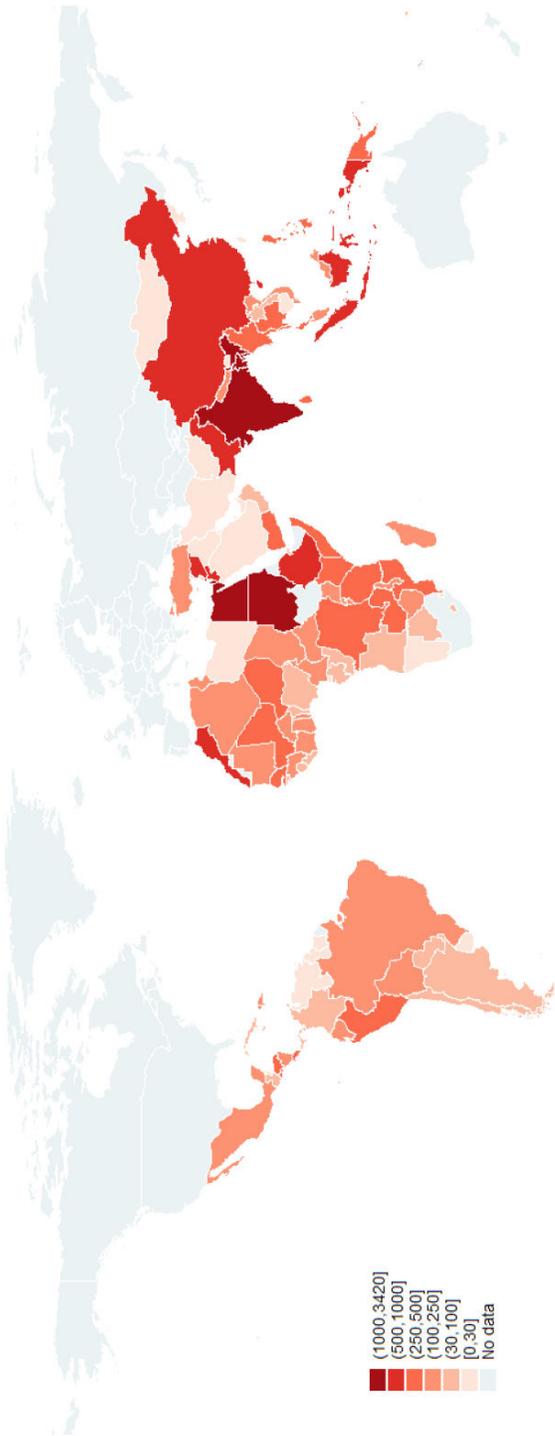
Note: Data, available on line at: [www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline), are in per cent of total DAC ODA.

Figure A.4: DAC ODA by major purpose in 2011



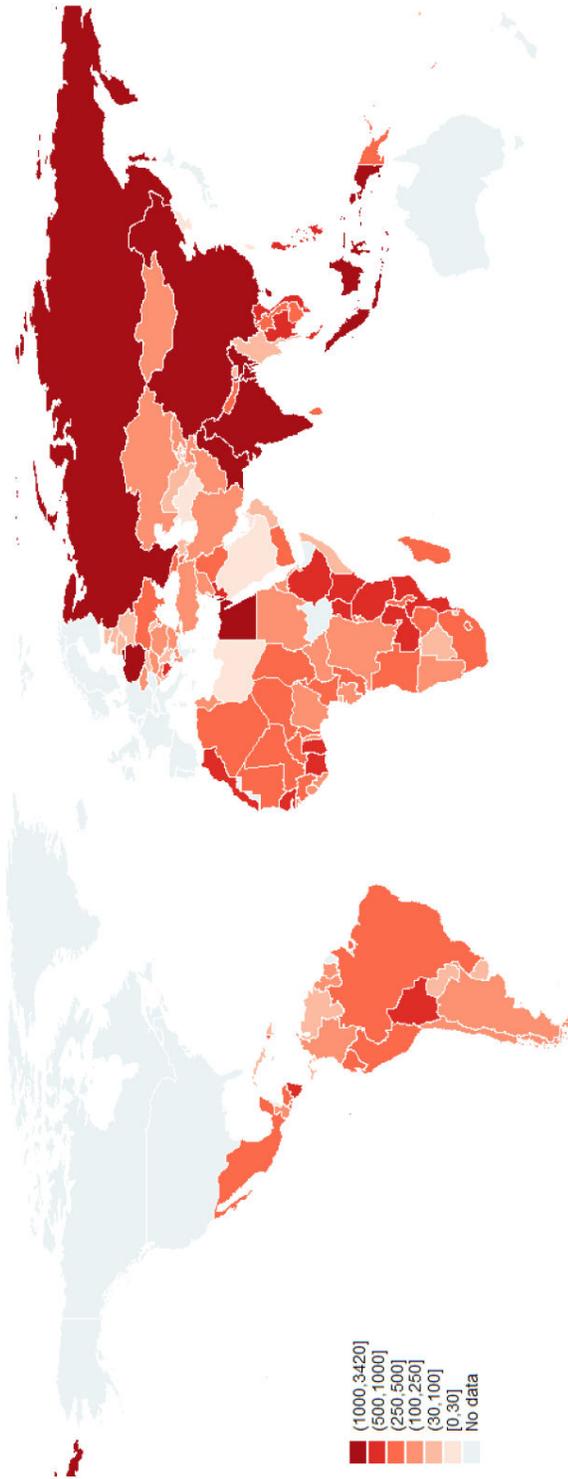
Note: Data, available on line at: [www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline), are in per cent of each recipient's GNI.

Figure A.5: Net ODA allocated in 2012 – by OECD DAC countries



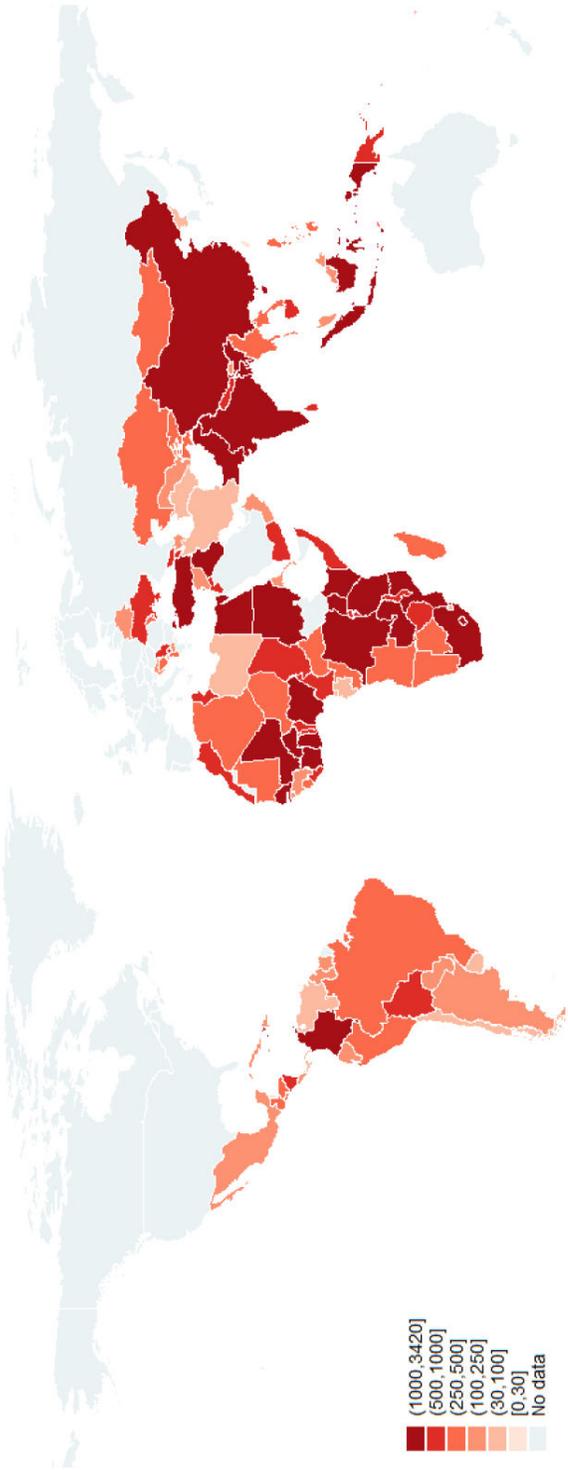
Note: Data, available on line at: [www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline), are in millions of constant 2011 U.S. dollars.

Figure A.6: Net ODA received in 1985



Note: Data, available on line at: [www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline), are in millions of constant 2011 U.S. dollars.

Figure A.7: Net ODA received in 1996



Note: Data, available on line at: [www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline), are in millions of constant 2011 U.S. dollars.

Figure A.8: Net ODA received in 2010

A.2 Trends and patterns of foreign aid:  
Some stylized facts

Table A.2: Net ODA received by region

| Region                                 | 1960  | 1970  | 1980  | 1990  | 2000  | 2010   | Increase in ODA<br>1960-2010 (%) | Share of world<br>ODA in 2010 (%) |
|----------------------------------------|-------|-------|-------|-------|-------|--------|----------------------------------|-----------------------------------|
| East Asia and Pacific                  | 6494  | 11615 | 10396 | 11995 | 13722 | 10714  | 64.98                            | 7.73                              |
| Europe and Central Asia                | 1810  | 1101  | 597   | 847   | 15823 | 7955   | 339.57                           | 5.74                              |
| Latin America and Caribbean            | 1635  | 5770  | 5123  | 8174  | 8387  | 11168  | 582.91                           | 8.06                              |
| Middle East and North Africa           | 8813  | 6629  | 22506 | 16811 | 8111  | 12892  | 46.28                            | 9.30                              |
| Pacific island small States            | 29    | 176   | 345   | 389   | 715   | 1131   | 3833.36                          | 0.82                              |
| Small states                           | 400   | 1278  | 2052  | 3125  | 3127  | 4519   | 1029.71                          | 3.26                              |
| South Asia                             | 7301  | 8164  | 14437 | 11643 | 6645  | 16303  | 123.31                           | 11.77                             |
| Sub-Saharan Africa                     | 5954  | 8258  | 13913 | 26356 | 25505 | 47344  | 695.22                           | 34.17                             |
| Heavily Indebted Poor Countries        | 2554  | 6458  | 12576 | 22376 | 23847 | 47650  | 1765.94                          | 34.9                              |
| Least Developed Countries <sup>a</sup> | 3356  | 5873  | 16923 | 26342 | 23174 | 47482  | 1314.72                          | 34.27                             |
| Low income <sup>a</sup>                | 2964  | 5042  | 13515 | 20617 | 18989 | 43237  | 1358.78                          | 31.21                             |
| Lower middle income <sup>a</sup>       | 13265 | 21093 | 37396 | 31610 | 27296 | 38510  | 190.31                           | 27.80                             |
| Upper middle income <sup>a</sup>       | 6844  | 8423  | 8696  | 13431 | 15499 | 14455  | 111.20                           | 10.43                             |
| World                                  | 34028 | 43997 | 73727 | 86127 | 90367 | 138548 | 307.16                           |                                   |

Notes: <sup>a</sup>: UN classification. Data are in constant 2011 US dollars and in millions. ODA includes here OA. Data are available on-line at:  
[www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline).

### A.3 The puzzle of foreign aid

Despite all these transfers of money and promises, the overall effect of foreign aid in recipient countries remains puzzling. Why giving aid? This question has crossed the whole aid literature since the sixties. The two-gap model of [Chenery and Strout \(1966\)](#) has provided a broadly accepted theory at the beginning of the aid literature to justify aid amounts. Foreign aid was designed to fill in the gap in investment and trade in developing countries in order to allow them to reach their saddle growth path. In the following decades, aid objectives have evolved. During the seventies, poverty and human basic needs have been the major aid targets boasted by the donor community. During the eighties, aid turned to focus on financial and economic stabilization as well on structural adjustments. Since the nineties, good governance, global security and the eradication of poverty have become the major concerns of the donor community.

An abundant body of literature has documented the aid effectiveness in promoting such aims and supporting development, providing as many different results as the number of studies ([Mosley et al., 1987](#); [Boone, 1996](#); [Hansen and Tarp, 2000](#); [Collier and Hoeffler, 2004](#); [McGillivray et al., 2006](#); [Karras, 2006](#); [Rajan and Subramanian, 2008](#); [Doucouliagos and Paldam, 2011](#)). The three first generations of aid studies (see [Hansen and Tarp \(2000\)](#) for this classification) have investigated the consequences of aid on economic growth channeled through savings, investment and policy. A fourth generation of studies concluded that the empirical investigation of the aid-growth relationship is too complex and conditional on intermediate channels to be accurately assessed (see, among others, [Arndt et al. \(2010\)](#) and [Mekasha and Tarp \(2013\)](#)).

To face these inconclusive findings, some scholars have sought to focus on different types of foreign aid, on specific aid outcomes and on the prerequisites supposed to favor aid effectiveness ([Clemens et al., 2012](#)). As briefly shown by the statistics presented in this Appendix, ODA is not a unique transfer of money. Aid is composed of different categories and has multiple targets. Foreign assistance given for different purposes will possibly have different results in the recipient country. Aid specifically designed to develop market opportunities with between the donor and the recipient country would presumably have a different impact on domestic institutions than other types of aid. Accordingly combining different types of aid in a single aggregate overlooks inherent differences, which conceals the complexity of foreign aid. Chapter B presents an overview of the literature interested in the consequences of different types of aid. This literature has led us to consider in our essays components of aid aside an aggregated measure of foreign assistance.

# Chapter B | Complementary Review of Literature on Aid Types

## B.1 Do different types of aid have different outcomes?

The issue of aid heterogeneity, involving the use of data disaggregated by aid categories, has been raised in order to understand the inconclusive findings on foreign aid outcomes (Mavrotas and Ouattara, 2006; Asiedu and Nandwa, 2007; Mavrotas and Nunnenkamp, 2007; Minoiu and Reddy, 2010; Scott and Steele, 2011). Among the standard distinctions, scholars have traditionally focused on (i) the budget support-versus-project aid debate; (ii) the loans-versus-grants debate and (iii) the technical assistance-versus-monetary aid debate.

### B.1.1 Budget support versus project aid

Usually, donors have either financed particular projects (project aid) – that often associate directly donors to their recipients in completing the project – or provided support to the recipient’s public budget, frequently through specific conditions on how to allocate the received resources (budget support). A number of studies has been oriented toward this distinction between budget support and project aid, despite relatively scarce data in this area.

Cordella and Dell’Ariccia (2007) assumed that budget support gives greater incentives to build sound institutional reforms. They enlarged the study of Burnside and Dollar (2000) disaggregating aid from 1974 to 1993 between program aid (the sum of budget supports and debt relieves) and project aid. Program aid seemingly increases growth in countries with sound policies, where conditionality is hence more likely to be enforced

no matter the ability of donors to supervise aid reallocation. Budget support, designed to support macroeconomic reforms, is worthier when aid is small enough compared to domestic resources and if recipients commit to respect donors' prescriptions. Project aid, in which donors are involved, increases growth in countries with poor policies. Budget support alone would even have a positive and high short run effect on growth, no matter the recipient dependence or policy quality (Clemens et al., 2012). The growth effect of aid would nonetheless be much more important in well governed countries.

Ouattara and Strobl (2008) and Agénor and Aizenman (2010) did not confirm these intuitions. Accordingly budget support depends on short run performances and is highly volatile, which makes difficult for the recipient government to monitor its resources with a long run view. Ear (2007) evidenced that no aid category is able to improve governance when aid can be a substitute for another domestic resource. Budget support would even decrease the quality of governance and foment rent-seeking activities.

Turning to case studies, Mavrotas (2002) investigated the effect of program aid, project aid and technical assistance on public investment, taxation and government consumption in India. Both program aid and project aid have decreased economic growth in India between 1970 and 1992. Mavrotas (2005) also took an interest in the roles of aid on the fiscal behavior of the Ugandan government. Contrary to program aid and technical assistance, project aid and food aid have decreased public investment and consumption in Uganda.

### B.1.2 Loans versus grants

Another common distinction since the end of the nineties relates to grants and loans. Grants stand for non-repayable funds, mainly directed to education, health, nutrition and sanitation. Loans are foreign assistance directed to institutional reforms in particular. They are supposed to produce enough resources to be paid off. Because loans need to be paid off, loans presumably give greater incentive to improve the quality of public spending, reduce public consumption and decrease recipients' dependence on foreign assistance. Djankov et al. (2006) evidenced that loans rather than grants increase economic growth through investment by requiring greater self-regulation and a better use of aid funds. On the contrary, grants dependent countries tend to reduce their own tax effort and their public revenues while they increase their dependence toward foreign donors (Gupta et al., 2004).

Otim (1996) nuanced the effects of aid on the fiscal behavior of Pakistan, India and Sri Lanka. He showed that both loans and grants increase public consumption and investment but loans are more likely to generate higher investment than grants do. Odedokun (2004)

confirmed that loans foster higher fiscal discipline, increase fiscal revenues and enhance investment. Loans indeed increase government revenues (White, 1993). However, a part of grants is balanced out by a decrease in taxation decreasing in turn these domestic revenues. Foreign aid funds are not totally transferred to an increase in government spending. In particular, grants would generate a decrease of taxation more important than an increase of borrowing (Heller, 1975; Feyzioglu et al., 1998).

Despite a seeming consensus, the loans-grants debate does neither close the aid effectiveness debate. Bulow and Rogoff (2005), Radelet (2005) and Das and Khan (2012) asserted that loans bring perverse incentives, in particular because it would be less costly to the donor to forgive debts and allocate new loans to enable the recipient country to repay previous loans. On the contrary, grants do not contribute to debt extension.

### **B.1.3 Technical assistance versus monetary aid**

Academic research has also been interested in the distinction between monetary aid and technical assistance – also named technical cooperation – in particular to address the deviation of aid entries from their initial targets. Technical assistance refers to transfers of knowledge and skills aiming at improving local and officials' competencies. In practice technical assistance defaults. Knack (2001) found no significant effect of aid on domestic corruption as long as aid is aggregated. Once technical assistance is scrutinized alone, he even concluded that technical assistance is particularly adverse to the recipient rule of law and its quality of bureaucracy.

Technical assistance has been criticized to be a tool for donors to control aid programs instead of being a simple transfer of competences, even if donors' advisers may not be more qualified than local officials (Bräutigam, 2000). Actually, technical assistance is often brought by expatriate experts, who are supposed to train local officials and improve local monitoring (Kurt and Stephen, 2009). To ensure that aid programs are implemented according to their own willingness, donors may want their expatriates to take charge of the program (Lancaster, 1999; Bräutigam, 2000). In turn, local officials have less incentive to undergo training. Recipient countries become more dependent on their donors, specifically when technical assistance intend to transfer to the recipient country complex and costly organizational techniques that are inappropriate to improve the quality of domestic institutions (Morgan, 2002). Despite monetary funds are supposed to face more diversion (see Kurt and Stephen (2009)), technical assistance is blamed to be related to the donor's needs instead of the recipient's ones (Easterly, 2007; Easterly and Pfutze, 2008; Rajan and Subramanian, 2008).

Closely related to the aid categories debate, the type of donors has also attracted a

growing interest in empirical studies. Instead of focusing on what category of aid is the most prone to foment development, this strand of literature endeavours to discern what motives underline aid allocations according to the type of donor. These motivations would explain the divergence in aid outcomes.

## B.2 Do different types of donors condition aid outcomes?

### B.2.1 The bilateral versus multilateral donors debate

Different donors are expected to have different motives and aims. The increasing emphasis on donors' aims and motives since this century has not been matched by similar efforts to investigate empirically the consequences and the effectiveness of the different sources of aid. We focus in particular on bilateral and multilateral aid. Bilateral aid covers all aid amounts allocated from one donor to one recipient. Multilateral aid refers to international organizations gathering at least two donor countries. Given the the difference of motives and determinants of aid between types of donors, one would expect foreign aid allocations to be distinct between bilateral and multilateral donors, affecting in turn aid effectiveness (see [Fuchs et al. \(2014\)](#) for instance). Indeed, different motives and goals lying behind aid allocations will have presumably different consequences.

Most empirical evidence showed that foreign aid is more likely to be misused when aid is bilateral (see among others [Berthélemy \(2006\)](#) and [Minoiu and Reddy \(2007\)](#)). Accordingly, bilateral donors would be likely to be guided by self-interests instead of developmental issues and to be constraint by their budget planning and political cycles. At the same time, multilateral donors, that have inherently fewer political ties, would be more prone to support developmental outcomes. As a consequence, recipient countries have an incentive to monitor aid inflows with transparency in order to ensure that future aid funds will be renewed. The pressure of cutting aid flows from bilateral donors specifically is much less credible when the motives of their allocation are – at least partly – self-interested. The recipient government can more easily resist reforms asked by the donor country and divert aid entries from their initial purposes if donors find personal interests in funding this country. Finally, aid would be less confusing for the recipient country, less split, less duplicated and less tied to personal donors' interests if allocated through a multilateral agency instead by several bilateral donors ([Sperling and Hart, 2003](#); [Knack and Rahman, 2007](#)). Appendix C specifically details these issues.

Accordingly [Sperling and Hart \(2003\)](#) concluded that an increased proportion of multilateral aid could make aid more effective. [Kanbur et al. \(1999\)](#) suggested that aid effectiveness would be greater if allocated by one unique agency. Intuitively, multilateral aid

is inherently based on the coordination between each donor composing the international agency. Donors would have access to all aid programs propositions, compete and choose for the best of them, which would avoid donors proliferation and programs duplication. In practice, the question is whether such presumable differences between bilateral and multilateral donors indeed affect aid effectiveness.

### **B.2.2 The bilateral versus multilateral effects of aid in practice**

Few studies interested in the consequences of foreign aid have considered that the effect of bilateral aid would not be equal to the one of multilateral aid. No unanimous agreement emerged but most of recent studies claimed that multilateral aid is beneficial for the recipient country while the effect of bilateral aid are ambiguous. Overall, since [McKinlay and Little \(1977\)](#), the literature has emphasized that interests and motivations differ according to the type of donors. Yet, though several researches have shown that bilateral aid and multilateral aid have a different impact on growth ([McKinlay and Little, 1977](#); [Ram, 2003](#); [Berthélemy and Tichit, 2004](#); [Dollar and Levin, 2006](#); [Anderson et al., 2006](#); [Dreher and Jensen, 2007](#); [Kilby, 2006](#); [Headey, 2008](#)), very few have explored the differentiated impact of foreign aid on recipient's institutions or other outcomes. We only present some main findings on the differentiated effect of aid on economic outcomes in this section. Section 1.2 in Chapter 1 extends the literature review to the governance issue.

[Heller \(1975\)](#) found that both aid allocations affect in the same direction public investment and consumption while [Gang and Khan \(1999\)](#) showed that the developmental effect of aid in India between 1961 and 1989 depends on the type of donors: in average, twice more bilateral than multilateral aid is disbursed toward development expenditures. [Burnside and Dollar \(1997\)](#) associated aid ineffectiveness with bilateral aid biases in favour of post-colonial and geopolitical ties. Bilateral aid increases government consumption of more than the aid amount received (this effect is called the voracity effect) and then reduces public investment and growth opportunities. [Ram \(2003\)](#) extended this issue asking whether aid is more beneficial to economic growth if allocated by bilateral donors or by multilateral agencies. Using the same data as [Burnside and Dollar \(2000\)](#), he found that bilateral aid is much more effective in promoting growth in recipient countries.

But [Headey \(2008\)](#) questioned this result. He assumed that foreign aid is not exogenous to economic growth and that the effect of foreign aid on growth takes much more time. Moreover Headey upheld that bilateral aid was less efficient during the Cold War and accounted for the recent awareness in terms of governance issues. Bilateral donors were likely to use foreign aid as a vector of ideologies during the Cold War: being an opposite of the soviet regime was a sufficient condition to receive greater bilateral aid inflows. On

the contrary, multilateral aid has always been positively correlated to higher income, no matter the time period. [Otim \(1996\)](#) associated aid effectiveness with multilateral aid conditionality. Multilateral aid is much more efficient to promote public investment – and growth – than bilateral aid by imposing conditions and restrictions on aid allocations. Multilateral aid is apparently able to shift resources from public consumption to public investment.

Different types of donors pursue rather different objectives with foreign aid, which makes presumably a difference between the effect of multilateral allocation and the effect of bilateral allocation. This dissertation accounts for these types of aid because understanding these differences is important to improve aid allocations effectiveness. There are diverse reasons, related to donors' motives, to expect such a difference between bilateral and multilateral aid. Appendix C discusses donors' incentives for allocating aid.

# Chapter C | Complementary Review of Literature on Aid Motives

## C.1 Why do donors allocate aid or why they should not do?

Do the finding presented in Appendix B mean that some types of aid are not efficient at encouraging economic growth or that economic growth is not exactly the main priority of some donors' aid agenda? Starting from [Dudley and Montmarquette \(1976\)](#), researchers have explored several allocation criteria to determine aid real agenda. Empirical specifications have commonly included (i) variables that reflects donors' interests – usually measured by exports to the recipient country, colonial ties or military expenditures –, (ii) recipients' needs – typically reflected by income per capita or life expectancy – and (iii) the quality of governance and democracy in recipient countries ([Tarp et al., 1998](#); [Alesina and Dollar, 2000](#); [Neumayer, 2003a](#); [Doucouliagos and Paldam, 2011](#)).

### C.1.1 Donors ties and interests

Historically bilateral aid has prevailed in the aid literature landscape. Major donors are the former metropolises and the United States – the leader of the Marshall plan and the only country in a position to afford assistance after World War II. [Alesina and Dollar \(2000\)](#) found that, between 1970 and 1994, a significant amount of bilateral aid was allocated first to countries with whom donors shared a colonial history and political alliances. Correcting for the selection bias, [Berthélemy \(2006\)](#) strengthened this assertion for the period 1980-1999. Bilateral donors were apparently more likely to allocate aid to countries they could influence or to political allies. For instance, 78 per cent of the British bilateral aid from 1980 to 1987 were found to go to recipient countries belonging to the

Commonwealth (McGillivray and Oczkowski, 1992). Not only former colonies have been important to determine donors' allocations but also sharing an ethnic group between a donor and a recipient country have weighted in aid decisions. This may explain why India is still receiving more aid from the United Kingdom or why Turkey is receiving more aid from Germany (Lahiri and Raimondos-Møller, 2000). Colonial ties remain a significant determinant of aid allocations, even fifty years after the end of the colonial era (Hoeffler and Outram, 2011).

Besides, bilateral donors may have trade interests and look for market opportunities when allocating assistance to their commercial partners (Alesina and Dollar, 2000). Tsoutsoulides (1991) confirmed that, between 1975 and 1980, trade interests are one of the most important determinants of all the European Community member states' allocations. Small countries tend also to receive more foreign assistance, maybe because aid is more efficient in small countries or because donors may be more influential in small recipient countries (Alesina and Dollar, 2000; Rajan and Subramanian, 2011). Over the last fifty years, the highest increase in aid allocations has been observed for small states and small islands (see Table A.2). Younas (2008) advocated that donors, still strategic in the post-Cold War period, may want to be able to influence the recipient country's decisions, which is easier if the recipient is a small country and if other donors' allocations are negligible. Bilateral donors are indeed prone to be substitute to each other (Berthélemy, 2006). Besides, regional considerations may matter for donors' allocations. Bilateral donors are more prone to fund recipient countries that are geographically close to them while multilateral agencies do not (Neumayer, 2003a). For example, French allocations are particularly directed to West Africa while aid from Japan is specifically directed to Asia.

At the same time, multilateral agencies – like the International Monetary Fund (IMF) and the World Bank – are not totally free from political pressure. Most of multilateral agencies constitutions declare that they cannot not be politically partisan. But bilateral donors are their main contributors. According to different researches, multilateral agencies are partly influenced by bilateral interests of specific donors, such as the United States (Dreher and Jensen, 2007; Kilby, 2006). Harrigan et al. (2006) evidenced that loans from the IMF and the World Bank are influenced by the political interests of the dominant funding countries (the United States) when aid is allocated to the Middle East and North Africa (MENA) region. Neumayer (2003c) showed that both bilateral Arab countries and multilateral agencies like the Islamic Development Bank target admittedly poor countries but they also favor Islamic countries and countries close to Saudi Arabia but not to Israel. Fleck and Kilby (2006b) backed up these findings on data covering the 1968-2002 period. They evidenced that the United States have inclined the World Bank to allocate funds

based on their own interests. However the United States' assistance is blamed to be not able to foment development the countries receiving their assistance (McGillivray, 1989). Kilby (2006) confirmed that Japan and American interests also have been more important in determining the Asian Development Bank assistance from 1968 to 2002 than the recipient needs. Nevertheless political pressures remain partly drown in multilateral agencies due to the multiplicity of donors funding such agencies (Schneider and Tobin, 2013).

### **C.1.2 Recipients Needs**

Multilateral aid flows have not received as much consideration as bilateral aid flows. But most of scholars interested in multilateral allocations have claimed that multilateral aid has a greater focus on developmental issues, is more harmonized and is more effective than bilateral aid, in particular at improving the human well-being in recipient countries.

Maizels and Nissanke (1984) showed that multilateral donors only allocated aid to needed countries in order to fill the gap in their domestic resources. According to Neumayer (2003a), multilateral donors seem globally to have neither geographic nor strategic views but instead they follow the Millennium Development Goals recommendations by allocating more to sub-Saharan African countries. Frey and Schneider (1986) investigated a model that combines economic and political controls to show that budget deficit, growth, external debt and political instability explain the World Bank International Development Association (IDA) allocations over the period 1972-1981. Tsoutsoplides (1991) confirmed this result between 1975 and 1980 by comparing the European Commission (EC) aid and the member states bilateral aid. The EC allocation is strongly determined by an indicator of life expectancy, infant survival and literacy – called the Physical Quality of Life Index.

Though all bilateral donors apparently have not significantly turned to more developmental issues after the end of Cold War (Neumayer, 2003a), the result is mixed when considering specific donor countries (Alesina and Dollar, 2000; Berthélemy, 2006). Dowling and Hiemenz (1985) evidenced that some of bilateral donors give more aid to low income country, suggesting that income and poverty are also motivating bilateral allocations. Scandinavian countries and Australia in particular follow this pattern. Bilateral donors, being more tied to former colonies than multilateral agencies can be, may have a better understanding of recipients' needs. Bilateral aid would hence be more easily managed when the recipient and the donor countries share similar institutions, norms and languages (Ram, 2003).

### C.1.3 Political conditionality

Aside from donors' interests and recipients' needs, a third category of motives may make bilateral donors behave differently than multilateral donors: the quality of institutions in recipient countries. Both [Alesina and Weder \(2002\)](#) and [Neumayer \(2003a\)](#) concluded that, up to the end of the nineties, there was no statistical relationship between the degree of corruption and foreign assistance. A country having specific ties with a donor was used to receive much more bilateral aid than a democratic one, even though a democratic country was receiving more assistance than an autocratic one ([Alesina and Dollar, 2000](#)). Since 2000 international commitments on aid effectiveness have grown in number. The Monterrey consensus (2002) or the Paris declaration (2005) have laid stress on the importance of governance and political issues for development (see Table A.1 for a summary of the global aid agenda). These promises have partly reoriented donors' behaviors and nourished the aid conditionality rule. The International Monetary Fund and the World Bank, for example, have made "good governance" a critical determinant of their aid allocations ([Woods, 2000](#)). [Dollar and Levin \(2006\)](#) explored aid allocation regressions over panel data covering the 1984-2002 period. Most of bilateral and multilateral donors have therefore become more selective since the end of the nineties. Though donors still target countries following strategic interests, they also are more selective in choosing eligible recipient countries ([Berthélemy, 2006](#)).

Bilateral donors are also more selective. But they still tend to impose first political, diplomatic or economic conditions when they decide to allocate foreign assistance. Bilateral aid is more tied to donors' interests than to the recipient quality of institutions. Even after the Cold War, bilateral donors have not been fully engaged in greater developmental aspirations ([Younas, 2008](#)). Such behaviors that determine the decisions to allocate foreign aid and the amounts of assistance may be responsible of a part of aid (in)effectiveness.

## C.2 Why aid may not lead to development?

Unexpected aid consequences can happen because of what donors do or do not do. But they can also happen in spite of donors' good intentions and besides donors' motives. Volatility and uncertainty of foreign aid ([Heller et al., 2002](#); [Bulíř and Hamann, 2008](#)), limited aid absorption capacity or donors fragmentation and proliferation ([Morss, 1984](#); [Acharya et al., 2006](#); [Knack and Rahman, 2007](#)) can as well explain why foreign aid may not lead to development.

### C.2.1 The conditionality controversy

Despite their programs and good intentions, donors still face an important issue hard to predict: in the end, aid can finance what the recipient country wants to – such as the military sector, a tax diminution or higher public employment. To overcome this problem, donors may condition their allocation on the recipient country's willingness to promote development or give the recipient country incentives to pursue what donors want to.

Aid conditionality has been nonetheless hardly questioned (see, for example, Crawford (1997); Murshed and Sen (1995); Svensson (2000); Santiso (2001); Sandholtz and Gray (2003)). Dunning (2004) stated that the end of Cold War and of the Soviet Union needs to be taken into account. Donors' geopolitical interests were indeed a central motive for allocating aid to developing countries during the Cold War period. Conditionality was consequently not credible, weakening incentives to implement policy reforms. The end of Cold War as well as global agreements on the necessity to promote development have set up a new deal. In theory, donors are encouraged to condition aid on the good willingness of recipient countries to promote their development.<sup>1</sup> Benefits of aid should therefore be expressed. Once conditioned, foreign aid would be able to increase public budget that in turn enables the government to bear the cost of a beneficial reform and to reduce the trade-off between long and short run projects. These additional funds may give the recipient country the resources to provide public services or sustain public policies that would not be undertaken without these funds. While countries need to focus on essential sectors when budget resources are limited, they can expend these sectors when foreign aid increases the size of public resources.<sup>2</sup> Foreign aid would also be able to raise public salaries and in turn tax collection (Van Rijckeghem and Weder, 2001; Mattozzi and Merlo, 2008; Besley and McLaren, 1993). Police officers and judges for example would be more disinterested in all forms of corruption to increase their income, leading to a more efficient business and investment environment. A lower corruption should also improve the environment for investment (Knack and Keefer, 1995).

In practice conditions on foreign aid may still be either ineffective or not credible (Svensson, 2003). Donors have their own interests in allocating foreign aid, even just having a success story, financing the neediest countries all else equal or being charitable. This is often called the Samaritan's dilemma (Buchanan, 1975). Even if recipient countries have not implemented the reforms on which they have committed, their donors may still

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<sup>1</sup>The provision of available medicines to developing countries has, for example, no value at all if recipient countries do not succeed in managing a reliable and effective health system.

<sup>2</sup>This is upon which the New Partnership for Africa's Development (NEPAD) has emerged. The NEPAD was created by the presidents of South Africa, Nigeria, Senegal and Algeria in 2001, and is an attempt to obtain more aid, more investment and relieve debts in exchange for development.

have an interest in providing aid, which discredits the threat of cutting aid funds. Such eligible countries (namely countries expecting aid entries) will have weaker incentives to balance their public budget if they anticipate that their donors will not abandon them. In other words, foreign aid is like an insurance for the recipient country against the risk of an insufficient public budget (Bräutigam and Knack, 2004). Additionally, some donors also reward their political allies even if they are not sustainable in the long run (Easterly, 2002; Alesina and Dollar, 2000). In turn, the recipient government would have little incentives to refuse large aid amounts that finance patronage and increase their benefits (Bräutigam and Knack, 2004). Conditionality loses efficiency.

Even more, the success of a fulfilled condition is not straightforward. The recipient government may not totally fulfill a reform in order to stay eligible as an aid recipient country. The government can, for example, allow opposition parties to campaign without letting them the possibility to win or allocate funds to build schools without providing any maintenance (Hillman, 2004). Foreign aid hence reduces the cost of inertia and non-reforming. To sum up, the success of aid conditionality partly depends on recipients' characteristics and willingness that donors do or cannot fully internalize (Dollar and Svensson, 2000).

### C.2.2 Donors proliferation

Another way in which conditioning aid may lose efficiency is when donors proliferate (Kimura et al., 2012). Too many donors – turning to too many different interests – has not conducted to an optimal aid architecture (Morss, 1984; Zimmermann and Smith, 2011). Each donor has funded in average 107 countries between 1999 and 2001. In 2011, 37 per cent of aid donors were measly compared to the size of the recipient country (see Table C.1 for detailed features). The noteworthy dilution of foreign assistance floods the attention a donor can dedicate to a single recipient and reduces each donor's responsibility as far as the downfall of projects is concerned. The history of international aid began with the American Marshall Plan (1947) for the European recovery. At the end of World War II, the United States were the only country able to offer foreign assistance. Consequently they were entirely responsible in case of failure, with any possibility to share the risk of a failure (Knack and Rahman, 2007). According to Kanbur et al. (1999), the uniqueness of aid allocation has ensured the success of the Marshall Plan.

Since the time Europe has been reconstructed, the number of aid donors has sharply increased. Starting from the sixties, multilateral aid agencies have also grew in number. Identifying 280 bilateral donors and 242 multilateral agencies in 2006, Deutscher and Fyson (2008) imputed aid ineffectiveness to the current architecture of international aid, where a growing importance of private aid (non-governmental organizations or foundations

for example) deepens this complexity: repetitions, duplication and obstacles presumably emerge from the simultaneous presence of dozens of donors.

In 2000, a recipient country received, in average, foreign assistance from fourteen different international donors, representing up to several thousands of aid projects (Acharya et al., 2006). Each project, managed and negotiated, required that domestic officials handle the multiple donors' languages, deal with all financial rules and have a sufficient absorption capacity. The proliferation of aid donors reduces aid effectiveness by exceeding absorption capacity and increasing financial, economic, conditional and technical rules (Svensson, 2006; Acharya et al., 2006; Kanbur et al., 1999; Bräutigam, 2000). Aid programs proliferation makes difficult for the recipient administration to manage simultaneously all donors' programs. Donors may want consequently to manage themselves some of their programs or use the private sector, which pushes aside local officials from having the opportunity to develop their abilities and increases recipients' dependence on donors administrations (Knack, 2001). In addition, workers from donor countries are exempted from taxation, reducing in turn the potential of public resources (Bräutigam and Knack, 2004; Bräutigam and Botchwey, 1999).

Why do donors still proliferate in recipient countries? Typically, donors that proliferate – Finland for example – have a greater altruistic view targeting the wider number of poor countries. They have neither colonial history nor geopolitical consideration inciting them to gather their assistance in a few number of countries. Donors are prone to want to satisfy their own objectives rather than promoting local development when the number of donors increases (Knack and Rahman, 2007). In this context, risks of failure and of losing reputation are shared among all the donors invested in the recipient country.

Table C.1: Aid Fragmentation ratio (FR)

| Aid recipient country | FR (in %) | Aid recipient country     | FR (in %) |
|-----------------------|-----------|---------------------------|-----------|
| Mexico                | 85        | Mauritania                | 36        |
| Iraq                  | 85        | Malawi                    | 36        |
| Malaysia              | 76        | West Bank and Gaza Strip  | 35        |
| India                 | 74        | Lesotho                   | 33        |
| Turkey                | 71        | Mozambique                | 33        |
| South Africa          | 69        | Anguilla                  | 33        |
| Tunisia               | 68        | El Salvador               | 33        |
| Cote d'Ivoire         | 67        | Montserrat                | 33        |
| St. Helena            | 67        | St.Vincent and Grenadines | 33        |
| Nauru                 | 67        | Syria                     | 33        |

*Continued on next page*

Table C.1 – *Continued from previous page*

| Aid recipient country | FR (in %) | Aid recipient country | FR (in %) |
|-----------------------|-----------|-----------------------|-----------|
| Jordan                | 64        | Cook Islands          | 33        |
| Afghanistan           | 63        | Palau                 | 33        |
| Indonesia             | 63        | Samoa                 | 33        |
| Colombia              | 61        | Liberia               | 32        |
| Sri Lanka             | 59        | Timor-Leste           | 32        |
| China                 | 59        | Mali                  | 31        |
| Cameroon              | 59        | Benin                 | 31        |
| Armenia               | 59        | Burkina Faso          | 30        |
| Haiti                 | 58        | Iran                  | 30        |
| Honduras              | 58        | Tonga                 | 30        |
| Georgia               | 58        | Cambodia              | 29        |
| Morocco               | 57        | Niger                 | 29        |
| Mauritius             | 57        | Panama                | 29        |
| Vietnam               | 57        | St. Lucia             | 29        |
| Philippines           | 55        | Sudan                 | 27        |
| Papua New Guinea      | 55        | Nepal                 | 27        |
| Kosovo                | 55        | Fiji                  | 27        |
| Thailand              | 54        | Guatemala             | 27        |
| Peru                  | 54        | Montenegro            | 26        |
| Egypt                 | 53        | Central African Rep.  | 26        |
| Dominican Republic    | 53        | Djibouti              | 26        |
| Guyana                | 53        | Yemen                 | 26        |
| Kenya                 | 53        | Dominica              | 25        |
| Cape Verde            | 52        | St. Kitts-Nevis       | 25        |
| Albania               | 52        | Bhutan                | 25        |
| Pakistan              | 52        | Maldives              | 25        |
| Serbia                | 50        | Tokelau               | 25        |
| Congo, Dem. Rep.      | 50        | Laos                  | 24        |
| Brazil                | 50        | Somalia               | 24        |
| Kiribati              | 50        | Togo                  | 24        |
| Marshall Islands      | 50        | Belarus               | 24        |
| Wallis and Futuna     | 50        | Cuba                  | 24        |
| Ethiopia              | 47        | Chile                 | 24        |
| Ghana                 | 47        | Bangladesh            | 24        |
| Lebanon               | 47        | Kazakhstan            | 24        |
| Azerbaijan            | 46        | Guinea                | 23        |
| Namibia               | 45        | Sierra Leone          | 22        |

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| Aid recipient country   | FR (in %) | Aid recipient country | FR (in %) |
|-------------------------|-----------|-----------------------|-----------|
| Moldova                 | 44        | Burundi               | 22        |
| Suriname                | 44        | Uzbekistan            | 22        |
| Kyrgyz Republic         | 44        | Angola                | 21        |
| Mongolia                | 44        | Korea, Dem. Rep.      | 21        |
| Rwanda                  | 43        | Argentina             | 21        |
| Micronesia, Fed. States | 43        | Chad                  | 21        |
| Nigeria                 | 42        | Guinea-Bissau         | 21        |
| Nicaragua               | 42        | Ecuador               | 19        |
| Solomon Islands         | 42        | Libya                 | 19        |
| Tajikistan              | 41        | Madagascar            | 19        |
| Swaziland               | 41        | Grenada               | 17        |
| Tanzania                | 41        | Belize                | 15        |
| Gabon                   | 40        | Costa Rica            | 14        |
| Uganda                  | 40        | Gambia                | 14        |
| Zambia                  | 40        | Jamaica               | 13        |
| Bolivia                 | 40        | Venezuela             | 13        |
| Niue                    | 40        | Comoros               | 13        |
| Senegal                 | 39        | Myanmar               | 12        |
| Ukraine                 | 38        | Congo, Rep.           | 12        |
| South Sudan             | 38        | Sao Tome and Principe | 12        |
| Vanuatu                 | 38        | Equatorial Guinea     | 11        |
| Bosnia-Herzegovina      | 37        | Eritrea               | 10        |
| Macedonia, FYR          | 37        | Seychelles            | 10        |
| Algeria                 | 37        | Uruguay               | 7         |
| Botswana                | 37        | Turkmenistan          | 7         |
| Paraguay                | 37        | Antigua and Barbuda   | 0         |
| Zimbabwe                | 37        | Tuvalu                | 0         |

Aid is fragmented among many donors, each with their specific allocation decision, process and rules. The fragmentation ratio (FR) proposed by the OECD is the number of non-significant donors divided by the number of donors allocating aid to the specific recipient. A significant donor provides a higher share of aid to the recipient country than the donor's overall share of aid or is one of the biggest aid donors for this recipient country. The fragmentation index is low when the number of significant donors is high relative to the number of non-significant donors. Defined from a partner country point of view, the aim is to maximize the number of significant donor relations and minimize the number of non-significant relations. Data and definitions are available on-line at [www.oecd.org/dac/aid-architecture/aidfragmentation](http://www.oecd.org/dac/aid-architecture/aidfragmentation).

### C.2.3 The curse of aid: A windfall and fungible revenue

When conditionality cannot be credible, foreign aid can be understood as a sudden windfall of resources. Therefore, aid can presumably increase opportunities for corruption and rent seeking activities. As natural resources rents do, aid can erode the social contract built between the government and its citizens because tax collection is no longer as much necessary for the government (Ross, 1999; Heller, 1975; Moss et al., 2006), in particular if the recipient country is not enforced to endorse political reforms (Svensson, 1999). The recipient government is prone to leave unchanged the public expenditures required to achieve development goals. Instead, the government will probably use foreign aid as a substitute for domestic taxation (McGillivray and Morrissey (2001); Bräutigam and Knack (2004); Moss et al. (2006). Bräutigam (2000) reported that more than the two third of aid recipient countries receiving at least fifteen per cent of GDP in aid in 1995 were not taxing their citizens as much as they were supposed to do. Public budget is hence less related to tax revenues. Aid dependent countries become more accountable to their aid donors than to their own citizens (Moore, 2004; Knack, 2001; Bräutigam and Knack, 2004; Moss et al., 2006; Guyer, 1992; Moore, 2004; McGillivray and Ahmed, 1999).

When aid is substituted to another domestic expense, aid is said to be fungible. Pack and Pack (1993) and Feyzioglu et al. (1998) have addressed the potential fungibility of foreign aid to explain the difficulties to link expectations over aid and its results. For example, if a donor's allocation is designed to fund hospitals, the recipient government can reduce its own spending on hospitals and reallocate it to another sector. In turn, the amount of money directed to hospitals will not change after the aid allocation (see Feyzioglu et al., 1998). The same is likely to occur with domestic tax collection. Donors are finally financing the project the recipient government chooses to finance thanks to a transfer of resources from donor aided sectors to non-donor aided sectors. In theory, this is not necessarily a dilemma if assuming that the recipient government knows better what is useful for its country. In practice, it depends on the quality of the recipient government monitoring.

The equivalent of foreign aid inflows, deviated from its initial purposes, may give birth to moral hazard by rubbing necessary reforms out with any immediate cost and blur the officials ability to govern in the long run (Campos and Pradhan, 1996; Casella and Eichengreen, 1996; Collier and Dollar, 2002; Araral, 2007). Because donors may have interests in continuing their assistance (at least to make the recipient country continue repaying their interests), the recipient government has no clear incentive to maintain or initiate reforms. This is called the patron's dilemma (Birdsall et al., 2003). Recipient countries can even expect that aid entries would continue to feed public revenues, over which groups

or individuals may compete (Tornell and Lane (1998), Bjørnskov (2010), Svensson (2000), Collier (2006a), Alesina and Weder (2002)). Svensson (1999) used game theory to analyse the behaviour of groups competing for the holding of public resources. The powerful group can use public resources for its own or bribe bureaucrats to guide policies and income redistribution in its favor. This behavior is politically rational though economically totally not efficient.

To conclude, foreign aid can have unexpected outcomes on development because (i) foreign aid allocations are not allocated with credible sanctions when conditions are not fulfilled; (ii) the recipient country does not want to escape underdevelopment; (iii) donor countries have greater self-interests than the development of the recipient country; and (iv) donor countries proliferate in recipient countries. One of the arguments of this dissertation is that aid is able to support development when donors and recipients' characteristics or types are accounted for because these aspects allows to overcome at least one of these issues (i), (ii), (iii) and (iv).

# Chapter D | Aid Glossary

Table D.1: Aid glossary

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|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aid dependence | Countries are aid dependent if they are not able to ensure the main functions of the government without foreign assistance. <a href="#">Bräutigam (2000)</a> stated that countries receiving more than 10% of aid in GDP are aid dependent countries.                                                                                                                                                                                                                                                                   |
| Aid fatigue    | Aid fatigue results when aid from a donor either can not increase or decreases, mainly due to internal budgetary constraints and lack of recognizable aid effects (despite large amount of aid, recipient countries do not develop), both lowering potential support for foreign assistance.                                                                                                                                                                                                                            |
| Bilateral ODA  | Bilateral transactions are those undertaken by a donor country directly with an aid recipient. They also include transactions with national and international non-government organizations active in development and other internal development-related transactions such as interest subsidies, spending on promotion of development awareness and administrative costs. Bilateral ODA includes project and program aid, technical cooperation, developmental food aid, debt relief and humanitarian aid. <sup>α</sup> |
| Bretton Woods  | The Bretton Woods Agreement, designed to handle commercial, monetary and financial relations among countries, was developed at the United Nations Monetary and Financial Conference held in Bretton Woods – from July 1 to July 22, 1944. The IMF and the IBRD were created.                                                                                                                                                                                                                                            |

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| Civil liberties         | Civil liberties allow for the freedoms of expression and belief, associational and organizational rights, rule of law, and personal autonomy without interference from the state. Countries are graded between 1 (most free) and 7 (least free) (Freedom House definition).                                                                                                                                                                                                                                                                                                                                        |
| Commitments             | Commitments are a firm obligation, expressed in writing and backed by the necessary funds, undertaken by an official donor to provide specified assistance to a recipient country or a multilateral organization. Bilateral commitments are recorded in the full amount of expected transfer, irrespective of the time required for the completion of disbursements. Commitments to multilateral organizations are reported as the sum of (i) any disbursements in the year reported on which have not previously been notified as commitments and (ii) expected disbursements in the following year. <sup>α</sup> |
| Conditionality (of aid) | Conditionality corresponds to the use of conditions associated to the allocation of bilateral or multilateral aid designed to improve aid effectiveness within the recipient country.                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Control of Corruption   | This index captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests (definition from <a href="#">Kaufmann et al. (2011)</a> ).                                                                                                                                                                                                                                                                                                                                |
| CPI                     | The Corruption Perception Index is a ranking of countries based on the extent to which corruption is perceived (created in 1995 by Transparency International). It scales zero to 10 (zero indicates high levels of corruption; 10 indicates low levels of corruption).                                                                                                                                                                                                                                                                                                                                            |
| Developing countries    | Developing countries gather low-income and middle-income economies (countries with a GNI per capita in 2010 lower than \$3,975) are sometimes referred to as developing economies (according to the World Bank database methodology).                                                                                                                                                                                                                                                                                                                                                                              |

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|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Development Assistance Committee (DAC) | Development Assistance Committee (DAC) is the specialized committee of the OECD that serves as a forum for discussions on aid and development among the main Western aid donors. It comprises 23 countries and the European Commission (EC). The 24 DAC members are the following: 1. Australia. 2. Austria 3. Belgium 4. Canada 5. Denmark 6. Finland 7. France 8. Germany 9. Greece 10. Ireland 11. Italy 12. Japan 13. Korea 14. Luxembourg 15. Netherlands 16. New Zealand 17. Norway 18. Portugal 19. Spain 20. Sweden 21. Switzerland 22. United Kingdom 23. United States 24. European Union Institution. <sup>α</sup>                                                                                                                                                                                        |
| Disbursements                          | Disbursements corresponds to the release of funds or the purchase of goods or services for a recipient; by extension, the amount thus spent. Disbursements record the actual international transfer of financial resources, or of goods or services valued at the cost to the donor. In the case of activities carried out in donor countries, such as training, administration or public awareness programs, disbursement is taken to have occurred when the funds have been transferred to the service provider or the recipient. They may be recorded gross (the total amount disbursed over a given accounting period) or net (the gross amount less any repayments of loan principal or recoveries on grants received during the same period). It can take several years to disburse a commitment. <sup>α</sup> |
| Donor                                  | A donor is any entity including sovereign governments, intergovernmental institutions, private nonprofit entities, and private for-profit organizations that contributes funds to IDA or to be held in trust by IBRD. A World Bank Group entity is considered a donor when making a contribution from its own income or from surplus. <sup>α</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| First High Level Forum (Rome, 2002)    | Aim: to focus on what makes aid effective (coordinating donors, monitoring aid programs and rewarding recipients' efforts). Participants: donors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Foreign aid                            | Aid corresponds to international transfers of capital, goods, services and technical assistance from a country or international organization for the benefit of a recipient country, its government or its population.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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| Fourth High Level Forum (Busan, 2011) | Aim: to strengthen the international community involvement to fight crises (among which financial, food, sanitary, and climatic crises) and increase efforts. Participants: donors, developing countries, UN and multilateral agencies, and civil society organizations.                                                                                                                              |
| Fungibility (of aid)                  | Aid fungibility is the possibility that aid funds are targeting other sectors or purposes than those wanted by donors when disbursing the funds.                                                                                                                                                                                                                                                      |
| Global issue                          | Issues that concerns countries beyond their frontiers (environment, financial stability, or AIDS for instance) and that often require international cooperation to be managed are called global issues.                                                                                                                                                                                               |
| Grant                                 | Grants are transfers made in cash, goods or services for which no repayment is required.                                                                                                                                                                                                                                                                                                              |
| Government Effectiveness              | This index captures the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies (definition from <a href="#">Kaufmann et al. (2011)</a> ).                                             |
| Gross ODA                             | Gross ODA corresponds to ODA without any deductions for loan repayments.                                                                                                                                                                                                                                                                                                                              |
| ICRG Bureaucracy quality              | This indicator measures the strength and expertise to govern without drastic changes in policy or interruptions in government services (definition from <a href="http://www.prsgroup.com">www.prsgroup.com</a> ).                                                                                                                                                                                     |
| ICRG Corruption                       | This indicator measures how corruption distorts the economic and financial environment; it reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability; and, last but not least, introduces an inherent instability into the political process (definition from <a href="http://www.prsgroup.com">www.prsgroup.com</a> ). |
| ICRG Law and Order                    | This indicator measures the strength and impartiality of the legal system [and the] popular observance of the law (definition from <a href="http://www.prsgroup.com">www.prsgroup.com</a> ).                                                                                                                                                                                                          |
| Loans                                 | Loans are transfers for which repayment is required.                                                                                                                                                                                                                                                                                                                                                  |

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| Migration                           |           | Migration represents movements of foreigners considered to be settling in the country from the perspective of the destination country. <sup>α</sup>                                                                                                                                                                                                                                                                                                                           |
| Millennium Development Goals (MDGs) |           | The MDGs are eight international development goals that all 192 United Nations member states and at least 23 international organizations have agreed to achieve by the year 2015. They include eradicating extreme poverty, reducing child mortality rates, fighting disease epidemics such as AIDS, and developing a global partnership for development. <sup>α</sup>                                                                                                        |
| Monterrey (2002)                    | Consensus | Aim: financing for development and defining and mobilizing resources. Result: donors agreed that cooperation is needed to improve aid effectiveness important (United Nations).                                                                                                                                                                                                                                                                                               |
| Multilateral ODA                    |           | Multilateral contributions are made by a donor to a recipient institution which: 1. conducts all or part of its activities in favor of development; 2. is an international agency, institution or organization whose members are governments, or a fund managed autonomously by such an agency; and 3. pools contributions so that they lose their identity and become an integral part of its financial assets. <sup>α</sup>                                                 |
| Net ODA                             |           | Net ODA is ODA net of repayments.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| New donors                          |           | New donors are mainly non DAC-OECD donors. According to <a href="#">Dreher et al. (2011)</a> , new donors are: Brazil, Chile, China, Colombia, Estonia, Hungary, India, the Republic of Korea, Kuwait, Latvia, Lithuania, Poland, Saudi Arabia, the Slovak Republic, South Africa, Taiwan, Thailand, the United Arab Emirates.                                                                                                                                                |
| Official Aid (OA)                   |           | Official assistance refers to aid flows from official donors to countries and territories in part II of the DAC list of recipients: more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union, and certain advanced developing countries and territories. Official aid is provided under terms and conditions similar to those for ODA. Part II of the DAC List was abolished in 2005 (definition provided by the World Bank database). |

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| Official Development Assistance | Official Development Assistance (ODA) is defined as those flows to developing countries on the DAC List of ODA Recipients and to multilateral development institutions which are: 1. provided by official agencies, including state and local governments, or by their executive agencies; 2. and each transaction of which: a. is administered with the promotion of the economic development and welfare of developing countries as its main objective; and b. is concessional in character and conveys a grant element of at least 25 per cent (calculated at a rate of discount of 10 percent per year). <sup>α</sup> |
| Political rights                | Political rights enable people to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate. Countries are graded between 1 (most free) and 7 (least free) (Freedom House definition).                                                                                                                                                                        |
| Political Stability             | This index captures the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism (definition from <a href="#">Kaufmann et al. (2011)</a> ).                                                                                                                                                                                                                                                                                                                                                      |
| Program aid                     | The provision of financing, in cash or in kind, for specific capital investment projects, i.e., projects that create productive capital which can generate new goods or services. Also known as capital assistance. Investment project assistance may have a technical co-operation component (OECD definition).                                                                                                                                                                                                                                                                                                          |

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|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project aid                           | Project aid corresponds to the provision of assistance which is not cast in terms of specific investment or technical co-operation projects but which is instead provided in the context of broader development program and macro-economic objectives and/or which is provided for the specific purpose of supporting the recipient's balance-of-payments position and making available foreign exchange. This category includes non-food commodity input assistance in kind and financial grants and loans to pay for commodity inputs. It also includes resources ascribed to debt relief (World Bank definition). |
| Recipient                             | A recipient is any entity that receives Trust Fund monies, including governmental, quasi-governmental, nongovernmental, or private institutions. The Bank may itself be the recipient of a Trust Fund in support of Bank activities. <sup>α</sup>                                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory Quality                    | This index captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (definition from <a href="#">Kaufmann et al. (2011)</a> ).                                                                                                                                                                                                                                                                                                                                                                             |
| Rule of Law                           | This index captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (definition from <a href="#">Kaufmann et al. (2011)</a> ).                                                                                                                                                                                                                                                                                   |
| Second High Level Forum (Paris, 2005) | Aims: commitments for both donors and recipients on the Paris Declaration; to include recipients will and programs in the process of aid allocations (make them appropriate their development); to share the responsibility of aid programs, simplify aid processes, measuring results. Participants: donors and developing countries.                                                                                                                                                                                                                                                                               |

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Table D.1 – *Continued from previous page*

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|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical cooperation                | Technical cooperation (or aid) includes both (a) grants to nationals of aid recipient countries receiving education or training at home or abroad, and (b) payments to consultants, advisers and similar personnel as well as teachers and administrators serving in recipient countries, (including the cost of associated equipment). Assistance of this kind provided specifically to facilitate the implementation of a capital project is included indistinguishably among bilateral project and program expenditures, and not separately identified as technical co-operation in statistics of aggregate flows (OECD definition). |
| Technical efficiency                 | Efficiency measures how close a country's production is to what a country's optimal production would be for using the same bundle of inputs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Tied aid                             | Tied aid is aid allocated on the condition that funds be used to buy goods and services from a specific country or region, usually the donor itself.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Third High Level Forum (Accra, 2008) | Aim: to take stock on the situation and consolidate the Paris declaration. Participants: donors, developing countries, UN and multilateral agencies, and civil society organizations.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Voice and Accountability             | This index captures the perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media (definition from <a href="#">Kaufmann et al. (2011)</a> ).                                                                                                                                                                                                                                                                                                                                                            |

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<sup>α</sup> These definitions are provided by the OECD website – Glossary of AidFlows terms.

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# Chapter E | Main Data Sources

**Barro and Lee** databases are available online at:

[www.barrolee.com](http://www.barrolee.com)

**CEPII** databases are available online at:

[www.cepii.fr/cepii/fr/bdd\\_modele/bdd.asp](http://www.cepii.fr/cepii/fr/bdd_modele/bdd.asp)

**OECD** databases are available on line at:

[www.oecd.org/statistics/](http://www.oecd.org/statistics/),

[stats.oecd.org/qwids/](http://stats.oecd.org/qwids/),

[www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline)

**Quality of Governance** databases are available online at:

[www.qog.pol.gu.se/data/datadownloads/](http://www.qog.pol.gu.se/data/datadownloads/)

**Penn World Tables** are available online at:

[pwt.sas.upenn.edu/php\\_site/pwt\\_index.php](http://pwt.sas.upenn.edu/php_site/pwt_index.php)

**World Development Indicators** (World Bank Institute) are available on line at:

[data.worldbank.org/data-catalog/world-development-indicators](http://data.worldbank.org/data-catalog/world-development-indicators)

# Résumé Détaillé (Version Française)

## PROBLÉMATIQUE

Pourquoi l'aide au développement, initiée il y a près de soixante-dix ans, n'a-t-elle pas scellé le rattrapage des Etats bénéficiaires sur les économies développées ? L'attribution de fonds d'aide internationale est attendue comme pouvant délier les blocages d'une croissance générale et durable conciliant intérêts du développement local et gestion des biens publics mondiaux. Ces flux transnationaux sont ainsi censés pouvoir enclencher un rééquilibrage international. En effet, l'aide tisse un lien entre les pays industrialisés et les économies en développement au nom de l'équité sociale, un principe sans cesse réaffirmé dans les différents forums et accords internationaux depuis les années 2000. Porteuse d'objectifs louables, l'aide au développement est le vecteur d'une redistribution des revenus au niveau global visant l'intégration à terme des pays bénéficiaires dans un contexte de croissance mondiale durable et équilibrée. Pourtant, l'efficacité réelle de ces financements publics internationaux n'en reste pas moins controversée et continue d'alimenter la polémique.

Au travers de quatre études empiriques détaillées dans les Chapitres 1, 2, 3 and 4, cette thèse contribue à une meilleure compréhension des enjeux relatifs à l'aide étrangère, de ses conséquences pour les pays récipiendaires à sa définition par les Etats donateurs. L'aide étrangère est une thématique de recherche effervescente qui a animé de nombreux débats depuis les années soixante, que ce soit dans la sphère académique ou sur la scène politique internationale. Entre critiques et défenseurs de l'aide, il est difficile d'appréhender une politique cohérente de l'aide et de justifier l'allocation de fonds internationaux. Cette thèse s'y emploie en recherchant des contextes favorables capables d'assurer l'efficacité de l'assistance internationale. Elle alimente la littérature féconde attachée à étudier les implications et déterminants de l'aide au développement en s'attardant sur trois axes principaux. Premièrement, cette thèse propose d'étudier la relation entre l'aide et la gouvernance des Etats récipiendaires, jugée indispensable pour enrayer le sous-développement. L'accent est mis en particulier sur les circonstances permettant à l'aide de renforcer les institutions des économies en développement (Chapitre 1) ainsi que sur l'existence, le sens et la direction des causalités reliant l'aide et la gouvernance (Chapitre 2). Deuxièmement, cette thèse apporte un regard nouveau sur la relation entre aide et croissance économique dans les pays en développement en évaluant l'effet de l'aide internationale sur une composante de la croissance : l'efficacité de production (Chapitre 3). Troisièmement, afin d'évaluer la cohérence des politiques des économies développées, cette thèse étudie comment l'environnement socio-politique des Etats donateurs peut influencer leur propre décision d'allouer des financements externes (Chapitre 4).

## CHAPITRE 1 : Les ressources naturelles conditionnent-elles la relation entre aide et gouvernance ?

Le Chapitre 1 propose d'expliquer pourquoi les effets de l'aide au développement sur la qualité de la gouvernance des économies bénéficiaires sont équivoques. La gouvernance d'un Etat représente en somme la manière avec laquelle le pouvoir est exercé dans le cadre de la gestion des ressources économiques et sociales du pays (World Bank, 1992). A ce titre, la qualité de la gouvernance peut être un canal intermédiaire conditionnant l'impact de l'aide sur la création de richesses dans les Etats récipiendaires : l'aide peut affecter la croissance économique au travers de son influence sur les institutions domestiques. La faible qualité de la gouvernance est, de plus, perçue comme étant un des challenges majeurs pour la plupart des Etats africains (Asongu, 2012), Etats particulièrement dépendants des financements publics étrangers.

En théorie, l'aide au développement peut être tout aussi stérile que bénéfique pour l'Etat récipiendaire. Elle peut tout d'abord accélérer la formation d'institutions solides et faciliter les réformes du système politique (Goldsmith, 2001 ; Tavares, 2003 ; Dunning, 2004 ; Jensen et Wantchekon, 2004 ; Charron, 2011). Mais elle peut également donner à l'élite au pouvoir les moyens de retarder voire geler tout changement institutionnel (Knack, 2001 ; Bräutigam et Knack, 2004 ; Knack et Rahman, 2007 ; Rajan et Subramanian, 2007 ; Busse et Gröning, 2009). Enfin, en provisionnant le budget de l'Etat bénéficiaire, l'aide peut exacerber corruption, diversion de fonds et instabilité politique (Dalgaard et Olsson, 2008 ; Djankov et al., 2008).

Dans le but de démêler l'imbroglio de la relation entre aide et gouvernance, nous proposons (i) de désagréger l'aide suivant son mode d'allocation, qu'il soit bilatéral ou multilatéral (à l'instar d'Alesina et Weder (2002) et Charron (2011)) et (ii) de tenir compte de l'importance des rentes issues de l'exploitation des ressources naturelles dans la production de richesse des économies récipiendaires. Ces deux profils sont susceptibles de conditionner les répercussions de l'aide internationale sur la qualité des institutions des Etats bénéficiaires. D'une part, l'amélioration de la gouvernance des pays en développement est devenue une priorité décisive pour les agences multilatérales (Neumayer, 2003b ; Dollar et Levin, 2006 ; Charron, 2011) tandis que l'aide allouée par les donateurs bilatéraux peut être soumise à l'influence d'intérêts propres aux Etats donateurs (Alesina et Dollar, 2000 ; Berthélemy, 2006 ; Clist et al., 2012). Des considérations d'ordre stratégique, commercial, économique ou politique peuvent ainsi animer davantage les décisions d'allocation bilatérale que le ferait l'intention d'affermir les institutions politiques des Etats récipiendaires (Alesina et Weder, 2002). D'autre part, les revenus des ressources naturelles pouvant créer conflits, instabilité et comportements rentiers (Ades et Di Tella, 1999 ; Collier et Hoeffler, 2005 ;

Dalgaard et Olsson, 2008 ; Vicente, 2010 ; Bhattacharyya et Hodler, 2010 ; Papyrakis et Gerlagh, 2004), la détention de rentes sur les ressources naturelles peut, censément, altérer la relation entre l'aide étrangère et la gouvernance des Etats bénéficiaires.

Afin d'évaluer la portée de ces deux hypothèses, notre première étude s'oriente vers l'examen des conséquences de l'aide étrangère sur la qualité de la gouvernance des Etats africains en particulier, entre 1997 et 2008. Pour ce, nous estimons un modèle de données de panel dynamique à l'aide des Moindres Moments Généralisés. Cette méthode nous permet d'évaluer l'effet net de l'aide sur la gouvernance grâce à la prise en compte de l'influence potentielle de la qualité de la gouvernance des Etats récipiendaires sur la décision des Etats donateurs d'allouer leur aide. Nos résultats indiquent que l'aide est capable d'améliorer la qualité de la gouvernance des pays bénéficiaires lorsqu'elle est allouée par des agences multilatérales. Cette aide est d'autant plus profitable aux Etats africains que l'ascendant des rentes issues de l'exploitation des ressources naturelles sur leurs économies reste négligeable.

Ces conclusions suggèrent que les politiques d'aide devraient être reconsidérées pour les pays tributaires de leurs rentes, notamment pétrolières. Le renforcement des institutions locales pourrait aussi s'intensifier si l'aide était en priorité allouée par des agences multilatérales qui semblent porter davantage d'intérêt au développement d'une bonne gouvernance que les donateurs bilatéraux.

## **CHAPITRE 2 : Comprendre le lien entre aide et corruption : une analyse de causalité**

Le Chapitre 2 interroge la causalité existant entre l'aide internationale et la corruption publique, un trait particulier de la gouvernance défini comme étant le détournement de biens ou de fonds à des fins privées. Bien que la relation entre aide et corruption ait abondamment attiré l'attention des chercheurs, aucune étude n'a été dédiée à l'analyse du signe et de la direction de la causalité entre ces deux dimensions.

Aide et corruption sont pourtant souvent associées dans les politiques internationales. L'aide est tantôt présumée capable de combattre la corruption des Etats bénéficiaires (Tavares, 2003 ; Dunning, 2004 ; Charron, 2011 ; Okada et Samreth, 2012) et tantôt accusée d'être responsable d'attiser les malversations politiques (Svensson, 2000 ; Alesina et Weder, 2002 ; Bräutigam et Knack, 2004 ; Rajan et Subramanian, 2007). A l'inverse, certains Etats donateurs (à l'image des pays Scandinaves selon Alesina et Weder (2002)) peuvent décider d'allouer davantage d'aide aux pays contrôlant leur corruption dans le but de renforcer l'efficacité de leur assistance. Ils peuvent également escompter financer des réformes institutionnelles dans les pays corrompus afin de leur permettre par eux-mêmes de contrôler

fraudes et détournements de fonds (Trumbull et Wall, 1994). Enfin, la corruption des Etats récipiendaires peut ne jouer qu'un rôle secondaire dans la décision des Etats donateurs de prêter assistance (Alesina et Dollar, 2000 ; Neumayer, 2003a ; Berthélemy, 2006 ; Thiele et al., 2007).

Pour corroborer empiriquement l'une ou l'autre de ces théories, nous proposons de tester le sens et le signe de la causalité entre ces deux dimensions grâce à l'utilisation de tests de Granger (Granger, 1969 ; Granger, 1988). En d'autres termes, plutôt que d'analyser les effets immédiats d'une variable sur l'autre, nous recherchons si les valeurs passées de l'aide étrangère permettent de prédire le niveau de corruption actuel – et inversement – ou, au contraire, si l'aide internationale et la corruption publique sont dynamiquement indépendantes. La significativité des coefficients de l'aide étrangère dans l'équation de corruption, par exemple, indiquerait que l'aide affecte la corruption avec un retard. Cette méthode, encore peu appliquée dans le cadre des études sur l'aide au développement (Bowles, 1987 ; Giles, 1994 ; Roodman, 2008), est pour la première fois employée dans l'examen de l'existence de relations causales entre l'aide et la corruption. Compte tenu des problèmes d'endogénéité possibles et des effets fixes pour chaque pays, nous conduisons l'analyse de Granger dans le cadre d'un modèle de données de panel dynamique estimé par les Moindres Moments Généralisés.

Nos données couvrant 71 pays en développement entre 1996 et 2009 révèlent qu'aucune relation de type causal au sens de Granger n'unit l'aide à la corruption, peu importe leurs mesures empiriques, l'origine de l'aide (qu'elle soit bilatérale ou multilatérale), la région bénéficiaire de l'allocation ou les spécifications alternatives. Ces résultats supposent (i) que vouloir contenir la corruption publique grâce à l'allocation de fonds étrangers uniquement est vraisemblablement inefficace et (ii) que le niveau de corruption des économies en développement ne semble pas encourager les Etats donateurs à ajuster leurs allocations.

### **CHAPITRE 3 : L'aide est-elle efficiente ?**

Le Chapitre 3 s'imprime dans la lignée des Chapitre 1 et Chapitre 2 qui étudient les conséquences de l'aide internationale sur les Etats récipiendaires. Toutefois, l'objectif de cet essai est ici d'analyser la relation entre l'aide et l'efficience macroéconomique des pays en développement, un composant même de la croissance économique. Bien que la promotion de la croissance ait été le principal moteur des décisions couvrant initialement l'allocation de l'aide internationale (Rosenstein-Rodan, 1961 ; Chenery et Strout, 1966), les conséquences économiques de l'aide publique au développement restent néanmoins opaques et confuses (Hansen et Tarp, 2001 ; Kanbur, 2006 ; McGillivray et al., 2006 ; Roodman, 2007 ; Doucouliagos et Paldam, 2011).

La croissance économique est un agglomérat qui combine essentiellement deux dimensions : l'investissement – au coeur des recherches ([Arndt et al., 2011](#)), et la productivité – plus largement ignorée ([Dalgaard et al., 2004](#)). L'aide peut affecter chacune de ces sources de la croissance économique dans des directions opposées nourrissant de ce fait les dissonances observées dans les études empiriques attachées à examiner les effets de l'aide internationale sur la croissance économique dans son ensemble. Nous contribuons ainsi à la compréhension du lien entre aide et croissance en nous focalisant sur un concept récemment introduit dans la littérature de l'aide par [Christopoulos et al. \(2010\)](#), [Veiderpass et Andersson \(2011\)](#) et [Alvi et Senbeta \(2012a\)](#) : l'efficacité de production. Cette mesure de productivité relative évalue l'écart entre la production actuelle d'un pays et la production maximale (représentée par une frontière de production) que ce pays pourrait atteindre avec la même quantité d'intrants.

Nous estimons cette frontière de production grâce à un modèle de frontière stochastique (proposé par [Battese et Coelli \(1992\)](#) et adapté par [Méon et Weill \(2010\)](#) par exemple) appliqué à 67 Etats bénéficiaires de l'aide entre 1985 et 2010. Nous évaluons ensuite les effets de l'aide au développement sur l'efficacité avec laquelle les pays récipiendaires assurent leur production nationale à l'aide des Moindres Moments Généralisés. Nos résultats soulignent que l'aide internationale, qu'elle soit allouée par les Etats eux-mêmes ou via des agences multilatérales, est capable de réduire l'écart entre le niveau actuel et le niveau optimal de production dans un pays bénéficiaire, et ce, sans modifier la quantité d'intrants initialement utilisée.

Nous nous intéressons dans un second temps à la qualité de l'environnement domestique susceptible de renforcer l'efficacité de l'aide étrangère. Des institutions solides pouvant encadrer et assurer la stabilité de la sphère économique ([Burnside et Dollar, 2000](#); [Christopoulos et al., 2010](#)) ainsi qu'un système bancaire efficace capable d'allouer les ressources financières vers les projets les plus productifs ([Alvi et Senbeta, 2012a](#)) pourraient, en principe, asseoir les bénéfices de l'aide internationale sur l'efficacité de production des économies en développement. En particulier, notre étude précise que l'effet favorable de l'aide sur l'efficacité de production est avivé dans les pays démocratiques et macroéconomiquement stables. Etant donné que l'efficacité de production est une composante de la croissance économique, ces conclusions donnent un appui substantiel aux politiques d'aide visant à promouvoir la croissance des pays en développement.

## CHAPITRE 4 : L'influence de la montée du chômage sur les politiques d'aide et de migration

Le dernier Chapitre de cette thèse est consacré à l'étude des déterminants domestiques de l'aide étrangère au sein des pays donateurs et s'inscrit dans la poursuite des études de [Faini et Venturini \(1993\)](#), [Lundsgaarde et al. \(2007\)](#), [Berthélemy et al. \(2009\)](#), [Azam et Berlinschi \(2009\)](#) et [Tingley \(2010\)](#). L'objectif est ici d'expliquer comment l'aide et la migration au sein de 22 pays de l'OCDE sont simultanément déterminées afin de comprendre comment l'environnement socio-politique des pays donateurs (notamment dans un contexte de chômage en hausse) peut contribuer à l'ébauche des politiques d'aide au développement. A l'image de [Berthélemy et al. \(2009\)](#), nous employons un modèle de gravité dans le cadre d'un système d'équations simultanées appliqué à des données de panel en trois dimensions. Ce modèle est estimé via la méthode des Moindres Carrés en Trois Etapes sur un échantillon de 22 Etats donateurs et 153 pays récipiendaires entre 2000 et 2010 afin de remédier au biais de simultanéité dans la décision de ces politiques ([Zellner and Theil, 1962](#)). L'utilité de cette démarche empirique est de déterminer conjointement les niveaux d'aide et de migration bilatérales des pays de l'OCDE ainsi que leurs rapports à l'évolution du chômage dans le but d'apprécier la cohérence des politiques publiques des économies développées.

Nos résultats révèlent que la politique d'aide des Etats donateurs peut avoir des fondements domestiques. En particulier, nous interprétons la relation positive entre une poussée du chômage et les montants d'aide alloués comme étant une indication sur le fait que les pays de l'OCDE peuvent utiliser l'aide comme un instrument capable de contenir la progression du chômage : l'aide étant censée réduire les écarts de revenus entre nations développées et en développement, l'allocation de fonds additionnels devrait dissuader les migrants potentiels de quitter leur pays d'origine, réduisant ainsi les pressions sur le marché du travail.

Par ailleurs, les entrées de migrants tendent elles aussi à faire pression sur le montant d'aide alloué aux pays dont les migrants sont originaires. En retour, l'aide semble dynamiser un surcroît de flux migratoires grâce à un effet de réseau et d'attraction qui renforce les liens bilatéraux entre pays. L'aide à l'éducation par exemple peut faciliter l'émigration. Cette corrélation positive entre aide et migration implique que les politiques qui leur sont rattachées sont intimement liées pour les pays de l'OCDE. Aussi, une politique d'aide généreuse devrait-elle s'accompagner de politiques migratoires restrictives si le pays destinataire désire garder constant le flux de migration entrant (ce qui semble être une donne générale pour les pays de l'OCDE selon [Pedersen et al. \(2008\)](#)).

Enfin, en période de crise économique, le poids du chômage dans les pays de l'OCDE

peut faire naître de la part des citoyens une demande de protection du marché du travail domestique et encourager des politiques restrictives de migration (Azam et Berlinschi, 2009) aussi bien des politiques généreuses d'aide pour freiner les incitations à migrer. En revanche, nos résultats montrent que l'efficacité de ces politiques reste précaire car davantage d'aide attire davantage de migrants ce qui contrebalance les effets d'une politique migratoire restrictive.

## OUVERTURE

L'aide internationale irrigue depuis plus de soixante ans les économies en voie de développement, multipliant ainsi les questionnements quant à son efficacité réelle. Le décalage entre son idéal et ses pratiques en fait une des thématiques de la sphère macroéconomique les plus débattues. La complexité de mettre en place des politiques consistantes, flexibles et adaptées en fonction des projets et des destinataires stimule des recherches de plus en plus ciblées. Ce ciblage vise à établir des cadres précis d'action, que ce soit pour des groupes de pays particuliers aussi bien que pour des objectifs précis de développement. C'est explicitement ce à quoi nous aspirions pour ce travail de recherche qui nous a permis (i) de caractériser des contextes dans lesquels l'aide peut être efficace (Chapitre 1 et Chapitre 3) là où, globalement, elle apparaît comme étant une politique aride (Chapitre 2) et (ii) d'évaluer la cohérence des politiques des Etats donateurs dans un contexte de pression migratoire et de poussée du chômage (Chapitre 4). Ce travail n'est qu'une entame au regard de toutes les pistes de recherche destinées à guider au mieux l'allocation des fonds d'aide internationale. Dans l'objectif de contribuer à ce champ d'étude, nous poursuivrons avec une analyse empirique destinée à déterminer l'allocation optimale de l'aide pour chaque pays récipiendaire en vue de répondre à un des Objectifs du Millénaire pour le Développement : la préservation de l'environnement et des ressources naturelles.



## General Abstract

The objective of this dissertation is to contribute to the existing knowledge about foreign aid, either about its consequences on the developing world or about its implications for developed economies. Summing up the main conclusions of our four essays, we find clear evidence that foreign aid is able to support economic and political progress within the developing world. The most important characteristic of this conclusion is the complexity with which aid allocations can be decided and with which aid can affect political and economic outcomes in recipient countries. Recipients and donors domestic conditions need to be accounted for in order to evaluate accurately the politics of foreign aid. Addressing this concern through different points of view and with different methodologies, we discover that foreign assistance and its effectiveness are dependent (i) on the way aid is allocated, (ii) on other donors' policies and (iii) on specific local conditions observed in recipient countries.

Chapter 1 examines the effects of aid on the quality of governance in African countries, accounting for their particular dependence on natural resources. We find that aid improves public institutions when aid is allocated by multilateral agencies. The benefits of aid are even more valuable in countries not reliant on their oil resources rents. In Chapter 2 we analyze the possible Granger causal relationships running between foreign aid and corruption in developing countries. Our data reveal that aid does not result in more or less corruption, and reversely corruption does not exert a significant influence on future assistance. In Chapter 3 we evidence that foreign assistance enhances the recipient country's efficiency of production, in particular when the country has democratic and macroeconomic sound institutions. Chapter 4 reports our data analysis on donors' domestic policies. Aid, migration and unemployment policies are recognized to be tightly connected for OECD donors. Specifically, aid policies are partly shaped by the burden of unemployment and the stock of migrants observed in the donor country.

**Keywords:** Foreign aid, Governance, Corruption, Efficiency, Migration, Policies.

**JEL codes:** D73, E61, F22, F35, O11, O47.



## Résumé Général

L'objectif de cette thèse est d'élargir le champ d'étude relatif à l'aide étrangère, en examinant aussi bien les conséquences des flux d'aide sur les pays en développement que les implications et tenants des politiques d'aide pour les économies développées. La synthèse de nos quatre Chapitres d'étude nous amène à conclure que l'aide étrangère est capable de promouvoir le développement des pays bénéficiaires. Le trait marquant de cette conclusion est la complexité apparente avec laquelle l'allocation de l'aide est décidée et avec laquelle les flux d'aide au développement font évoluer l'environnement politique et économique des Etats bénéficiaires. La prise en compte des caractéristiques et conditions domestiques des pays donateurs et récipiendaires est indispensable à l'étude de l'aide étrangère. En d'autres termes, l'efficacité de l'aide au développement et de son allocation (i) sont intrinsèquement liées au type de donateurs, (ii) sont dépendantes des conditions locales observées dans les Etats bénéficiaires et (iii) sont affiliées aux autres politiques publiques décidées par les pays émetteurs de fonds.

Dans le Chapitre 1, nous étudions les conséquences de l'aide sur la qualité de la gouvernance des pays bénéficiaires en tenant compte de leur dépendance aux rentes générées par l'exploitation des ressources naturelles. L'aide peut améliorer les institutions politiques lorsqu'elle est allouée par des agences multilatérales. Ses bénéfices sont d'autant plus notables que l'économie de l'Etat récipiendaire se délie des rentes pétrolières. Le Chapitre 2 explore les aspects de la causalité pouvant exister entre aide et corruption au sein des Etats bénéficiaires, indépendamment de toute caractéristique. Nos résultats ne manifestent aucune relation causale au sens de Granger entre l'aide et le niveau de corruption observé dans les pays récipiendaires. Le Chapitre 3 interroge l'influence directe et conditionnelle de l'aide sur l'efficacité technique avec laquelle les Etats bénéficiaires assurent leur production nationale. L'aide est d'autant plus efficace que les pays bénéficiaires se démocratisent et contrôlent leur inflation. Le Chapitre 4, quant à lui, adresse l'étude des politiques des Etats donateurs de l'OCDE. Les politiques d'aide, de migrations et de chômage sont intimement imbriquées. En particulier, la décision d'allouer des fonds d'aide étrangère est tributaire de la santé économique des Etats émetteurs (le taux de chômage) et soumise aux pressions des flux migratoires.

**Mots clefs** : Aide étrangère, Gouvernance, Corruption, Efficience, Migration, Politiques.

**Codes JEL** : D73, E61, F22, F35, O11, O47.

# Audrey-Rose MENARD

## Essais sur l'aide au développement

### Résumé

L'objectif de cette thèse est d'élargir le champ d'étude relatif à l'aide étrangère, en examinant aussi bien les conséquences des flux d'aide sur les pays en développement que les implications et tenants des politiques d'aide pour les économies développées. Dans le Chapitre 1, nous montrons que l'aide peut améliorer les institutions politiques lorsqu'elle est allouée par des agences multilatérales. Ses bénéfices sont d'autant plus notables que l'économie de l'Etat récipiendaire se délie des rentes pétrolières. Le Chapitre 2 révèle qu'aucune relation causale n'existe entre l'aide et la corruption au sein des Etats bénéficiaires. Le Chapitre 3 montre que l'aide améliore l'efficacité technique avec laquelle les Etats bénéficiaires assurent leur production nationale, d'autant plus que les pays bénéficiaires se démocratisent et contrôlent leur inflation. Le Chapitre 4 révèle que les politiques d'aide, de migrations et de chômage sont intimement imbriquées. En particulier, la décision d'allouer des fonds d'aide étrangère est tributaire de la santé économique des Etats émetteurs (le taux de chômage) et soumise aux pressions des flux migratoires.

Mots clefs : Aide étrangère, Gouvernance, Corruption, Efficience, Migration, Politiques.

Codes JEL : D73, E61, F22, F35, O11, O47.

### Résumé en anglais

The objective of this dissertation is to contribute to the existing knowledge about foreign aid, either about its consequences on the developing world or about its implications for developed economies. Chapter 1 shows that aid improves public institutions when aid is allocated by multilateral agencies. The benefits of aid are even more valuable in countries not reliant on their oil resources rents. In Chapter 2 we analyse the possible Granger causal relationships running between foreign aid and corruption in developing countries. Our data reveal that aid does not result in more or less corruption, and reversely corruption does not exert a significant influence on future assistance. In Chapter 3 we evidence that foreign assistance enhances the recipient country's efficiency of production, in particular when the country has democratic and macroeconomic sound institutions. Chapter 4 reports our data analysis on donors' domestic policies. Aid, migration and unemployment policies are recognized to be tightly connected for OECD donors. Specifically, aid policies are partly shaped by the burden of unemployment and the stock of migrants observed in the donor country.

Key words: Foreign aid, Governance, Corruption, Efficiency, Migration, Policies.

JEL codes: D73, E61, F22, F35, O11, O47.