ESSAIS SUR LA DÉCENTRALISATION DANS LES PAYS EN DEVELOPPEMENT

Emilie Caldeira

Université d'Auvergne, Clermont-Ferrand 1
Faculté des Sciences Économiques et de Gestion
École Doctorale des Sciences Économiques, Juridiques et de Gestion
Centre d'Études et de Recherches sur le Développement International (CERDI)

ESSAIS SUR LA DÉCENTRALISATION DANS LES PAYS EN DEVELOPPEMENT

ESSAYS ON DECENTRALIZATION IN DEVELOPING COUNTRIES

Thèse Nouveau Régime
Présentée et soutenue publiquement le 24 Octobre 2011
Pour l'obtention du titre de Docteur ès Sciences Économiques

Par

Emilie Caldeira

Sous la direction de
M. le Professeur Grégoire Rota-Graziosi

Membres du Jury

M. Gérard Chambas, Chargé de recherche CNRS au CERDI	Président
M. Grégoire Rota-Graziosi, Professeur à l'Université d'Auvergne	Directeur
M. Odd Helge Fjeldstad, Professeur à l'Université de Bergen, Norvège	Rapporteur
M. François Vaillancourt, Professeur à l'Université de Montréal, Canada	Rapporteur

Université d'Auvergne, Clermont-Ferrand 1
Faculté des Sciences Économiques et de Gestion
École Doctorale des Sciences Économiques, Juridiques et de Gestion
Centre d'Études et de Recherches sur le Développement International (CERDI)

ESSAIS SUR LA DÉCENTRALISATION DANS LES PAYS EN DEVELOPPEMENT

ESSAYS ON DECENTRALIZATION IN DEVELOPING COUNTRIES

Thèse Nouveau Régime
Présentée et soutenue publiquement le 24 Octobre 2011
Pour l'obtention du titre de Docteur ès Sciences Économiques

Par

Emilie Caldeira

Sous la direction de
M. le Professeur Grégoire Rota-Graziosi

Membres du Jury

M. Gérard Chambas, Chargé de recherche CNRS au CERDI	Président
M. Grégoire Rota-Graziosi, Professeur à l'Université d'Auvergne	Directeur
M. Odd Helge Fjeldstad, Professeur à l'Université de Bergen, Norvège	Rapporteur
M. François Vaillancourt, Professeur à l'Université de Montréal, Canada	Rapporteur

A celui qui me manque infiniment...

Remerciements

Je veux tout d'abord adresser mes remerciements les plus sincères à mon directeur de thèse, Grégoire Rota-Graziosi. D'un soutien sans faille, restant présent malgré la distance, il m'a accompagnée pas à pas tout au long de cette épreuve. Il a également fait de ma thèse une période riche d'apprentissage et d'ouverture sur le monde.

J'aimerais ensuite remercier les membres du jury, Monsieur Odd Helge Fjeldstad et Monsieur François Vaillancourt d'avoir accepté de rapporter ma thèse et Monsieur Gérard Chambas de présider mon jury.

Je remercie également tous les membres du CERDI, chercheurs, doctorants, étudiants ainsi que le service administratif, qui entretiennent un environnement chaleureux et une atmosphère intellectuellement stimulante. Un merci tout particulier à ceux qui ont partagé mon bureau durant ces trois dernières années et qui m'ont été d'une aide précieuse : Catherine Simonet, Christian Ebeke, Sébastien Marchand, Hélène Ehrhart et Huanxiu Guo. Cette thèse a, sans nul doute, été enrichie par les nombreuses réflexions partagées et leurs regards éclairés. Merci également à Vianney Dequiedt pour sa disponibilité, l'intérêt qu'il a porté à mes travaux de recherche et son aide pour le chapitre 3. J'exprime également toute ma reconnaissance envers Lionel Védrine pour m'avoir fait bénéficier de ses compétences en économétrie spatiale.

J'adresse mes remerciements à la FERDI, à l'ICTD et aux organisateurs de la conférence internationale sur le thème "Fiscalité et développement : des réformes, et après ?" (24 et 25 octobre 2011), en particulier à Monsieur Gérard Chambas et à Madame Anne-Marie Geourjon, grâce auxquels la traduction simultanée durant la soutenance de cette thèse pourra être assurée.

Je n'oublierai jamais l'accueil exceptionnel qui m'a été réservé au PDM (Partenariat pour le Développement Municipal, Cotonou, Bénin) et la grande générosité de l'ensemble des gens que j'y ai rencontrés. Je pense notamment à Biram Owens Ndiaye, Lionel Caruana, Gilbert Guigma, Martin Finken, Henriette Hounkpatin-Sossa et Katty Assongmekop. Je manque de mots pour remercier mon ami Hervé Agossou. Ce travail n'aurait pas été possible sans son effort de collecte de données durant plus de dix ans au sein du PDM et l'expertise qu'il m'a offerte tout au long de mes recherches. Une pensée toute particulière pour Julie et Alain avec qui j'ai partagé des discussions passionnantes sur le monde qui nous entoure. Ce séjour au Bénin a constitué un tournant déterminant de ma thèse et il est, à ce jour, l'une des plus belles expériences de ma vie.

Je suis profondément reconnaissante envers Claude Montmarquette qui m'a permis d'intégrer pendant deux mois le CIRANO (Centre Interuniversitaire de Recherche, Montréal, Canada) et

de bénéficier ainsi des connaissances et remarques pertinentes d'un grand nombre de chercheurs. Un grand merci à Martial Foucault pour son accueil durant ce séjour ainsi que pour nos collaborations fructueuses.

La réalisation de ce travail a également bénéficié d'échanges avec les chercheurs rencontrés aux conférences et workshops extérieurs auxquels j'ai participé ("The NBER Africa Project: Policy-Oriented Research Conference 3", Zanzibar, Tanzanie, Août 2011 ; "16th Annual Conference on Econometric Modelling for Africa", Nairobi, Kenya, Juillet 2011 ; Séminaire de Politique Publique, CIRANO, Montréal, Canada, Janvier 2011 ; "The 2010 Annual Meeting of the Public Choice Society", Monterey, États-Unis, Mars 2010 ; Rencontres doctorales, Université Paris 1, Novembre 2009 ; "65th Congress of the International Institute of Public Finance", Le Cap, Afrique du Sud, Août 2009 ; "Colloque 2009 de l'Association de Science Régionale de Langue Française", Clermont-Ferrand, France, Juillet 2009 ; "8th Spatial Econometrics and Statistics Workshop," Besançon, France, Juin 2009). Qu'ils en soient vivement remerciés.

Je remercie très chaleureusement Catherine, Claire, Gaëlle, Hélène, Juliette, Stéphanie, et Cindy pour avoir été avec moi, de près ou de loin, durant toutes les épreuves qui ont accompagné cette période et pour les moments de joie et de légèreté partagés. Merci aussi à Laurence, Adrien, Nathalie, Agnès, Estelle, Cécile et Angeline pour leur écoute et leur soutien. Leur amitié m'a été indispensable. Encore merci à ma Cathouch et ma Cacahouète pour m'avoir soutenue quand mon ordinateur a décidé de m'abandonner à une semaine de la fin.

En ce moment fort de ma vie, mes pensées se tournent vers ma famille. Je remercie de tout mon cœur mon père. Il est un exemple parfait de courage et de persévérance et c'est en lui que j'ai puisé la force de travail qui m'a permis d'affronter ce nouveau défi. Ce dernier n'aurait pu être relevé paisiblement sans l'estime inconditionnelle et l'amour sans limite que me porte ma Maman. Merci à mes sœurs pour m'avoir offert les plus beaux cadeaux du monde, mes "rayons de soleil", Elina, Mathéo, Alizée et Chloé. Merci à eux pour l'inestimable amour qu'ils me donnent. Je vous aime tous de tout mon coeur.

Enfin, merci à Antoine, pour tant de choses que je ne saurais formuler ici....

Essais sur la décentralisation dans les pays en développement

Essays on decentralization in developing countries

Thèse Nouveau Régime
Présentée et soutenue publiquement le 24 Octobre 2011
Pour l'obtention du titre de Docteur ès Sciences Économiques

Par

Emilie Caldeira

Résumé substantiel

Cette thèse en quatre parties aborde différents aspects de la décentralisation dans les pays en développement. Après avoir introduit notre travail et passé en revue la littérature sur ce thème (chapitre 1), nous nous attachons à étudier l'existence et la nature des interactions horizontales entre les gouvernements locaux dans un contexte de faibles ressources budgétaires et d'absence de démocratie locale (respectivement, chapitres 2 et 3). Nous analysons ensuite les relations verticales entre le gouvernement central et les gouvernements locaux, plus précisément, les effets et les déterminants de l'allocation des transferts intergouvernementaux (respectivement, chapitres 4 et 5). Enfin, nous déterminons l'impact final de la décentralisation sur l'accès des populations locales aux services de base (chapitre 6).

Partie I : Introduction générale

La partie I, intitulée "Introduction générale", est constituée d'un seul chapitre (chapitre 1) consistant en une revue critique de la littérature des effets de la décentralisation dans les pays en développement.

Chapitre 1 : "Les effets de la décentralisation dans les pays en développement : une revue de la littérature"

Le chapitre 1 examine les effets théoriques attendus de la décentralisation, analyse leur pertinence dans le cadre particulier des pays en développement et dresse un bilan critique des études économétriques existantes sur ce sujet.

Une vague de décentralisation s'est répandue sur les pays en développement dès le début des années 1990. Alors que les États centraux, incapables d'assurer le développement économique,

ont perdu toute légitimité, la décentralisation est apparue comme un moyen d'améliorer les performances du secteur public en rendant les décideurs politiques plus redevables par l'introduction d'une concurrence inter-juridictionnelle et par la promotion de la démocratie locale.

La décentralisation a trois effets suivant la taxonomie des fonctions de l'État établie par Musgrave (1959) : allocation des ressources, redistribution et stabilisation de l'activité économique. Une grande partie de la littérature du fédéralisme budgétaire (*fiscal federalism*) s'est consacrée à l'étude des effets de la décentralisation sur la fonction d'allocation des ressources. Deux principaux mécanismes sont à l'origine de ces effets. Le premier peut être qualifié de "principe de proximité". En rapprochant les décideurs politiques des citoyens, la décentralisation est censée améliorer la connaissance des besoins et préférences des populations par les décideurs (Hayek, 1948), et accroître la redevabilité des gouvernements locaux (Seabright, 1996). Le deuxième mécanisme est généralement appelé "le principe de compétition". En induisant une compétition inter-juridictionnelle, la décentralisation devrait permettre une meilleure adéquation de l'offre des biens et services publics aux préférences des habitants (Tiebout, 1956 et Oates, 1972) et encourager les gouvernements locaux à être plus efficaces (Salmon, 1987 et Besley et Case, 1995). Cependant, l'offre décentralisée des biens publics est inefficiente en présence d'économies d'échelle et d'effets de débordement (Lockwood, 2002 et Besley et Coate, 2003).

La prise en compte du contexte particulier des pays en développement peut remettre en cause la pertinence des théories traditionnelles. D'une part, certaines hypothèses sur lesquelles reposent les arguments de proximité et de compétition - l'existence d'une démocratie locale, d'une conscience politique des citoyens, d'une mobilité inter-juridictionnelle des habitants ou encore l'absence de capture par les élites locales - peuvent paraître peu réalistes dans ce cadre (Prud'homme, 1995 et Bardhan, 2002). D'autre part, l'insuffisance des capacités techniques, administratives et fiscales est particulièrement marquée dans ces pays, pouvant réduire l'efficacité des gouvernements locaux à fournir les biens et services publics.

Les effets de la décentralisation sur les fonctions de redistribution et de stabilisation font l'objet d'un nombre d'études plus restreint mais qui tendent à un plus large consensus (Tanzi, 1996). Ces fonctions doivent rester de la responsabilité de l'État central. De plus, la décentralisation peut fragiliser la cohésion économique et sociale de la nation par les inégalités qu'elle est susceptible de générer ainsi que la stabilité économique du fait du risque d'indiscipline budgétaire des gouvernements locaux qu'elle initie (Kornai, 1979).

Dans ce chapitre, parallèlement à l'examen des effets théoriques attendus de la décentralisation, nous dressons un bilan des études économétriques qui se sont attachées à évaluer l'existence de tels effets dans les pays en développement. Nous discutons finalement des principales difficultés méthodologiques auxquelles sont confrontées ces études, qui constituent des défis à

relever pour les recherches futures : le manque de données, les problèmes d'endogénéité et d'hétérogénéité entre les pays. Nous identifions également les questions qui n'ont fait l'objet que de rares études et méritent de plus amples investigations. C'est le cas notamment du principe de compétition, qui représente pourtant un argument essentiel en faveur de la décentralisation.

Partie II : Décentralisation et interactions inter-juridictionnelles

Dans la partie II, "Décentralisation et interactions inter-juridictionnelles", nous nous focalisons sur les relations horizontales entre les gouvernements locaux décentralisés dans un contexte de pays en développement de sorte à évaluer la pertinence du principe de compétition. Plus précisément, cette partie vise à tester la présence d'interactions stratégiques entre les décideurs locaux, dans un contexte de ressources budgétaires limitées (cas du Bénin, chapitre 2) et d'absence de démocratie locale (cas de la Chine, chapitre 3).

Chapitre 2 : "Decentralisation in Africa and the nature of local governments' competition: Evidence from Benin"

Le chapitre 2 s'intéresse à l'existence et à la nature des interactions stratégiques entre les gouvernements locaux au Bénin, où certaines juridictions sont caractérisées par de très faibles ressources budgétaires. Il est issu d'un article co-écrit avec Martial Foucault et Grégoire Rota-Graziosi.

Le principe de compétition a été largement étudié dans les pays développés. Au contraire, jusqu'ici, la littérature économétrique concernant les pays en développement s'est largement focalisée sur le principe de proximité considérant, comme Bardhan (2002), que le contexte institutionnel est radicalement différent de celui des économies industrielles avancées, de sorte que certaines hypothèses sous-jacentes au principe de compétition ne semblent pas applicables. En particulier, la pertinence du modèle de Tiebout est fréquemment remise en cause dans la mesure où la mobilité de la population est limitée et, l'existence d'une concurrence par comparaison ("*yardstick competition*") est débattue dans un contexte de jeunes démocraties. Par ailleurs, les contraintes financières fortes auxquelles font face ces juridictions locales peuvent être suffisantes pour expliquer l'absence de comportements stratégiques des gouvernements locaux dans ces pays ; et justifier que l'approche dominante actuelle de la décentralisation dans les pays en développement soit basée sur le principe de proximité. Pourtant, à notre connaissance, le

caractère applicable ou non du principe de compétition en présence de ressources limitées n'a pas été rigoureusement établi.

C'est pourquoi nous nous attachons dans ce chapitre à étudier la pertinence du principe de compétition dans un pays en développement, représentatif de l'Afrique de l'Ouest, le Bénin. Nous développons un modèle théorique où deux gouvernements déterminent leur niveau de dépenses publiques en présence d'externalités. Pour prendre en compte l'extrême pauvreté de certaines juridictions locales, nous utilisons une version généralisée de l'équilibre de Nash - l'équilibre de Nash contraint - qui différencie notre démarche de celles préalablement adoptées. Nous déterminons dans quelles conditions les interactions entre les gouvernements locaux émergent et trouvons effectivement qu'elles ne peuvent exister en cas de ressources budgétaires insuffisantes. Notre stratégie économétrique consiste ensuite à estimer une fonction de réaction au niveau des dépenses publiques, considérant les interactions entre les juridictions géographiquement et ethniquement proches. Nous estimons ainsi un modèle spatialement décalé (*spatial lag model*) pour des données de panel constituées des 77 communes du Bénin de 2002 à 2008. Nous établissons l'existence d'interactions stratégiques au niveau des dépenses publiques, conditionnelle à un niveau suffisant de ressources budgétaires locales, validant ainsi les prédictions de notre modèle théorique. Des interactions inter-juridictionnelles existent non seulement entre les communes voisines mais aussi entre celles qui sont similaires en termes de composition ethnique. De plus, nous déterminons la nature de ces interactions : les dépenses publiques locales sont des compléments stratégiques, c'est-à-dire qu'un accroissement des dépenses publiques dans une juridiction induit des variations similaires des dépenses dans les communes voisines.

L'analyse menée dans ce chapitre contribue finalement à une meilleure compréhension de la décentralisation dans les pays en développement mettant en évidence que cette dernière peut induire des comportements stratégiques similaires à ceux observés dans les pays développés. Ces résultats sont en accord avec ceux de Akin, Hutchinson, et Strumpf (2005) et Arze, Martinez-Vasquez, et Puwanti (2008) qui analysent respectivement la décentralisation des services de santé en Ouganda et les dépenses publiques locales en Indonésie. La nature de ces interactions, c'est-à-dire la complémentarité stratégique, a des implications intéressantes. Elle tend notamment à confirmer l'existence d'un multiplicateur comparable à celui exposé par Glaeser, Sacerdote, et Scheinkman (2003) qui peut renforcer l'appel à la décentralisation de l'aide extérieure.

Chapitre 3 : "Yardstick competition in a federation: Theory and evidence from China"

Le chapitre 3 traite de l'existence d'une competition entre les gouvernements provinciaux chinois, encastrés dans un système politique fortement centralisé.

La fulgurante croissance économique chinoise des années 1980 et 1990 a coïncidé avec la décentralisation de sorte que Zhuravskaya (2000) a défendu l'idée selon laquelle cette dernière aurait incité les gouvernements provinciaux à renforcer l'efficacité économique des dépenses publiques locales, créant ainsi les bases des performances économiques nationales. Néanmoins, si la décentralisation a été une composante cruciale de la réforme économique en Chine, cette dernière revêt une forme tout à fait différente de celle observée dans un bon nombre de pays. Premièrement, tandis que le système budgétaire est décentralisé, la structure de gouvernance est quant à elle fortement centralisée (Maskin, Qian, et Xu, 2000). De plus, le pouvoir des gouvernements provinciaux n'est pas basé sur un système de représentation électorale, les gouverneurs étant nommés par le gouvernement central à Pékin. Deuxièmement, la mobilité de la population entre les provinces demeure limitée malgré les allègements du système Hukou, qui restreint la mobilité des populations depuis le début des années 1950. Or, la décentralisation est supposée accroître l'efficience des dépenses publiques en induisant une compétition inter-juridictionnelle à travers "un vote avec les pieds" ou une "*yardstick competition*". En Chine, ces mécanismes classiques de discipline, que sont la sanction par la mobilité ou par les urnes, ne sont pas disponibles et ne peuvent donc expliquer une telle concurrence entre les provinces. Néanmoins, reprenant les arguments de Blanchard et Shleifer (2001), nous considérons que le contrôle vertical peut assurer la redevabilité des gouvernements locaux et créer une compétition inter-juridictionnelle. En effet, Tsui (2005) met en exergue le fait que les gouverneurs provinciaux sont insérés dans une structure politique très hiérarchisée et sont récompensés ou pénalisés selon la réussite des objectifs qui leur sont assignés. Maskin, Qian, et Xu (2000) et Li et Zhou (2005) démontrent que les gouverneurs provinciaux ont d'autant plus de chance d'être promus au sein du Parti que le taux de croissance relatif de leur province est important. Ainsi, les objectifs de carrière peuvent constituer une incitation à améliorer les performances économiques (Tsui et Wang, 2008), même en l'absence de processus démocratique.

Ce chapitre teste empiriquement la présence d'une compétition entre les gouvernements provinciaux chinois, encastrés dans un système politique fortement centralisé. De plus, il propose une explication à l'existence d'une potentielle compétition entre les provinces chinoises en considérant un modèle de "*yardstick competition*" par le haut. Dans ce dernier, le gouvernement central crée une concurrence entre les gouvernements locaux en les évaluant sur la base

de leur performance relative à fournir des services publics. L'idée selon laquelle les décideurs locaux peuvent être évalués par comparaison a été proposée par Salmon (1987) et formalisée par Besley et Case (1995). Dans ce chapitre, nous modifions le modèle de ces derniers de sorte à appliquer le principe de "*yardstick competition*" au contexte de la Chine. Cette concurrence n'est plus induite par les électeurs mais par le gouvernement central. De plus, tandis que Besley et Case (1995) considèrent un modèle d'économie politique de détermination des taxes, nous nous focalisons sur les choix en termes de dépenses publiques. Nous montrons alors que, de la même manière que dans leur modèle, les externalités informationnelles provenant des autres juridictions affectent la fourniture des services publics dans la juridiction évaluée. Ainsi, quand le gouvernement central utilise la performance des juridictions voisines pour juger un gouverneur, ce dernier est encouragé à considérer les décisions budgétaires voisines. Nous devrions alors observer des interactions stratégiques entre les juridictions locales, de même que lorsque les décideurs locaux sont démocratiquement élus. De plus, nous démontrons que de telles interactions ne devraient pas apparaître dans un système budgétaire centralisé. Dans un second temps, nous estimons un modèle spatialement décalé pour 29 provinces de 1980 à 2004, prenant en compte l'hétérogénéité des provinces, les problèmes d'endogénéité et d'autocorrélations temporelle et spatiale pour tester les prédictions théoriques de notre modèle. A notre connaissance, cette étude constitue la première évaluation de l'existence d'interactions stratégiques relatives aux dépenses publiques locales en Chine. Finalement, notre analyse économétrique confirme la présence d'une compétition entre les provinces chinoises. Nous montrons également que ces interactions stratégiques concernent les catégories de dépenses publiques liées aux critères de performance formellement utilisés par le gouvernement central pour évaluer les gouverneurs provinciaux. De plus, comme attendu, de telles interactions sont renforcées par le degré de décentralisation.

Ce travail révèle l'existence d'interactions stratégiques entre les provinces chinoises, en dépit de l'absence de redevabilité électorale des gouverneurs et d'une mobilité aisée des agents. Alors que, généralement, une hypothèse nécessaire à la présence d'une compétition interjuridictionnelle est que les gouvernements locaux soient directement élus par les citoyens et que le processus de décentralisation soit total, en Chine, au contraire, c'est le système politique centralisé associé à un système budgétaire décentralisé qui assure la redevabilité politique des décideurs locaux en induisant une compétition entre les juridictions locales.

Partie III : Décentralisation et transferts intergouvernementaux

Dans la partie II, nous avons adapté les théories traditionnelles du fédéralisme budgétaire de façon à déterminer les conditions d'existence d'interactions stratégiques entre les gouvernements locaux évoluant dans un contexte de faible capacité fiscale ou d'absence de démocratie locale. La partie III, "Décentralisation et transferts intergouvernementaux", est consacrée à l'étude des transferts de ressources du gouvernement central vers les gouvernements locaux. Dans un premier temps, nous analysons l'effet des transferts sur les recettes budgétaires locales propres des communes au Bénin, où la mobilisation des ressources locales constitue une préoccupation majeure (chapitre 4). Dans un second temps, nous examinons la manière dont les transferts sont alloués entre les gouvernements locaux du Sénégal, où l'allocation des ressources est souvent ressentie par la population comme étant influencée par des considérations d'ordre politique (chapitre 5).

Chapitre 4 : "Do unconditional central transfers boost local own-revenue in a sub-Saharan country?"

Le chapitre 4, version d'un article co-écrit avec Grégoire Rota-Graziosi, analyse l'effet des transferts inconditionnels sur la mobilisation des ressources locales au Bénin.

Alors que la plupart des pays africains se sont engagés dans un processus de décentralisation, un déséquilibre existe souvent entre la capacité des gouvernements locaux à lever des ressources et les responsabilités qui leur sont transférées. Les transferts du gouvernement central sont alors essentiels pour assurer le succès de la décentralisation dans ces pays. Cependant, ils posent un problème d'incitation à la mobilisation des ressources locales propres. En effet, les transferts budgétaires intergouvernementaux modifient le comportement des décideurs locaux. Plusieurs mécanismes ont été mis en évidence dans la littérature. Parmi les plus discutés, le "flypaper effect" est une régularité empirique souvent qualifiée d'"anomalie" : une augmentation des transferts induit un accroissement des dépenses publiques locales plus important qu'une hausse équivalente du revenu privé de la population locale (Hines et Thaler, 1995). Un autre effet (dés)incitatif des transferts centraux est lié à la question de la contrainte budgétaire douce et au risque d'emprunt excessif des gouvernements locaux. Dans un contexte d'asymétries informationnelles, les subventions du gouvernement central mettent en péril la discipline budgétaire des gouvernements locaux, soulevant un problème d'aléa moral (Kornai, Maskin, et Roland, 2003 et Pisauro, 2001). Elles sont également perçues comme une aubaine leur permettant de réduire leur effort fiscal. Étant donné le déséquilibre budgétaire, d'une part, et les problèmes

d'incitation liés aux transferts, d'autre part, une importante littérature a été consacrée aux systèmes d'allocation des ressources du gouvernement central (Boadway et Shah, 2007). Les transferts inconditionnels sont généralement considérés comme étant peu incitatifs. Pour limiter ce phénomène, certains pays ont d'ailleurs développé des systèmes dans lesquels le niveau des transferts dépend en partie des capacités, des besoins mais aussi des efforts budgétaires des gouvernements locaux (Smart, 2007 et Egger, Koethenbuerger, et Smart, 2010). Cependant, le manque de données au niveau local, notamment pour apprécier les capacités fiscales locales, limite l'utilisation de tels systèmes sophistiqués dans beaucoup de pays en développement.

Dans ce chapitre, nous analysons l'effet des transferts inconditionnels sur les ressources locales propres des gouvernements locaux au Bénin. En reprenant un modèle standard de détermination du niveau de taxe optimal et en faisant l'hypothèse que les coûts de collecte des gouvernements locaux sont supérieurs à ceux du gouvernement central, nous mettons tout d'abord en évidence une ambigüité théorique associée à l'effet de tels transferts sur la mobilisation des ressources locales propres. Notre analyse économétrique porte ensuite sur un panel de 74 communes béninoises de 2003 à 2008. Nous utilisons la taxe de voirie, collectée par le gouvernement central et redistribuée aux gouvernements locaux selon le poids démographique des juridictions, pour évaluer l'effet causal des transferts inconditionnels. Cette taxe rétrocédée a des caractéristiques intéressantes pour permettre une analyse économétrique pertinente, notamment le fait qu'elle soit allouée selon une règle fixe. Traitant ainsi rigoureusement le problème d'endogénéité inhérent à ce genre d'études, nos résultats révèlent un impact positif des transferts inconditionnels sur les ressources locales propres, conditionnel à un minimum de richesse de la commune. Cet effet est plus important pour les juridictions ne partageant pas la même affiliation politique que le président en poste, ces dernières semblant être davantage incitées à mobiliser des ressources par elles-mêmes. Nos conclusions diffèrent de celles de Shah (1990) et Rajaraman and Vasishtha (2000) qui mettent en lumière un effet désincitatif des transferts respectivement au Brésil et en Inde. Néanmoins, ces études ne traitent pas l'endogénéité des transferts. Les résultats de Skidmore (1999), Smart (2007), Buettner (2006) et Dahlberg, Mörk, Rattso, et Agren (2008), concluant à un effet positif des transferts d'égalisation sur la mobilisation des ressources locales, se rapprochent de nos conclusions. Notre étude a cependant la particularité de mettre en lumière un effet positif non pas des transferts d'égalisation mais des transferts inconditionnels, généralement considérés comme étant peu incitatifs.

Ce chapitre met finalement en exergue une qualité négligée des transferts inconditionnels dans les pays en développement : ils peuvent alléger les contraintes financières qui pèsent sur les gouvernements locaux non seulement directement mais aussi indirectement en stimulant la mobilisation des ressources locales propres.

Chapitre 5 : "Does the system of allocation of intergovernmental transfers in Senegal eliminate politically motivated targeting?"

Le chapitre 5 analyse les déterminants de l'allocation des transferts au Sénégal, où une formule d'allocation est employée.

La littérature s'accorde à dire que les bénéfices espérés de la décentralisation sont conditionnés à la présence d'un système de transferts intergouvernementaux stable, équitable et efficace (Buchanan, 1950, Oates, 1972 et Gramlich, 1977). Néanmoins, très tôt, les historiens économistes tels que Wright (1974) ont examiné l'allocation des transferts entre les États américains durant le "New Deal" et ont montré que les variables politiques étaient plus à même d'expliquer la distribution des ressources que les variables économiques. Une importante littérature sur les déterminants de l'allocation des transferts existe désormais et révèle de manière univoque que les transferts n'ont pas pour seul objectif d'atténuer les problèmes d'inefficacité et d'inégalité entre les gouvernements locaux. Les décideurs politiques semblent notamment utiliser les transferts budgétaires pour maximiser leur chance de réélection (Grossman, 1994 et Banful, 2010) et défendre les intérêts de leurs partisans (Cox, 1986 et Case, 2001). Si les études économétriques ont montré que l'allocation des transferts pouvait interagir avec les intérêts personnels des décideurs, distribuer les ressources sur la base d'une formule reposant sur des critères économiques devrait permettre d'éliminer l'arbitraire (Banful, 2010). Un tel système a été adopté par un grand nombre de pays. C'est notamment le cas au Sénégal où la distribution des transferts est basée sur une formule simple d'allocation.

Dans ce chapitre, nous tentons de déterminer si le système d'allocation des transferts au Sénégal est conforme aux prescriptions de la théorie normative, notamment, au principe d'équité (1) et si ce système est suffisant pour éliminer les considérations d'ordre politique dans l'allocation des ressources entre les communes (2). Si tel n'est pas le cas, nous examinons la nature des facteurs politiques influant sur la distribution horizontale des transferts (3). Ce chapitre contribue à la littérature d'une double manière. Premièrement, à notre connaissance, il est l'un des premiers à exploiter une base de données de panel au niveau microéconomique d'un pays d'Afrique sub-saharienne pour tester les théories d'économie politique des transferts budgétaires. Ceci permet de déterminer dans quelle mesure les résultats obtenus dans les économies avancées peuvent être observés dans un pays en développement. De plus, le Sénégal est un cas particulièrement intéressant puisqu'il y a une suspicion selon laquelle l'allocation des transferts est largement influencée par la nature des relations politiques que la juridiction récipiendaire entretient avec le gouvernement central. Deuxièmement, nous proposons l'utilisation d'une méthode économétrique qui offre des résultats empiriques robustes. En effet,

nous utilisons l'estimateur à décomposition vectorielle des effets fixes développé par Plümper et Troeger (2007). Ainsi, nous prenons en compte l'hétérogénéité des gouvernements locaux tout en évitant l'inefficience associée à l'estimation de l'effet de variables à faible variance temporelle, communément observée dans cette littérature. De plus, pour déterminer dans quelle mesure les considérations d'équité sont prises en compte dans l'allocation des transferts intergouvernementaux, nous calculons un indicateur innovant de richesse au niveau local basé sur la possession d'actifs par les ménages, utilisant les Enquêtes Démographiques et de Santé (Filmer et Pritchett, 1999, Sahn et Stifel, 2003 et Rutstein, 2008).

Portant sur l'étude d'un panel de données concernant 67 communes sénégalaises de 1997 à 2009, les résultats de nos estimations tendent à montrer que les considérations d'équité n'affectent pas l'allocation des transferts intergouvernementaux au Sénégal, conduisant à la conclusion que la distribution des ressources ne suit pas les prescriptions de la théorie normative (1). Ce résultat n'est pas surprenant. Dans la plupart des études économétriques (Kraemer, 1997, Wallis, 1998 et Meyer et Naka, 1999), les gouvernements locaux les plus riches reçoivent davantage de transferts par tête. Notre étude démontre également l'existence de motivations politiques dans l'affectation des ressources en dépit de la formule d'allocation (2). Nous mettons en évidence trois types de motivations politiques (3). Premièrement, la distribution des ressources semble être tactique plus que partisane puisque les communes "*swing*" sont ciblées tandis que les communes partisanes ne semblent pas l'être. Contrairement aux conclusions de Case (2001) et Miguel et Zaidi (2003), le gouvernement central ne cible pas les ressources sur les zones partisanes. Notre résultat est proche de celui de Cole (2009) qui montre que les politiciens maximisent leurs chances de réélection en ciblant les juridictions dont le choix de vote sera plus vraisemblablement influencé par le montant des transferts. Il est également similaire à celui de Banful (2010) qui suggère la présence d'une utilisation tactique des transferts dans un contexte africain. Deuxièmement, les gouvernements locaux qui sont mieux représentés au Parlement semblent recevoir un montant supérieur de transferts. Une plus grande représentation par électeur est effectivement associée à plus de transferts par tête, ce qui confirme l'un des résultats les plus robustes de cette littérature (Wright, 1974, Porto et Sanguinetti, 2001 et Khemani, 2007). Enfin, la fragmentation ethnique apparaît être positivement corrélée aux transferts, suggérant que le gouvernement central utilise les transferts comme instrument pour pacifier des zones potentielles de troubles (Treisman, 1996).

Ce chapitre met ainsi en lumière l'incapacité d'un système d'allocation des transferts à éliminer le pouvoir discrétionnaire dans la distribution des ressources. La délégation de cette responsabilité à une agence indépendante pourrait être, comme le suggère l'étude de Khemani (2007), une solution pour atténuer les distorsions créées par de telles incitations politiques.

Partie IV : Décentralisation et bien-être

Après avoir étudié les relations horizontales entre les décideurs locaux (partie I) et verticales entre le gouvernement central et les gouvernements locaux (partie II), la partie IV, "Décentralisation et bien-être", constituée d'un seul chapitre (chapitre 6), vise à évaluer l'effet final de la décentralisation sur des indicateurs de bien-être, essentiellement de santé et d'éducation, à partir d'enquêtes réalisées sur les conditions de vie des ménages.

Chapitre 6 : "Does decentralization facilitate access to poverty-related services? Evidence from Benin"

Le chapitre 6, fruit d'une collaboration avec Martial Foucault et Grégoire Rota-Graziosi dans le cadre du projet NBER "African Successes", évalue l'effet final de la décentralisation sur l'accès des populations aux services de base.

Alors que la décentralisation, devenue un élément clé de la réforme du secteur public des pays en développement, a été mise en place depuis un certain nombre d'années, peu d'études ont à ce jour examiné l'efficacité de cette stratégie à combattre la pauvreté en Afrique sub-saharienne.

Ce chapitre a pour objectif de déterminer l'effet de la décentralisation sur l'accès aux services de base : l'eau, les toilettes, le traitement des ordures ménagères et eaux usées, et l'éducation primaire. Plus précisément, par l'analyse de données de panel concernant 77 communes béninoises de 2006 à 2007, nous tentons de répondre aux trois questions suivantes : (1) Dans quelle mesure la décentralisation, mesurée comme la part des recettes locales propres dans le total des recettes budgétaires pour chaque commune, affecte-t-elle l'accès aux services de base ? Cet effet est-il monotone avec le degré de décentralisation ? (2) La décentralisation impacte-t-elle différemment les communes selon leur niveau de richesse ? (3) La décentralisation réduit-elle les inégalités d'accès aux services de base à l'intérieur des communes ? Pour répondre à ces questions, nous combinons différentes bases de données de panel au niveau microéconomique. En plus des données sur les finances publiques locales, nous utilisons les Enquêtes Modulaires Intégrées sur les Conditions de Vie des ménages 2006 et 2007 qui ont la particularité d'être représentatives au niveau communal autorisant ainsi la mesure d'indicateurs agrégés et distributionnels à ce niveau. De plus, nous prenons en compte la potentielle endogénéité du degré de décentralisation, l'hétérogénéité des gouvernements locaux et l'inefficience de l'estimation de l'effet des variables ayant peu de variance temporelle.

Notre analyse tend à montrer qu'en moyenne la décentralisation améliore l'accès aux services publics de base. Néanmoins, cet effet est non-monotone avec le degré de décentralisation, suivant la forme d'une courbe en cloche. Il apparaît par ailleurs comme étant hétérogène à la

fois entre les communes et à l'intérieur de celles-ci. En effet, la décentralisation a un impact positif pour les communes suffisamment riches mais son effet devient négatif pour les plus pauvres d'entre elles. De plus, le transfert de compétences aux gouvernements locaux semble accroître les inégalités d'accès aux services publics entre les ménages à l'intérieur des juridictions locales, et ce spécialement dans les zones les plus pauvres. Ces résultats sont en accord avec ceux de Galiani, Gertler, et Schargrodsky (2008) qui concluent que la décentralisation améliore les services publics dans les zones les plus riches mais ne bénéficie pas aux juridictions déjà défavorisées, considérant que seuls les citoyens des premières ont les moyens de défendre leurs préférences.

L'implication majeure de ce chapitre est que la décentralisation au Bénin apparaît comme étant un moyen efficace de réduire la pauvreté par l'amélioration de l'accès moyen à certains services de base ; pour autant, le risque associé à cette politique réside dans l'accroissement des inégalités inter et intra-juridictionnelles. Il semble alors essentiel de maintenir un montant minimum de transferts, en particulier pour les communes les plus pauvres afin d'éviter une aggravation des inégalités.

Table des matières

Liste des tableaux

Liste des figures

Partie I

Introduction générale

Introduction générale

Motivations et problématique

Tandis que la réforme des systèmes économiques des pays en développement s'est concentrée sur le rôle du marché durant les années 1980, dès le début des années 1990, le secteur public est devenu une préoccupation majeure. Visant à redéfinir le rôle de ce secteur et à améliorer ses performances, un processus de décentralisation, largement encouragé par les bailleurs nationaux et internationaux, a été engagé dans un grand nombre de pays en développement, en Amérique latine, en Asie ainsi qu'en Afrique. La décentralisation des fonctions gouvernementales apparaît alors comme une alternative prometteuse aux systèmes centralisés, ayant fait preuve de leurs limites. Ainsi, à la nécessité d'un État fort, capable de construire une nation dans des pays souvent fragmentés et d'assurer le contrôle macroéconomique d'économies fragiles, s'est opposée la volonté de promouvoir une démocratie locale et d'introduire plus de concurrence pour améliorer la redevabilité des décideurs politiques et l'efficacité de la fourniture des biens et services publics. Cette réforme institutionnelle devait finalement contribuer à la réduction de la pauvreté.

La littérature traditionnelle du fédéralisme budgétaire (*fiscal federalism*) s'est largement consacrée à l'étude des effets de la décentralisation sur l'efficacité des politiques publiques. Dans ce cadre, deux arguments sont généralement invoqués en faveur de la décentralisation. Premièrement, rapprochant les décideurs politiques des citoyens, la décentralisation réduit les asymétries informationnelles (Hayek, 1948). Ainsi, elle est censée améliorer la connaissance des besoins et préférences des populations par les décideurs. En outre, rendant le contrôle des élus par les citoyens plus aisé, elle devrait accroître la redevabilité des gouvernements locaux (Seabright, 1996). Deuxièmement, la décentralisation induit théoriquement une compétition inter-juridictionnelle. En effet, la possibilité d'une sanction par le vote (Salmon, 1987 et Besley et Case, 1995) ou par les pieds (Tiebout, 1956) induit une concurrence entre les gouvernements locaux qui les encourage à être plus efficaces.

Des auteurs tels que Prud'homme (1995) ou Bardhan (2002) estiment néanmoins que la prise en compte des particularités des pays en développement peut remettre en cause la validité de ces arguments. En particulier, l'existence d'une compétition inter-juridictionnelle est mise en doute. En effet, elle repose sur des hypothèses qui peuvent paraître peu réalistes : la présence d'une démocratie locale effective, la mobilité inter-juridictionnelle des habitants et des capacités fiscales suffisantes des gouvernements locaux. Ainsi, tandis que l'argument de compétition a été validé pour un grand nombre de pays développés (Kelejian et Prucha, 1998), Sole-Ollé, 2006,

Redoano, 2007 ou Foucault, Madies, et Paty, 2008), peu d'études se sont consacrées à évaluer la pertinence de cet argument dans les pays en développement.

Une grande partie de la littérature s'est également focalisée sur les systèmes de transferts intergouvernementaux qui accompagnent la décentralisation, indispensables pour assurer le succès de celle-ci (Boadway et Shah, 2007). Dans ce cadre, deux problématiques sont principalement étudiées. Premièrement, des études analysent la manière dont les transferts budgétaires affectent le comportement des décideurs locaux. Elles montrent notamment que, dans un contexte d'asymétries informationnelles, les transferts budgétaires du gouvernement central peuvent désinciter les gouvernements locaux à mobiliser des ressources, voire même, les encourager à adopter des comportements budgétaires irresponsables (Kornai, Maskin, et Roland, 2003 et Pisauro, 2001). Si les transferts inconditionnels sont considérés comme étant peu incitatifs, conditionner les transferts aux efforts budgétaires des gouvernements locaux peut limiter ces phénomènes (Smart, 2007 et Egger, Koethenbuerger, et Smart, 2010). Néanmoins, ces systèmes restent difficiles à mettre en place, particulièrement dans les pays en développement. Deuxièmement, la question des critères d'allocation des transferts du gouvernement central vers les gouvernements locaux est fondamentale. Alors que, selon la théorie normative, l'allocation des transferts devrait être basée sur des considérations d'ordres économiques telles que l'équité et l'efficacité (Buchanan, 1950, Oates, 1972 et Gramlich, 1977), l'importante littérature économétrique qui existe désormais sur les déterminants de l'allocation des transferts révèle de manière univoque la prédominance des facteurs politiques. Les gouvernements utilisent les transferts pour maximiser leur chance de réélection (Grossman, 1994 et Banful, 2010) et récompenser leurs partisans (Cox, 1986 et Case, 2001). Néanmoins, distribuer les ressources sur la base d'une formule reposant sur des critères économiques devrait théoriquement permettre d'éliminer les distorsions engendrées par l'allocation arbitraire des transferts (Banful, 2010).

Enfin, un certain nombre d'études économétriques se sont attachées à évaluer l'efficacité de la décentralisation à améliorer la fourniture des services publics et le bien-être des populations (Bird et Rodriguez, 1999, Robalino, Picazo, et Voetberg, 2001, Robalino, Picazo, et Voetberg, 2001, Faguet, 2004, Enikolopov et Zhuravskaya, 2007, Galiani, Gertler, et Schargrodsky, 2008 et Azfar et Livingston, 2010). Cependant, ces études n'ont pas concerné les pays d'Afrique de l'Ouest, qui ont pourtant largement participé à ce mouvement de décentralisation.

La littérature existante et ses limites, développées plus amplement dans le chapitre 1, ont constitué le point de départ des essais proposés dans cette thèse. Cette dernière aborde ainsi trois séries de questions relatives à la décentralisation dans les pays en développement :

1. Le principe de compétition demeure-t-il pertinent en cas de ressources fiscales limitées et en absence de démocratie locale ?

2. Quels effets les transferts inconditionnels ont-il sur la mobilisation des ressources locales propres ? Un système de transfert intergouvernemental basé sur une formule d'allocation permet-il d'éliminer les motivations politiques dans la distribution des ressources ?

3. Quel est l'effet final de la décentralisation sur l'accès moyen et les inégalités d'accès aux services de base par la population en Afrique de l'Ouest ?

Structure de la thèse, démarche et principaux résultats

Le **chapitre 1**, "*Les effets de la décentralisation dans les pays en développement : une revue de la littérature*", propose une revue critique des effets de la décentralisation dans les pays en développement.

Nous nous attachons à analyser les effets théoriques attendus de la décentralisation, suivant la taxonomie des trois grandes fonctions de l'État définies par Musgrave (1959), et à examiner leur pertinence dans le contexte particulier des pays en développement. Parallèlement à cela, nous établissons un bilan critique des études économétriques qui se sont consacrées à évaluer l'existence de tels effets.

Ce chapitre met ainsi en exergue les lacunes de la littérature empirique existante. D'une part, il révèle les principales difficultés méthodologiques auxquelles sont confrontées ces études. D'autre part, il permet d'identifier les questions qui n'ont fait l'objet que de rares études et méritent de plus amples investigations.

La **partie II** vise à évaluer la pertinence du principe de compétition dans les pays en développement, argument fréquemment invoqué en faveur de la décentralisation mais considéré *a priori* comme peu applicable dans ces pays.

Sans ignorer les particularités propres aux pays en développement, le **chapitre 2**, "*Decentralisation in Africa and the nature of local governments' competition: Evidence from Benin*", revisite la pertinence de ce principe dans un contexte de capacités fiscales limitées.

Dans un premier temps, nous proposons un modèle théorique basé sur l'utilisation d'une version généralisée de l'Équilibre de Nash : l'Équilibre de Nash contraint. Cette approche, qui nous différencie de celles précédemment adoptées dans la littérature, nous permet de tenir compte des contraintes financières importantes que connaissent certaines juridictions locales. Dans ce cadre, nous développons un modèle dans lequel les gouvernements locaux déterminent leur

niveau de dépenses publiques en présence d'externalités et examinons les conditions d'existence et la nature des interactions stratégiques entre ces gouvernements. Notre analyse théorique démontre notamment que la présence de comportements stratégiques est conditionnelle à un niveau suffisant de ressources budgétaires des juridictions locales. Dans un second temps, nous testons l'existence d'interactions stratégiques dans un pays représentatif de l'Afrique de l'Ouest, le Bénin, caractérisé par l'extrême pauvreté de certaines zones géographiques. Notre étude économétrique est basée sur l'estimation d'un modèle spatialement décalé (*spatial lag model*) portant sur des données de panel de 77 communes de 2002 à 2008, et traite rigoureusement des problèmes d'hétérogénéité, d'endogénéité et d'autocorrélations temporelle et spatiale.

L'apport de ce chapitre est double. D'une part, nous établissons l'existence d'interactions stratégiques similaires à celles observées dans les économies avancées, conditionnelle à un minimum de richesse locale. Ces interactions inter-juridictionnelles existent non seulement entre les communes voisines mais aussi entre celles qui sont similaires en termes de composition ethnique. D'autre part, nous levons l'ambiguïté théorique associée à la nature de ces interactions, mettant en évidence la complémentarité stratégique des dépenses publiques locales. Le fait qu'un accroissement des dépenses publiques dans une juridiction induise des variations similaires des dépenses dans les communes voisines tend à confirmer l'existence d'un multiplicateur similaire à celui de Glaeser, Sacerdote, et Scheinkman (2003), qui peut notamment encourager à décentraliser l'aide extérieure.

Le **chapitre 3**, "*Yardstick competition in a federation: Theory and evidence from China*", reconsidère également le principe de compétition mais dans un contexte de mobilité limitée des populations et d'absence de démocratie locale, comme c'est le cas en Chine.

Considérant que le contrôle vertical peut assurer la redevabilité des gouvernements locaux et créer une compétition inter-juridictionnelle (Blanchard et Shleifer, 2001), nous proposons un modèle de concurrence par comparaison ("*yardstick competition*") par le haut, où la concurrence n'est plus induite par les électeurs comme dans le modèle de Besley et Case (1995) mais par le gouvernement central. Ce dernier évalue les gouvernements locaux sur la base de leur performance relative à fournir des services publics, les encourageant ainsi à considérer les décisions budgétaires voisines. La décentralisation devrait alors induire des interactions stratégiques entre les juridictions locales voisines, de même que lorsque les décideurs locaux sont démocratiquement élus. Utilisant une stratégie économétrique rigoureuse, nous testons ensuite les prédictions théoriques de notre modèle pour 29 provinces chinoises de 1980 à 2004.

Notre analyse révèle, pour la première fois, la présence d'interactions stratégiques en Chine. Elle met ainsi en lumière l'existence de comportements stratégiques, en dépit de l'absence de

redevabilité électorale des gouvernements locaux. Un système politique centralisé associé à un système budgétaire décentralisé peut assurer la redevabilité politique des décideurs locaux en induisant une compétition entre les juridictions locales et faire preuve d'efficacité.

La présence d'interactions stratégiques laisse penser que la décentralisation dans les pays en développement pourrait, à travers les incitations qu'elle engendre, améliorer l'efficacité des politiques publiques. Néanmoins, pour être efficace et éviter une aggravation des inégalités, la décentralisation ne peut se passer d'un système de transferts intergouvernementaux équitable et efficace. C'est pourquoi, dans la **partie III**, nous nous attachons à analyser les effets et les déterminants de l'allocation des transferts du gouvernement central vers les juridictions locales.

Le **chapitre 4**, "*Do unconditional central transfers boost local own-revenue in a sub-Saharan country?*", évalue l'effet des transferts inconditionnels sur la mobilisation des ressources locales propres au Bénin.

A partir d'un modèle standard de détermination du niveau de taxe optimal, faisant l'hypothèse que les coûts de collecte des gouvernements locaux sont supérieurs à ceux du gouvernement central, nous mettons tout d'abord en évidence une ambigüité théorique associée à l'effet de tels transferts sur la mobilisation des ressources locales propres. Notre analyse économétrique porte ensuite sur la taxe de voirie, collectée par le gouvernement central et rétrocédée aux gouvernements locaux béninois selon leur poids démographique. Le fait que ce transfert soit alloué selon une règle fixe nous offre la possibilité de mener une analyse économétrique rigoureuse, traitant des biais d'endogénéité inhérents à ce genre d'études.

Portant sur un panel de 74 communes béninoises de 2003 à 2008, les résultats des estimations révèlent un impact positif des transferts inconditionnels sur les ressources locales propres, à condition d'un minimum de richesse de la commune. Cet effet incitatif apparaît également plus important pour les juridictions ne partageant pas la même affiliation politique que le président en poste. Cette étude met ainsi en lumière une qualité des transferts inconditionnels, pourtant généralement considérés comme étant peu incitatifs : au-delà de la simplicité de leur mise en place, ils peuvent alléger efficacement les contraintes financières qui pèsent sur les gouvernements locaux et les inciter à mobiliser des ressources par eux-mêmes.

Au-delà de la forme des transferts intergouvernementaux, se pose la question de leurs critères d'allocation entre les juridictions locales. Le **chapitre 5**, "*Does the system of allocation of intergovernmental transfers in Senegal eliminate politically motivated targeting?*" analyse les déterminants de l'allocation des transferts budgétaires au Sénégal, où la distribution de ces ressources est théoriquement basée sur une formule d'allocation. Plus précisément, nous tentons

de déterminer si le système d'allocation des transferts employé est conforme aux prescriptions de la théorie normative, notamment au principe d'équité (1), s'il est suffisant pour éliminer l'arbitraire dans l'allocation des ressources (2) et, si tel n'est pas le cas, nous examinons la nature des facteurs politiques expliquant la distribution horizontale des transferts (3).

A partir de l'étude d'un panel de données concernant 67 communes sénégalaises de 1997 à 2009, nous utilisons une méthode économétrique qui offre des résultats empiriques robustes. Basée sur l'estimateur à décomposition vectorielle des effets fixes développé par Plümper et Troeger (2007), elle traite à la fois les biais dus à l'hétérogénéité des gouvernements locaux et évite l'inefficience associée à l'estimation de l'effet de variables à faible variance temporelle, courante dans cette littérature. De plus, pour tester la présence des considérations d'équité dans l'allocation des transferts, nous calculons un indicateur innovant de richesse au niveau local basé sur la possession d'actifs par les ménages, utilisant les Enquêtes Démographiques et de Santé.

Ce travail révèle, d'une part, que les considérations d'équité n'affectent pas la distribution des transferts au Sénégal et, d'autre part, que la formule d'allocation ne suffit pas à éliminer l'existence de motivations politiques dans l'affectation des ressources. En outre, il met en évidence trois types de motivations politiques : les communes "swing", dont le choix de vote est plus vraisemblablement influencé par le montant des transferts, sont ciblées par les transferts ; les gouvernements locaux mieux représentés au Parlement reçoivent un montant supérieur de ressources du gouvernement central ; la fragmentation ethnique est positivement corrélée aux transferts, suggérant que le gouvernement utilise la politique fiscale pour pacifier des zones de conflits potentiels. Ce chapitre montre ainsi qu'une formule d'allocation peut être insuffisante pour éliminer la distribution discrétionnaire des ressources.

L'existence d'interactions stratégiques démontrée dans la partie II prouve que la décentralisation est effective dans bon nombre de pays en développement, malgré des capacités fiscales demeurant souvent limitées et une démocratie qui n'est pas toujours effective. La partie III révèle quant à elle la difficulté de mettre en place des transferts intergouvernementaux efficaces et équitables pour assurer le succès de la décentralisation et éviter une aggravation des inégalités. Dans cette dernière partie (**partie IV**), nous nous attachons enfin à déterminer l'effet moyen et distributionnel de la décentralisation sur des indicateurs de bien-être.

Le **chapitre 6**, "*Does decentralization facilitate access to poverty-related services? Evidence from Benin*", évalue l'effet final de la décentralisation sur l'accès des populations aux services de base au Bénin : l'eau, les toilettes, le traitement des ordures ménagères et eaux usées, et l'éducation primaire. Nous tentons de répondre à trois questions : (1) La décentralisation

améliore-t-elle l'accès aux services de base ? (3) Affecte-t-elle différemment les communes selon leur niveau de richesse ? (4) Réduit-elle les inégalités d'accès aux services de base à l'intérieur des communes ?

Pour répondre à ces questions, nous analysons des données de panel concernant 77 communes béninoises de 2006 à 2007, résultat de l'utilisation de différentes bases de données de panel. En effet, des données sur les finances publiques locales sont combinées avec les Enquêtes Modulaires Intégrées sur les Conditions de Vie des ménages 2006 et 2007 qui ont la particularité d'être représentatives au niveau communal, autorisant ainsi la mesure d'indicateurs agrégés et distributionnels à ce niveau. Notre stratégie économétrique prend en compte la potentielle endogénéité du degré de décentralisation, l'hétérogénéité des gouvernements locaux et l'inefficience de l'estimation de l'effet des variables ayant peu de variance temporelle.

Cette analyse révèle trois résultats fondamentaux. Premièrement, en moyenne, la décentralisation améliore l'accès aux services publics de base. Néanmoins, cet effet est non-monotone avec le degré de décentralisation, suivant la forme d'une courbe en cloche. Deuxièmement, l'impact de la décentralisation apparaît comme étant hétérogène entre les communes. En effet, le transfert de compétences aux gouvernements locaux a un impact positif pour les communes suffisamment riches mais nul voire négatif pour les plus pauvres d'entre elles. Troisièmement, la décentralisation accroît les inégalités d'accès aux services publics entre les ménages à l'intérieur des juridictions locales, et ce spécialement dans les zones les plus pauvres. Ainsi, si la décentralisation est un moyen efficace de réduire la pauvreté par l'amélioration de l'accès moyen à certains services de base, elle risque de renforcer les inégalités inter et intra-juridictionnelles.

Le reste de la thèse est structuré comme suit. Nous nous attachons, en premier lieu, à examiner les effets attendus de la décentralisation dans les pays en développement selon les théories du fédéralisme budgétaire (chapitre 1). Nous étudions ensuite, dans la partie II, l'existence et la nature des interactions horizontales entre les gouvernements locaux dans un contexte de faibles ressources budgétaires et d'absence de démocratie locale (respectivement, chapitres 2 et 3). Dans la partie III, nous analysons les effets et les déterminants de l'allocation des transferts intergouvernementaux (respectivement, chapitres 4 et 5). Enfin, la partie IV est consacrée à la détermination de l'impact final de la décentralisation sur l'accès des populations locales aux services de base (chapitre 6).

Chapitre 1

"Les effets de la décentralisation dans les pays en développement : une revue de la littérature"

Abstract

Cet article examine les effets théoriques attendus de la décentralisation, mis en évidence dans la littérature traditionnelle du fédéralisme budgétaire, et analyse leur pertinence dans le cadre particulier des pays en développement. Il s'attache également à dresser un bilan des études économétriques testant l'existence de ces effets. Enfin, il détermine les défis méthodologiques à relever pour permettre une analyse plus rigoureuse et systématique de la décentralisation, et identifie les lacunes de la littérature économétrique sur le sujet, faisant état des questions exigeant de plus amples investigations.

1.1 Introduction

Dès les années 1990, un grand nombre de pays en développement se sont engagés dans un processus de décentralisation. La fin de l'Union Soviétique et la "victoire" du marché ont contribué à redéfinir le rôle du secteur public et son organisation. Les pays en développement dont l'indépendance datait déjà de plusieurs décennies, ont vu la légitimité de leur gouvernement de plus en plus contestée face à une croissance économique insuffisante. La décentralisation est alors apparue comme un moyen d'y remédier en multipliant les centres de décisions politiques et en introduisant plus de concurrence et de contre-pouvoirs. De plus, dans des pays où les menaces de conflits ethniques et de mouvements séparatistes étaient critiques, cette réforme devait permettre d'atténuer les tensions sociales en autorisant une certaine autonomie politique locale. Largement soutenu par les bailleurs nationaux et internationaux[1], le transfert de compétences au niveau local a également été guidé par la volonté de promouvoir la démocratie locale et de rendre ainsi les décideurs publics plus redevables et efficaces.

Si l'analyse de la décentralisation a suscité un fort engouement durant les trois dernières décennies, cette notion reste difficile à définir et renvoie à des arrangements institutionnels aussi variés que les pays engagés dans ce processus. Une clarification de terminologie s'impose alors. D'un point de vue du droit constitutionnel, les États unitaires se distinguent des États fédéraux. Les premiers se caractérisent par une souveraineté acquise au seul gouvernement central. Dans les seconds, les gouvernements indépendants des territoires constituants et l'État central décident conjointement du partage des compétences. De plus, alors que le pouvoir dans les États unitaires est délégué aux gouvernements locaux par une loi selon la volonté de l'État, la répartition du pouvoir est prévue par la constitution et ne peut être modifiée aisément dans les États fédéraux. L'existence d'un État unitaire ou fédéral ne préjuge pas néanmoins du degré de décentralisation. Ce dernier, difficilement mesurable, dépend de la répartition qualitative et quantitative des compétences entre les différents niveaux de gouvernements. Dans ce cadre, il est indispensable de distinguer les notions de déconcentration, de délégation et de dévolution (Bird et Vaillancourt, 1998). La déconcentration vise à améliorer l'efficacité opérationnelle de l'action de l'État. Elle consiste en un transfert de responsabilités de l'État central à des agents d'une circonscription territoriale, alors subordonnés à l'autorité hiérarchique du gouvernement central. La délégation correspond quant à elle au transfert de pouvoir et de responsabilité dans un domaine bien défini à des entités semi-autonomes, agissant au nom de l'État central mais disposant d'un budget autonome. La dévolution implique enfin le transfert de compétences, de

[1] Voir, par exemple, World-Bank (1999) ou World-Bank (2000).

responsabilités et, plus encore, de la décision politique, à des personnes morales de droit public, élues par les administrés de la juridiction administrative en question. Sous cette forme la plus poussée de la décentralisation, les décideurs locaux jouissent d'un pouvoir décisionnel substantiel pour mobiliser leurs propres ressources financières et déterminer la manière dont elles vont être dépensées dans leur domaine de compétences et sont redevables devant les citoyens locaux. Dans la réalité, ces trois modalités apparaissent simultanément de manière complémentaire. Nous considérons ici la décentralisation dans sa version la plus complète, à savoir la dévolution.

Selon la théorie du fédéralisme budgétaire, la décentralisation a trois effets suivant la taxonomie des fonctions de l'État établie par Musgrave (1959) : allocation des ressources, redistribution et stabilisation de l'activité économique. L'étude des effets de la décentralisation sur la fonction d'allocation des ressources (que produire ? pour qui ? à quel prix ?) occupe une très large partie de la littérature. A l'origine de ces effets, deux mécanismes ont généralement été considérés : le principe de proximité et celui de compétition. Rapprochant les décideurs politiques des citoyens, la décentralisation améliore la connaissance des besoins et préférences des populations par les décideurs (Hayek, 1948) d'une part, et la redevabilité et l'efficacité des gouvernements locaux (Seabright, 1996), d'autre part. Par la compétition inter-juridictionnelle qu'elle induit, la décentralisation permet une meilleure adéquation de l'offre de biens et services publics aux préférences des habitants (Tiebout, 1956 et Oates, 1972) et incite les gouvernements locaux à plus d'efficacité (Salmon, 1987, Besley et Case, 1995). Néanmoins, la décentralisation peut s'avérer défaillante en présence d'économies d'échelle ou d'externalités inter-juridictionnelles (Lockwood, 2002 et Besley et Coate, 2003). Les particularités des pays en développement remettent en cause la pertinence des principes de proximité et de compétition. D'une part, ceux-ci reposent sur plusieurs hypothèses peu réalistes dans les pays les plus pauvres : l'existence d'une démocratie locale, la mobilité inter-juridictionnelle des habitants ou encore l'absence de capture par les élites locales (Prud'homme, 1995 et Bardhan, 2002). D'autre part, l'insuffisance des capacités techniques, administratives ou fiscales des gouvernements locaux est particulièrement marquée dans les pays en développement. L'analyse de l'impact de la décentralisation sur les fonctions de redistribution et de stabilisation est plus restreinte mais soulève un plus large consensus (Tanzi, 1996). Ces fonctions doivent rester du ressort de l'État central. La décentralisation apparaît alors davantage comme une menace à la cohésion économique et sociale de la nation par les inégalités qu'elle est susceptible d'induire, ou comme un facteur de déstabilisation économique liée au risque d'indiscipline budgétaire des gouvernements locaux qu'elle introduit.

En parallèle à l'analyse des effets théoriques attendus de la décentralisation, nous nous référerons aux études économétriques pertinentes qui se sont consacrées à tester l'existence

de tels effets dans les pays en développement (Tableau 1.1). Cette littérature présente néanmoins certaines lacunes que nous soulignerons. Tout d'abord, les études économétriques sont confrontées à plusieurs difficultés méthodologiques : un manque de données, une comparaison internationale très délicate et un problème d'endogénéité de la décentralisation. Ensuite, alors que certaines questions, comme la pertinence du principe de proximité, ont été largement étudiées, d'autres n'ont été l'objet que de rares études. C'est le cas notamment du principe de compétition.

L'article est structuré comme suit. La section 1.2 s'intéresse aux effets de la décentralisation sur l'efficacité allocative de la fourniture des biens et services publics (fonction d'allocation). La section 1.3 s'attache à analyser ses effets macroéconomiques (fonctions de redistribution et de stabilisation). En conclusion (section 1.4), à partir du bilan dressé des analyses économétriques existantes, nous identifions les lacunes de la littérature économétrique sur le sujet et les défis méthodologiques à relever pour permettre une analyse plus rigoureuse et systématique de la décentralisation.

1.2 Les effets de la décentralisation sur l'efficacité allocative de la fourniture des biens et services publics

Les effets attendus de la décentralisation consistent en une modification de la nature des biens et services publics fournis, de leur allocation au sein de la population et de leur coût de production. Ces effets résultent des deux principaux mécanismes évoqués en introduction. La décentralisation rapproche les décideurs politiques de leur population, réduisant les asymétries informationnelles (section 1.2.1). Elle induit également une compétition entre gouvernements locaux, qui sont alors incités à davantage d'efficacité (section 1.2.2). Néanmoins, la décentralisation se heurte à certaines limites en présence d'économies d'échelle, d'effets de débordement ou encore de capacités techniques, administratives ou fiscales limitées (section 1.2.3).

1.2.1 Le principe de proximité

De nombreux arguments en faveur de la décentralisation ont été avancés dans la littérature du fédéralisme budgétaire. La plupart d'entre eux sont liés au principe de proximité. Rapprochant les décideurs politiques des citoyens, la décentralisation réduit, voire supprime, les asymétries informationnelles entre électeurs et élus. Non seulement, les élus locaux connaissent mieux les besoins et préférences de leurs administrés, mais ces derniers peuvent mieux apprécier les efforts ou la qualité de leur gouvernants locaux. En instaurant une démocratie locale, la décentralisation

vise à améliorer la gouvernance publique, notamment par une redevabilité plus grande des élus locaux. Cependant, le risque de corruption de ces élus n'est pas négligeable en particulier dans les pays en développement.

L'avantage informationnel des gouvernements locaux, déjà souligné par Hayek (1948) et Oates (1972), est généralement reconnu. Il est ainsi fréquent de leur déléguer le choix des bénéficiaires des programmes anti-pauvreté dans leur juridiction (par exemple : les projets "Trabajar" en Argentine et "Food-for-Education" au Bangladesh). Censés détenir plus d'information, à moindre coût, sur les membres de leur communauté, les élus locaux seraient plus à même de reconnaître les ménages les plus pauvres, sachant que la nature de la pauvreté peut varier d'une juridiction à l'autre. L'avantage informationnel des élus locaux est difficilement appréciable. Cependant plusieurs études empiriques ont établi que cet avantage permettait un meilleur ciblage des populations pauvres à l'intérieur des juridictions et, par là même, une plus grande efficacité des programmes mis en place (voir Ravallion, 1999, en Argentine, Alderman, 2002, en Albanie, Galasso et Ravallion, 2005, au Bangladesh et Bardhan et Mookherjee, 2006, en Inde).

La proximité induite par la décentralisation devrait également accroître la participation des citoyens et, en retour, la redevabilité des décideurs politiques. Les citoyens sont plus enclins à participer à la vie politique locale, considérant que celle-ci a un impact plus direct sur leur condition de vie. Leur participation, en termes d'élections et d'interactions avec les décideurs locaux, est ainsi renforcée par la décentralisation, alors vecteur de démocratisation (Blair, 2000). La population locale peut, en outre, contrôler plus aisément les décideurs locaux qu'une autorité centrale éloignée. Par conséquent, les gouvernements locaux, soumis à la pression des citoyens, sont incités à fournir plus efficacement les biens et services publics. Selon Seabright (1996), l'allocation des pouvoirs entre gouvernements central et locaux est un instrument incitatif visant à intégrer l'intérêt des citoyens dans la décision publique. Cet auteur établit que la décentralisation a certes des coûts en termes de coordination politique, mais elle implique une plus grande redevabilité des décideurs, entendue comme une plus grande probabilité que le bien-être d'une juridiction détermine *in fine* la réélection du gouvernement sortant.

Alors que l'avantage informationnel des gouvernements locaux est généralement reconnu, l'argument concernant leur plus grande redevabilité demeure contesté. En effet, il suppose d'une part un fonctionnement effectif de la démocratie locale. Une telle hypothèse peut s'avérer irréaliste dans les pays les plus pauvres (Bardhan et Mookherjee, 2006). D'autre part, des conflits locaux en termes de redistribution peuvent affecter la redevabilité des élus locaux (Galasso et Ravallion, 2005)[2], favorisant même des comportements de recherche de rente par les élites

[2] Le modèle de Seabright (1996) est développé dans un contexte où les communautés sont homogènes.

locales.

Les gouvernements locaux sont certes soumis à une pression électorale plus grande, mais ils sont aussi plus vulnérables à la corruption[3]. Selon Bardhan et Mookherjee (2005), si l'allocation intra-juridictionnelle des ressources s'améliore avec la décentralisation, celle inter-juridictionnelle se détériore résultant d'une allocation entre juridictions biaisée par les élites locales[4]. Pour Prud'homme (1995) et Bardhan (2002), la décentralisation dans les pays en développement peut induire une corruption plus importante : (1) la multiplication des centres de décisions politiques augmente les opportunités de corruption ; (2) les décideurs locaux sont également plus proches des groupes d'intérêt locaux (Tanzi, 1994) ; (3) les obstacles à la corruption sont moins nombreux au niveau local. Nécessitant la coopération des politiciens et bureaucrates, la corruption est en effet plus aisée au niveau local où l'indépendance entre ces deux entités est moins formelle. En outre, les contrôles et la pression des médias sont moins importants et ne jouent donc pas leur rôle désincitatif. Si la corruption est effectivement plus répandue au niveau local qu'au niveau national, alors, la décentralisation s'accompagne d'un accroissement de la corruption et il s'ensuit une hausse du coût de la fourniture des services publics. Les résultats des travaux économétriques demeurent partagés sur le lien entre corruption et décentralisation. Huther et Shah (1998), Barenstein et de Mello (2001) et Fisman et Gatti (2002) concluent que la décentralisation réduit la corruption et améliore la qualité de la gouvernance. Au contraire, Treisman (2000) et Fan, Lin, et Treisman (2009) montrent que les États décentralisés connaissent de plus haut niveaux de corruption.

La validation empirique du principe de proximité a généralement consisté à apprécier l'effet de la décentralisation sur la fourniture des biens publics. La plupart des études soulignent un impact positif : pour Faguet (2004), la composition des biens publics fournis s'est modifié avec la décentralisation en Bolivie, répondant mieux aux besoins des populations locales ; Bird et Rodriguez (1999) et Galiani, Gertler, et Schargrodsky (2008) concluent à l'effet favorable de la décentralisation, respectivement, sur l'accès à la santé, à l'éducation primaire, au logement et aux infrastructures aux Philippines[5], et sur les évaluations des étudiants en Argentine. Au niveau macroéconomique, Robalino, Picazo, et Voetberg (2001) mettent en lumière une cor-

Hypothèse souvent faite dans le cadre de pays développés, considérant les faibles coûts de mobilité inter-juridictionnelle, elle est souvent peu pertinente dans les pays en développement.

[3] Voir notamment le modèle de Bardhan et Mookherjee (2000).

[4] Des études ont mis en évidence la capture des gouvernements locaux par de puissantes élites locales. Par exemple, Hartmann et Boyce (1983) ont décrit comment de riches agriculteurs au Bangladesh ont détourné un programme d'aide à l'irrigation de la Banque Mondiale qui devait bénéficier aux agriculteurs les plus défavorisés.

[5] Estache et Sinha (1995) montrent également, à partir de deux échantillons de pays, un développé, un en développement, que la décentralisation tend à accroître les dépenses en infrastructure.

rélation négative entre le degré de décentralisation et les taux de mortalité[6], et Enikolopov et Zhuravskaya (2007) soulignent l'impact positif de la décentralisation sur des indicateurs de santé et d'éducation (vaccination DTP[7], mortalité infantile, taux d'alphabétisation et nombre d'enfants par enseignant). D'autres analyses tempèrent néanmoins ces résultats positifs. Pour Azfar et Livingston (2010), la décentralisation n'a pas d'effet significatif sur la fourniture locale des services publics en Ouganda, alors que Winkler et Rounds (1996) concluent à un résultat négatif, la décentralisation de l'éducation au Chili ayant considérablement réduit le nombre de postes d'enseignants et le niveau d'éducation atteint par les élèves, apprécié par des test de connaissance.

1.2.2 Le principe de compétition

Selon la littérature traditionnelle du fédéralisme budgétaire, la décentralisation devrait induire une compétition interjuridictionnelle permettant une offre plus adéquate des biens et services publics ainsi qu'une incitation à mettre en place des politiques publiques plus efficaces.

S'appuyant sur le modèle de Tiebout (1956), la décentralisation est perçue comme un moyen d'améliorer l'adéquation de l'offre des services publics aux préférences des habitants des différentes juridictions. Les gouvernements locaux peuvent offrir différents types et niveaux de services publics et les individus, parfaitement informés et mobiles, peuvent se déplacer dans les juridictions qui satisfont le mieux leurs préférences. La décentralisation permet ainsi de fournir aux habitants des différentes juridictions des biens publics différenciés, en accord avec leurs préférences, qui peuvent être hétérogènes au niveau national mais qui deviennent homogènes au sein des juridictions par le biais de la mobilité géographique. Dans le cas d'hétérogénéité ethnique, culturelle ou linguistique des populations et lorsque les caractéristiques pertinentes sont distribuées géographiquement au sein du territoire national, la décentralisation est un moyen efficace de satisfaire les besoins particuliers. Tandis qu'il est possible de considérer cet argument comme étant particulièrement fort dans les pays en développement, souvent largement fragmentés, Tanzi (1996) relève que, dans ces pays, la taille et les frontières des juridictions sont souvent le résultat d'accidents historiques plus que de considérations économiques. Il y a ainsi peu de chances pour que les caractéristiques des populations soient distribuées géographiquement entre ces juridictions. Prud'homme (1995) remet quant à lui fondamentalement en question l'argument de la meilleure adéquation de l'offre aux préférences dans le contexte des pays en développement. Il considère que la principale différence entre les juridictions lo-

[6] On peut également citer l'étude de Khaleghian (2003) qui met en évidence l'effet positif de la décentralisation sur la vaccination des enfants dans les pays les plus pauvres.

[7] Diphtérie, Tétanos, Poliomyélite.

cales ne se trouve pas dans leurs préférences respectives. Il ne s'agit pas alors de révéler les préférences hétérogènes des habitants des différentes juridictions mais de satisfaire leurs besoins fondamentaux, connus de tous. De ce point de vue, les gains en termes de bien-être associés à une meilleure adéquation de l'offre aux préférences sont minimes. Faguet et Sánchez (2008) montrent d'ailleurs que la décentralisation en Colombie a conduit au développement des services publics de première nécessité dans les juridictions de petites tailles, auparavant négligées par le gouvernement central. Ce résultat tend à confirmer que les attentes des populations locales concernent principalement les services de base. Enfin, d'autres auteurs estiment que le gouvernement central peut offrir des biens et services publics différenciés selon les préférences sur son territoire, rendant alors superflu l'avantage attendu de la décentralisation en termes de réponse aux préférences locales (Treisman, 2007)[8].

La littérature a également largement mis en exergue les gains d'efficience associés à la compétition interjuridictionnelle dans la fourniture des biens publics locaux. A travers leur "vote avec les pieds" (Tiebout, 1956), les citoyens, en particulier les investisseurs, peuvent encourager les gouvernements locaux à accroître l'efficience des politiques publiques. En effet, sachant que les populations peuvent se déplacer dans les juridictions voisines, les gouvernements locaux entrent en compétition pour attirer les populations et, par là même, accroître leur base fiscale[9]. Ce phénomène accroît la redevabilité des décideurs politiques et décourage la corruption puisque ces derniers tentent d'offrir la meilleure qualité de services publics au moindre coût (Qian et Roland, 1998). Certains estiment néanmoins que l'hypothèse de mobilité des agents parfaitement informés, "votant avec leurs pieds" en réponse à l'offre de services publics, n'est pas applicable dans ces pays. Bardhan (2002), notamment, considère que la mobilité des habitants est limitée et qu'elle n'est pas, quand elle existe, guidée par de telles considérations.

Les populations locales peuvent, même en l'absence de mobilité, initier une compétition entre les décideurs locaux. Dans un contexte d'asymétries d'information, les électeurs peuvent comparer les performances de leur gouvernement local avec celles des juridictions voisines pour identifier d'éventuels comportements opportunistes et juger du mérite de leurs décideurs locaux à rester en poste (Salmon, 1987). Les inefficiences ne peuvent alors pas être directement

[8] Ce contre-argument est limité pour au moins deux raisons (Hankla, 2009). Premièrement, il est peu probable que le gouvernement central soit aussi efficace que les gouvernements locaux pour reconnaître les préférences locales et y répondre. Deuxièmement, il semble difficile pour ce dernier d'adopter des politiques fiscales différenciées sur son territoire.

[9] Il existe d'autres types de concurrence inter-juridictionnelle. Les modèles de "welfare competition" analysent les politiques de redistribution par les gouvernements locaux lorsque les pauvres migrent en réponse aux différentiels de bien-être entre les juridictions (Brueckner, 2003). Dans la littérature de "tax competition", les gouvernements lèvent des taxes sur une taxe mobile, prenant en compte la relation inverse entre le taux de taxe dans une juridiction et sa base (voir Wilson, 1999, pour une revue détaillée).

observées par les électeurs mais sont déduites de la comparaison avec les autres juridictions. Cette comparaison induit une compétition inter-juridictionnelle puisque les décisions prises par les gouvernements voisins affectent, à travers les flux d'information qu'elles engendrent, la probabilité du gouvernement local d'être réélu. L'amélioration de l'efficacité des dépenses publiques dans les juridictions voisines force le gouvernement local à adopter le même comportement pour ne pas être signalé comme "mauvais" gouvernement et sanctionné lors des élections. Dans ce cas, la compétition horizontale est un outil de discipline des gouvernements, les incitant à être plus efficaces, à réduire les gaspillages, la corruption et les dépenses publiques non-productives. Besley et Case (1995) ont proposé un modèle sophistiqué de concurrence par comparaison ("*yardstick competition*") et fourni des preuves économétriques de ce phénomène à partir de données concernant les États-Unis de 1960 à 1988[10]. Néanmoins, prenant en compte le caractère nouvellement démocratique de bon nombre de pays en développement, l'existence de cet outil de discipline est discutée. Notamment, alors que le mécanisme de sanction est censé se faire par le vote, Prud'homme (1995) considère que, loin de révéler des préférences en termes de politiques budgétaires, le choix des électeurs est plus largement basé sur des appartenances ethniques, des affinités personnelles ou la fidélité à un parti politique.

Il n'existe pas de consensus sur l'effet final de la concurrence intergouvernementale sur le bien-être des citoyens. Ceux qui croient en la bienveillance des gouvernements considèrent généralement cette concurrence comme source d'externalités négatives, qui réduit le bien-être des populations. La concurrence fiscale apparaît alors comme étant à l'origine d'une "course vers le bas" - surenchère à la baisse des taux d'imposition locaux et offre sous-optimale des biens publics locaux - et d'une taxation trop importante des agents économiques les moins mobiles (Zodrow et Mieszkowski, 1986 et Wildasin, 1988)[11]. Les autres voient en cette compétition un moyen de limiter les comportements de prédation d'élus supposés opportunistes ou, en d'autres termes, "d'apprivoiser le Léviathan" (Brennan et Buchanan, 1977, Weingast, 1995, Besley et Smart, 2002, Brülhart et Jametti, 2007 et Weingast, 2009).

Alors que l'argument de compétition a été largement testé dans les pays développés, peu d'études ont tenté d'évaluer sa pertinence dans les pays développement[12]. Au niveau microéconomique, l'étude d'Arze, Martinez-Vasquez, et Puwanti (2008) met en lumière l'existence

[10] D'autres auteurs ont testé cet argument dans les pays développés. Voir, par exemple, Ashworth et Heyndels (1997) pour la Belgique, Bordignon, Cerniglia, et Revelli (2003) pour l'Italie, Schaltegger et Kuttel pour la Suisse et Revelli (2006) pour l'Angleterre.

[11] Cai et Treisman (2005) soulignent qu'elle peut affaiblir la discipline des unités les plus faiblement fournies.

[12] Ces études sont nombreuses dans les pays développés. Kelejian et Prucha (1998), Sole-Olle (2006), Redoano (2007) ou Foucault, Madies, et Paty (2008) ont fourni des preuves empiriques de l'existence d'interactions stratégiques au niveau des dépenses publiques respectivement aux États-Unis, en Espagne et en France.

d'une concurrence par comparaison relative aux dépenses publiques en Indonésie et celle de Chavis (2009) montre que le coût au mètre carré des routes décroît avec le nombre de villages qui sont en compétition pour l'obtention de subvention. Au niveau macroéconomique, Arikan (2004) fournit des preuves empiriques d'une association négative entre le niveau de corruption et le nombre de juridictions qui sont en concurrence. Au contraire, Akin, Hutchinson, et Strumpf (2005) mettent en évidence un problème d'effets de débordement entre les juridictions, consécutif à la décentralisation des services de santé en Ouganda, induisant une désincitation à fournir le bien public. Le niveau d'externalités entre les juridictions est considéré comme une condition critique de l'efficacité de la décentralisation, comme nous allons le voir dans la section suivante.

1.2.3 Les limites : économie d'échelle, externalités et capacités limitées

La littérature du fédéralisme budgétaire se focalise assez largement sur la demande, ignorant parfois la question de l'efficacité de l'offre des biens publics. Pourtant, les effets positifs attendus de la décentralisation dans l'efficacité allocative souffrent d'au moins deux exceptions ; lorsqu'il y a économies d'échelle et effets de débordement. Pour les biens et services publics dont la production se fait à rendements d'échelle croissants, comme certains services intensifs en capital (électricité, transport etc.), une production à plus grande échelle réduit les coûts moyens. Il existe, dans ce cas, un arbitrage entre la baisse des coûts et l'adéquation de l'offre aux préférences locales. Les effets de débordement dans la consommation ou la production des biens publics locaux sur les juridictions voisines induisent, quant à eux, une offre locale de biens et services publics sous-optimale en absence de coopération. Il est alors nécessaire de définir l'espace de production de sorte à internaliser les externalités. Le théorème de la décentralisation de Oates (1972) résume ces considérations en concluant que chaque service public doit être fourni par la juridiction qui exerce un contrôle sur le territoire géographique minimum qui lui permet d'internaliser les avantages et les coûts d'une telle prestation. Il s'agit alors d'un arbitrage entre la réponse aux préférences locales et la capacité à internaliser les externalités et réaliser des économies d'échelle (Lockwood, 2002, Besley et Coate, 2003).

En outre, les capacités techniques et administratives sont rarement les mêmes aux différents niveaux de gouvernement. La production des biens publics peut bénéficier d'économies de gamme plus importantes au niveau central (Prud'homme, 1995). Les gouvernements centraux peuvent plus probablement attirer les personnes les plus qualifiées, non seulement grâce à des salaires plus élevés mais aussi parce qu'ils offrent de meilleures perspectives de carrière (Murphy, Shleifer, et Vishny, 1991). Dans le contexte des pays en développement, Bardhan (2002)

considère, de surcroît, que le personnel technique local manque de formation et d'interactions avec les autres professionnels. Finalement, même si les préférences étaient révélées et que le gouvernement local souhaitait les satisfaire, se pose le problème de l'inadéquation des ressources disponibles aux dépenses nécessaires et du manque de qualification et de compétences locales permettant de répondre aux attentes. Reprenant la phrase de Bardhan (2002), le gouvernement central ne sait probablement pas *ce qu'il faut faire* tandis que le gouvernement local ne sait pas *comment le faire*[13].

1.3 Les effets macroéconomiques de la décentralisation

Alors que, dans la littérature du fédéralisme budgétaire, les effets microéconomiques positifs attendus de la décentralisation constituent les premières justifications à celle-ci, les effets macroéconomiques espérés sont plutôt négatifs. Réduisant les marges de manœuvre de l'État central, le transfert de compétences aux gouvernements locaux met en péril les fonctions de redistribution et de stabilisation, qui peuvent difficilement être mises en place au niveau local. En outre, la décentralisation est généralement associée aux risques d'accroissement des inégalités, soulevant la question des transferts intergouvernementaux, et d'indiscipline budgétaire, liée à l'existence d'une contrainte budgétaire douce. Nous étudions successivement l'effet de la décentralisation sur la redistribution des ressources et les inégalités (section 1.3.1) et sur la stabilité économique et la discipline budgétaire (section 1.3.2).

1.3.1 Décentralisation, redistribution et inégalités

Il existe un relatif consensus au sein de la littérature selon lequel la fonction de redistribution des revenus devrait rester de la responsabilité du gouvernement central. Nous relevons au moins quatre raisons à cela. Premièrement, seul le gouvernement central est en mesure de transférer des ressources des juridictions les plus aisées vers les plus pauvres. Deuxièmement, si la redistribution des revenus entre les ménages est à la charge des gouvernements locaux, les ménages disposant d'un revenu similaire avant la redistribution sont susceptibles d'être traités différemment du fait des différentiels de revenus et des divergences de politique redistributive entre les juridictions. Troisièmement, argument essentiel, du fait de la mobilité des populations, les juridictions les plus généreuses se trouveraient rapidement incapables de soutenir leur politique de redistribution intra-juridictionnelle, attirant les pauvres par les bénéfices qu'elles leur offrent

[13] "The central government may not know *what* to do, the local government may not know *how* to do it" (voir Bardhan, 2002, page 189).

et faisant fuir les riches par les taxes élevées qu'elles leur imposent[14]. Enfin, les ressources budgétaires et les capacités administratives des gouvernements locaux des pays en développement sont souvent trop limitées pour permettre la mise en place de politiques redistributives efficaces (Smoke, 2001). Ainsi, la décentralisation, par le transfert de ressources qu'elle induit, réduit la marge de manœuvre de l'État central pour mener des politiques de redistribution et, puisque les gouvernements locaux peuvent difficilement conduire des politiques de réduction des inégalités, elle réduit finalement l'efficacité de ces politiques au niveau national.

De surcroît, la décentralisation contribuerait à un accroissement permanent des inégalités (Prud'homme, 1995 et Manor, 1999). D'une part, dans un système décentralisé, si les juridictions financent leurs activités à partir de leurs propres ressources, les plus riches d'entre elles bénéficient de plus de services publics. West et Wong (1995), dans un article portant sur la réforme de décentralisation en Chine, mettent en évidence un tel accroissement des inégalités d'accès à l'éducation et à la santé entre les provinces.[15] Ces inégalités d'origine devraient, de plus, s'accroître par le biais de la mobilité des populations : les juridictions les plus riches ayant des bases fiscales plus importantes, elles peuvent proposer des taux de taxation plus faibles pour le même niveau de services publics, attirant de nouveaux résidents et, par là même, augmentant encore leur potentiel fiscal. D'autre part, il est peu probable que la décentralisation ait un effet uniforme sur l'ensemble du territoire, son effet dépendant largement des capacités fiscales et techniques des gouvernements locaux et de celles des citoyens à se faire entendre. L'étude de Galiani, Gertler, et Schargrodsky (2008) tend à confirmer ceci. Certes, elle montre que la décentralisation de l'éducation en Argentine a eu un impact moyen positif sur le niveau scolaire, mais elle révèle aussi des effets négatifs dans les juridictions les plus pauvres, où les populations n'ont pas la capacité de faire entendre et respecter leurs préférences[16]. La décentralisation bénéficie alors aux populations déjà avantagées, creusant l'écart avec les plus pauvres. L'élargissement du fossé entre les juridictions les plus aisées et les plus défavorisées qui en découle peut mettre en péril la cohésion économique et sociale de la nation[17].

Face au risque d'accroissement des inégalités, la littérature s'accorde sur la nécessité d'associer

[14] Cet argument est sans doute moins fort dans les pays en développement compte tenu de la plus faible mobilité de la population.

[15] Au contraire, à partir de données de panel, Sepulveda et Jorge Martinez-Vazquez (2011) montrent que la décentralisation accroît la pauvreté mais contribue à réduire les inégalités si le gouvernement central représente une part significative de l'économie (20%).

[16] De manière similaire, les résultats de Reinikka et Svensson (2004) tendent à montrer que la capture par les officiers locaux des subventions nationales à l'éducation est moindre dans les communautés les plus riches.

[17] Les études traitant de l'impact de la décentralisation sur la cohésion nationale ont des conclusions diverses. Certains montrent que la décentralisation peut réduire l'unité nationale et accroître les conflits (Treisman, 1999 et Tranchant, 2010). D'autres, au contraire, concluent que la décentralisation peut éviter la désintégration d'États divisés (Lijphart, 1977).

à la décentralisation un système de transferts intergouvernementaux stable, équitable et efficace (Buchanan, 1950, Oates, 1972 et Gramlich, 1977). La forme et le système d'allocation de ces transferts soulèvent néanmoins de nombreuses questions (Boadway et Shah, 2007, Martinez-Vazquez et Searle, 2007). Parmi elles, le risque de désincitation à la mobilisation des ressources locales propres (Smart, 2007 et Egger, Koethenbuerger, et Smart, 2010) et d'indiscipline budgétaire des juridictions locales (voir section 1.3.2). Ainsi, au-delà des capacités fiscales et des besoins locaux, les formules d'allocation des transferts doivent considérer les efforts budgétaires fournis par les gouvernements locaux[18]. De plus, même en présence de formules d'allocation, une abondante littérature économétrique a mis en lumière que la distribution des transferts entre les juridictions n'avait pas pour seul objectif d'atténuer les problèmes d'inégalité et d'inefficacité[19]. L'État central utilise les transferts budgétaires pour maximiser ses chances de réélection (Grossman, 1994 et Banful, 2010) et défendre les intérêts de ses partisans (Cox, 1986 et Case, 2001). Enfin, l'existence d'un système de transferts intergouvernementaux efficace et équitable ne garantit pas pour autant que les ressources distribuées aux juridictions les plus pauvres bénéficieront finalement aux ménages les plus défavorisés (Prud'homme, 1995).

1.3.2 Décentralisation, stabilisation et indiscipline budgétaire

La politique budgétaire, instrument indispensable pour stabiliser l'économie, est un outil difficilement manipulable au niveau local pour au moins trois raisons. Tout d'abord, les gouvernements locaux sont peu incités à supporter pleinement le coût d'une politique qui bénéficiera, en partie, aux juridictions voisines du fait des effets de débordement induits par la grande ouverture et les liens qui unissent les entités locales (Prud'homme, 1995). Ensuite, les moyens des gouvernements locaux pour poursuivre des politiques contra-cycliques sont limités : les recettes budgétaires locales sont souvent peu élastiques au revenu (Smoke, 2001)[20] et les déficits budgétaires ainsi que l'endettement des gouvernements locaux sont, au mieux, limités, compte tenu du risque d'indiscipline budgétaire. Enfin, alors que les gouvernements locaux de certains pays industrialisés peuvent jouer un rôle de stabilisation[21], ceux des pays en développement représentent généralement un faible pourcentage du secteur public en termes d'emploi et de dépense et

[18] Voir Boex et Martinez-Vazquez (2005) pour une revue des différentes formules d'allocation.

[19] Les études empiriques sur ce thème sont nombreuses : voir Case (2001) pour l'Albanie, Porto et Sanguinetti (2001) pour l'Argentine, Banful (2010) et Miguel et Zaidi (2003) pour le Ghana, Khemani (2007) et Cole (2009) pour l'Inde, Alperovich (1984) pour l'Israël et, Boex (2003) pour la Tanzanie.

[20] Comme il est préférable que les recettes budgétaires des collectivités locales soient stables, elles proviennent généralement de bases à la fois peu mobiles et peu élastiques.

[21] Gramlich (1987) avait déjà mis en lumière que les déficits des États fédéraux aux États-Unis dans les années 1980 avaient réduit le rôle de l'État central dans les politiques contra-cycliques.

n'auraient donc qu'un impact marginal au niveau national. Ainsi, la décentralisation, en transférant des ressources aux gouvernements locaux, induit une baisse de la marge de manœuvre du gouvernement central qui ne peut pas être compensée par les actions locales et réduit donc l'efficacité des politiques macroéconomiques de stabilisation. Considérant que les fluctuations macroéconomiques sont particulièrement importantes dans les pays en développement, souvent dépendants des économies extérieures et exposés aux chocs climatiques, il apparaît alors essentiel de coordonner les politiques de stabilisation au niveau central. Gramlich (1987) estime cependant que les autorités locales peuvent jouer un rôle de stabilisation, notamment si les cycles économiques ne sont pas parfaitement corrélés entre les juridictions.

Au-delà de leur incapacité à mettre en place des politiques de stabilisation face à des fluctuations économiques de court terme, les gouvernements locaux peuvent mettre en péril la stabilité macroéconomique d'un point de vue structurel (Tanzi, 1996). En l'absence de règle légale ou constitutionnelle claire et ferme, il existe effectivement un risque d'indiscipline budgétaire des gouvernements locaux, soulevant la question de la nature de la contrainte de discipline budgétaire d'une part, et de la possibilité de recours à l'emprunt par ces derniers d'autre part. En premier lieu, un problème de contrainte budgétaire douce ("*solf budget constraint*") se pose (Kornai, 1979, Qian et Roland, 1998 et Kornai, Maskin, et Roland, 2003). Les décideurs locaux peuvent dépenser plus que ne leur permettent leurs ressources sachant que les transferts du gouvernement central viendront, *ex post*, combler leurs déficits (démarche dite de "*bail out*"). La possibilité d'un financement par le gouvernement central incite à augmenter les dépenses publiques de sa juridiction puisque cette dernière en bénéficiera seule et que le coût sera finalement supporté par l'ensemble de la population nationale. Il s'agit d'un comportement stratégique des gouvernements locaux, expliqué par un problème d'aléa moral et par l'incapacité du gouvernement central à s'engager de manière crédible *ex ante,* à ne pas accorder *ex post* le soutien à un gouvernement local en difficulté financière. Les gouvernements locaux ont la possibilité d'extraire des ressources du gouvernement central, parce qu'ils ont un pouvoir politique sur lui, et surtout parce qu'ils savent que la non-action du gouvernement central, si ce dernier résistait à la pression, aurait des conséquences systémiques dont pâtirait l'État central[22]. En second lieu, les gouvernements locaux peuvent, de la même manière, ne pas rembourser les prêts contractés, forçant le gouvernement central à puiser dans ses ressources pour lui venir en aide. Ainsi, bien que l'emprunt soit indispensable pour répartir la charge de l'investissement dans le temps, ce risque d'indiscipline s'ajoute aux arguments avancés contre l'utilisation de cet outil

[22] En d'autres termes, la menace du gouvernement central de ne pas intervenir en cas de difficultés du gouvernement local n'est pas crédible.

par les autorités locales[23]. Ces comportements budgétaires irresponsables peuvent finalement conduire à d'importants déficits nationaux (voir le cas de l'Argentine, de l'Afrique du Sud ou du Brésil, Prud'homme, 1995). Ils réduisent les marges de manœuvre du gouvernement central mettant en danger la situation macroéconomique nationale à long terme (Tanzi, 1996)[24].

Peu d'études économétriques se sont consacrées à évaluer les effets macroéconomiques de la décentralisation. La plupart des analyses sont descriptives et anecdotiques et les résultats des études économétriques sont mitigés. Shah (1998) et Huther et Shah (1998) concluent que les systèmes budgétaires décentralisés sont associés à une meilleure gouvernance macroéconomique. King et Ma (2001) trouvent également que les pays décentralisés ont des taux d'inflation moins élevés. Au contraire, Wibbels (2000) met en évidence un effet négatif du fédéralisme budgétaire sur les performances macroéconomiques se traduisant par des niveaux d'inflation et des déséquilibres budgétaires plus importants. Certaines études fournissent des analyses plus fines. Notamment, les résultats de De Mello (2000) montrent que la décentralisation, lorsqu'elle est associée à une dépendance des autorités locales aux transferts, conduit à la dégradation des finances publiques nationales et ceux de Rodden (2002) révèlent que des déficits persistants apparaissent lorsque les gouvernements locaux sont simultanément dépendants des transferts et autorisés à emprunter[25].

1.4 Conclusion

Le Tableau 1.1 présente les principales analyses économétriques traitant des effets de la décentralisation dans les pays en développement[26]. Ces dernières sont classées en trois catégories selon qu'elles soient relatives au principe de proximité, au principe de compétition ou aux performances macroéconomiques. Ce bilan permet de mettre en évidence les principales difficultés auxquelles sont confrontées les études économétriques sur ce thème, qui constituent des défis pour les recherches futures. Nous identifions également les sujets relativement moins traités,

[23] Parmi ces arguments, le mauvais fonctionnement des marchés financiers, des ressources financières et des dépenses futures peu prévisibles, des connaissances techniques financières et capacités managériales trop faibles et, une incitation du décideur politique à emprunter puisqu'il en bénéficie immédiatement tandis que la charge de cet emprunt est reportée dans le temps.

[24] Comme Smoke (2001) le fait remarquer, la plupart des gouvernements locaux dans les pays en développement ont encore un rôle modeste et peu d'entre eux ont la possibilité d'avoir des déficits ou accès aux marchés des capitaux.

[25] L'effet final de la décentralisation sur la croissance a été étudié par Zhang et fu Zou (1998), Wollera et Phillips (1998), Davoodi, Xie, et Zou (1999), Lin et Liu (2000), Akai et Sakata (2002), et Martinez-Vazquez et McNab (2003).

[26] Nous ne prétendons pas l'exhaustivité mais avons procédé à une sélection de travaux parmi ceux qui nous semblaient les plus pertinents.

qui méritent de plus amples recherches.

Face à l'engouement en faveur de la décentralisation dans les pays en développement, les études économétriques des effets de cette dernière sont relativement rares[27]. Principale raison à cela, les analystes du fédéralisme budgétaire font face à un manque de données comparatives fiables pour juger de manière systématique des conséquences de cette réforme. Ceci s'explique par le fait que les gouvernements locaux dans les pays en développement, souvent introduits lors de la colonisation, ont longtemps joué un rôle budgétaire et politique minime, utilisés alors comme de simple relais administratifs[28]. Ainsi, marquée par une histoire de forte centralisation politique, la collecte de données sur les finances publiques locales a mis du temps à être systématisée. De plus, il existe un décalage entre l'introduction de la décentralisation et la disponibilité des données d'enquête au niveau local, devenu alors un niveau d'analyse pertinent[29]. Un effort de collecte de données est indispensable pour comprendre les réalités de la décentralisation, évaluer rigoureusement ses effets, et être à même de formuler des recommandations de politique publique.

Au delà de la faible disponibilité des données, les études macroéconomiques se heurtent à un problème fondamental : celui de l'hétérogénéité entre les pays. Les formes de décentralisation étant aussi diverses que les pays qui les mettent en place, il est difficile de baser une étude économétrique des effets de la décentralisation sur une comparaison entre pays. Ce problème est aggravé par le fait que les données exploitées au niveau macroéconomique sont souvent transversales (Huther et Shah, 1998, Treisman, 2000, Barenstein et de Mello, 2001, Fisman et Gatti, 2002 et Fan, Lin, et Treisman, 2009). Dans ce cas, l'introduction d'effets fixes, qui captent l'effet des caractéristiques inobservables et invariantes dans le temps des différents pays, n'est pas possible. De plus, l'exploitation de données de panel, qui permet théoriquement de dépasser cet obstacle, fait face au problème fréquent de faible variance temporelle des indicateurs de décentralisation qui rend inefficiente l'estimation de leur effet (Enikolopov et Zhuravskaya, 2007). L'utilisation de méthodes d'estimation plus sophistiquées peut aider à l'obtention de résultats économétriques plus robustes. Notamment, l'estimateur à décomposition vectorielle des effets fixes, développé par Plümper et Troeger (2007), permet de prendre en compte l'hétérogénéité des pays tout en évitant l'inefficience associée à l'estimation de l'effet de variables à faible variance

[27] On remarque que, si les pays d'Afrique sub-saharienne ont participé à la vague de décentralisation, les études économétriques les concernant sont quasi-inexistantes.

[28] En effet, les stratégies de développement étant alors basées sur la planification centrale, la décentralisation s'opposait à la nécessité d'un gouvernement central fort, capable de construire une nation dans des sociétés ethniquement fragmentées et de contrôler des économies vulnérables.

[29] Par exemple, les *Enquêtes Démographiques et de Santé* mises en place par la Banque Mondiale dans un grand nombre de pays africains sont généralement représentatives au niveau départemental alors que la décentralisation s'opère au niveau communal.

temporelle. Une autre approche, quand les données sont disponibles au niveau local, consiste à se focaliser sur l'étude des juridictions à l'intérieur d'un même pays, comme le font par exemple Galiani, Gertler, et Schargrodsky (2008) et Azfar et Livingston (2010). Se concentrer sur un pays évite en effet la difficulté de contrôler pour l'ensemble des variables institutionnelles et autres caractéristiques fixes dans le temps, propres à chaque pays, qui peuvent influencer le degré de décentralisation et les performances (qualité de la gouvernance, corruption, performances macroéconomiques etc.) et biaiser les résultats.

Généralement, l'analyse des effets de la décentralisation prend en compte les problèmes d'endogénéité, générés par l'omission de variables explicatives pouvant être corrélées avec la décentralisation et une potentielle causalité inverse. En effet, le degré de décentralisation - qu'il soit mesuré comme la part des recettes publiques locales dans le total des recettes, la part des dépenses publiques locales dans les dépenses publiques totales ou comme une variable binaire - peut difficilement être considéré comme étant une variable exogène. Au niveau macroéconomique, il est fréquent d'utiliser les origines légales du pays (Barenstein et de Mello, 2001 et Fisman et Gatti, 2002) ou la taille du pays (Enikolopov et Zhuravskaya, 2007) comme instruments. Ces derniers ont néanmoins le défaut d'être constants dans le temps. Au niveau microéconomique, il y a de fortes chances pour que les juridictions les plus aptes à créer de la richesse, qui ont alors vraisemblablement de meilleurs indicateurs de résultats, soient aussi les plus décentralisées. Galiani, Gertler, et Schargrodsky (2008) corrigent rigoureusement le problème d'endogénéité grâce à la mise en place d'une stratégie d'identification quasi-expérimentale. Les variables politiques, comme l'affiliation partisane, peuvent également être utilisées comme instruments, connaissant l'influence que les considérations d'ordre politique peuvent avoir sur le niveau des transferts reçus et, par là même, sur le niveau de décentralisation.

Enfin, certains effets semblent bénéficier de plus d'attention que d'autres. En particulier, alors que la pertinence du principe de proximité a été largement analysée, celle du principe de compétition, argument essentiel en faveur de la décentralisation et testé assez systématiquement dans les pays développés, n'a fait l'objet que de rares études dans les pays en développement (Arikan, 2004, Akin, Hutchinson, et Strumpf, 2005, Arze, Martinez-Vasquez, et Puwanti, 2008 et Chavis, 2009). De plus, parmi elles, Chavis (2009) et Arikan (2004) n'analysent pas les interactions stratégiques en tant que telles, la compétition étant simplement mesurée par le nombre de juridictions censées se faire concurrence. La rareté de ces études dans les pays en développement tient au fait que l'existence d'un "vote avec les pieds" se heurte à l'absence de mobilité de la population, celle d'une "*yardstick competition*" au caractère peu ou nouvellement démocratique de ces pays et, plus généralement, celle de comportements stratégiques à la faiblesse des capacités fiscales des gouvernements locaux (Bardhan, 2002). Sans pour autant ignorer

leurs spécificités, il apparaît urgent de reconsidérer la pertinence de cet argument dans les pays en développement. Avant d'évaluer l'effet final de la présence d'interactions stratégiques sur le bien-être, un préalable semble nécessaire : tester l'existence de comportements stratégiques des décideurs locaux dans les pays où certaines juridictions sont caractérisées par de faibles ressources budgétaires et dans ceux où il n'existe pas de démocratie locale. Cela constitue l'objet de la partie suivante.

1.5 Annexes

Tableau 1.1: Principales études économétriques testant les effets de la décentralisation dans les pays en développement

Auteurs	Données	Modèle testé et technique économétrique	Principaux résultats
		Principe de proximité	
		Avantage informationnel	
Ravallion, 1999	DT : Argentine, 503 départements, 22 provinces	VD : dépenses du programme "Trabajar" par tête, VI : pourcentage de ménages qui ont au moins un besoin de base non satisfait dans le département ; divise la période en sous-intervalles pour tester l'effet des contractions des dépenses du programme sur les performances en termes de ciblage, TE : MCO avec EF provinces.	Le programme décentralisé cible efficacement les pauvres mais ces performances se dégradent lors des contractions du programme.
Alderman, 2002	DP : Albanie, enquête de 145232 ménages, 1996 (sous-périodes)	VD : montant d'aide reçu, VI : dépenses du ménage (non inclus dans l'allocation de base) décomposées en observables, non observables et résidu, TE : Tobit.	Le ciblage des populations pauvres par les gouvernements locaux excède celui qui pourrait être atteint par le gouvernement central. Les autorités locales ont des informations dont le gouvernement central ne dispose pas.
Galasso et Ravallion, 2005	DP : Bengale-Occidental, 89 villages, 1978-98	1) Ciblage intra-village : VD : part des pauvres ciblés dans le village, VI : importance démographique de la classe dans le village, importance de la capture (alphabétisation, caste, inégalité), compétition politique (indice de concentration), productivité relative des pauvres, ressources par tête du village, 2) Ciblage inter-village : même approche avec VD : ressources par tête alloués au village, TE : EF avec dummies temporelles et cluster districts.	La pauvreté et les inégalités du village détériorent peu le ciblage du programme sur les populations pauvres à l'intérieur du village mais se traduisent par un montant d'aide reçu par le village significativement moindre. La compétition politique et les niveaux d'alphabétisation n'ont pas d'effets robustes sur le ciblage.
Bardhan et Mookherjee, 2006	DT : Bangladesh, enquête de 3625 ménages, 1996-97	1) Détermine la qualité du ciblage sur les populations pauvres du programme "Food-For-Education", 2) Teste dans quelle mesure les allocations inter et intra-villages expliquent ce ciblage, TE : MCO avec EF ménages ou villages et dummies temporelles.	Le ciblage des populations pauvres à l'intérieur des villages augmente avec la taille du programme. Il y a peu de preuves que l'État central cible les juridictions les plus pauvres.

DP = données de panel, DT = données transversales, VD = variable dépendante, VI = variable indépendante, TE = technique économétrique, MCO = moindres carrés ordinaires, EF = effets fixes

Tableau 1.1 (suite 1): Principales études économétriques testant les effets de la décentralisation dans les PED

Auteurs	Données	Modèle testé et technique économétrique	Principaux résultats
		Corruption	
Huther et Shah, 1998	DT : 80 PD et PED	VD : indice de qualité de la gouvernance (gestion économique, développement social, participation des citoyens, orientation du gouvernement), VI : part des dépenses publiques locales dans les dépenses publiques totales, TE: MCO.	Les résultats révèlent un effet positif de la décentralisation fiscale sur la gouvernance.
Treisman, 2000	DT : 54 pays en 1996	VD : corruption perçue (enquêtes réalisées sur les risques d'affaires), VI : variable binaire (fédéral/non fédéral), TE : MCO, DMC, ES.	Les pays à structure fédérale sont plus "corrompus".
Barenstein et de Mello, 2001	DT : 78 PD et PED	VD : indice de corruption "International Country Risk Guide", indicateur de Kaufmann, Kraay et Zoido-Lobaton (1999), VI : part des dépenses publiques locales dans les dépenses publiques totales, part des recettes locales dans les recettes totales, TE : MCP, DMC (I: origines légales du pays).	La décentralisation des dépenses a un effet positif sur la gouvernance, et ce d'autant plus que la part des ressources locales propres est faible.
Fisman et Gatti, 2002	DT : 55 PD et PED, moyenne 1980–95	VD : indice de corruption "International Country Risk Guide" (et 5 indicateurs alternatifs en robustesse), VI : part des dépenses publiques locales dans les dépenses publiques totales, TE : MCO, DMC (I: origines légales du pays).	La décentralisation fiscale est significativement associée à des niveaux de corruption plus faibles.
Reinikka et Svensson, 2004	DP : Ouganda, enquête de 250 écoles primaires, 1991–95	VD : part des subventions d'éducation effectivement reçues, VI : niveau de revenu de la communauté, mesures de la qualité de l'école et des étudiants, TE : pooled-MCO avec dummies district, EF avec muettes temporelles, MV.	Les écoles ont reçu 13% des subventions qui leurs étaient destinées, le reste étant "capturé" par les officiers et élus locaux. Le montant des subventions reçus varie selon la capacité des juridictions à exiger ce qui leur est du.
Fan et al., 2009	DT : 80 PD et PED en 2000	VD : fréquence de corruption (basée sur une enquête réalisée auprès des entreprises), VI : nombre de niveaux de gouvernement, étendue de décision des gouvernements locaux, décideurs locaux élus ou non, part des recettes locales dans le PIB, nombre d'employés publics locaux, TE : PO.	La corruption est plus fréquente quand le nombre de niveaux de gouvernement et d'employés publics locaux augmentent.

DP ==données de panel, DT=données transversales, VD=variable dépendante, VI=variable indépendante, TE=technique économétrique, EF=effets fixes, MCO=moindres carrés ordinaires
DMC=double moindres carrés, I=instrument, MCP=moindres carrés pondérés, ES=équation simultannées, MV=maximum de vraissemblance, PO=probit ordonné

Tableau 1.1 (suite 2): Principales études économétriques testant les effets de la décentralisation dans les PED

Auteurs	Données	Modèle testé et technique économétrique	Principaux résultats
		Efficacité de la fourniture des biens publics	
Estache et Sinha, 1995	DP : 10 PD et 10 PED, 1970-92	VD : dépenses d'infrastructure par tête, VI : part des dépenses publiques locales dans les dépenses publiques totales et des recettes locales dans les recettes totales, TE : MCP.	La décentralisation a un effet positif sur le niveau des dépenses en infrastructure.
Winkler et Rounds, 1996	DT : Chili, 70 municipalités	Modèle principal : VD : scores aux tests de mathématiques et d'espagnol, VI : scores précédant, dépenses dans les écoles privées subventionnées, dépenses dans les écoles publiques. TE : MCO.	Les inégalités entre municipalités (de budget consacré) ont augmentées. Le nombre d'emplois (hors enseignants) a été divisé par deux. Les résultats des tests de connaissances ont aussi diminué.
Robalina et al., 2001	DP : PED et PD, 1970-1995, n≈500	VD : taux de mortalité infantile, VI : part des dépenses publiques locales dans les dépenses publiques totales, TE : EF.	La décentralisation réduit les taux de mortalité infantile, et ce particulièrement dans les PED.
Khaleghian, 2003	DP : 140 pays à moyen et faible revenu, 1980-1997	VD : taux de couverture de vaccination, VI: variable binaire (décentralisé ou non), part des dépenses publiques locales dans les dépenses publiques totales, dépenses publiques locales de santé dans le total des dépenses publiques locales, TE : MCO avec dummies temporelles et correction de l'hétéroscédasticité, EEG.	La décentralisation a un impact positif sur les taux de couverture de vaccination, dans les pays les plus pauvres seulement.
Faguet, 2004	DP : Bolivie, 311 municipalités, 1987-1996	1) VD : types de dépenses publiques (7 secteurs), VI : effet fixe état, interactive entre effet fixe état et variable binaire décentralisation (avant et après 1994), 2) VD : différence entre les 2 coefficients des VI de la première étape, VI : indicateurs de besoin, TE : MCO avec EF état.	L'analyse montre que la composition des dépenses publiques a changé après la décentralisation et que ces changements ont été guidé par les besoins des populations.

DP = données de panel, DT = données transversales, PED = pays en développement, PD = pays développés, VD = variable dépendante, VI = variable indépendante, TE = technique économétrique, MCO = moindres carrés ordinaires, MCP = moindres carrés pondérés, EF= effets fixes, EEG = équations d'estimation généralisées

Tableau 1.1 (suite 3): Principales études économétriques testant les effets de la décentralisation dans les PED

Auteurs	Données	Modèle testé et technique économétrique	Principaux résultats
Enikolopov et al., 2007	DP : 95 PD et PED, 1975-2000	VD : vaccination, mortalité infantile, taux d'alphabétisation, nombre d'enfants par enseignant, indice de qualité de la gouvernance de Kaufmann, Kraay et Zoido-Lobaton (1999), VI : part des recettes locales sur le total des recettes et des dépenses publiques locales dans le total des dépenses publiques, TE : pooled-MCO, EF, DMC (I : taille du pays).	La décentralisation budgétaire a un effet positif sur la qualité de la gouvernance et l'accès à l'éducation et la santé. Les institutions politiques jouent un rôle essentiel dans la détermination de ces effets.
Galiani et al., 2008	DP : Argentine, 3 456 écoles publiques, 1994-1999	VD : résultat des tests cognitifs, VI : variable binaire école décentralisée ou non, TE : estimation en première différence avec matching entre groupes de traitement et de contrôle.	La décentralisation a un effet moyen positif sur l'éducation mais ces bénéfices n'atteignent pas les communautés les plus pauvres.
Azfar et Livingston, 2010	DT : Ouganda, 75 départements (enquête ménage, décideurs locaux, directeurs des écoles et centres de santé), 2000	1) Est-ce que la demande varie entre les juridictions? Les officiers locaux connaissent-ils les préférences des résidents? 2) Est-ce que les citoyens participent davantage aux élections locales? Qu'est-ce qui guide leur choix de vote? 3) Quels sont leur source d'information sur la politique nationale et local? 4) Qu'est-ce qui motive leur mobilité?, TE : MCO avec dummies district, probit.	Effets ambigus de la décentralisation sur la provision des services publics. Positif : marge de manœuvre des officiers locaux ; taux de participation et détermination des votes. Négatif : faible connaissance de la demande par les décideurs locaux ; source d'information sur la politique locale (= leaders locaux).
		Principe de compétition	
Arikan, 2004	DT : 72 PD et PED	VD : indice de corruption perçue de "Transparency International", VI : nombre de juridictions locales/niveaux de gouvernement divisé par la population totale, part des emplois publics locaux dans les emplois publics, part des dépenses publiques locales dans les dépenses totales, TE : MCO, DMC	Le niveau de corruption décroît avec le nombre de juridictions qui se font concurrence. Résultats peu robustes.
Akin et al., 2005	DP : Ouganda, 45 districts, 1995-97	1) VD : part du budget consacré aux différentes catégories de dépenses publiques, VI : part des transferts ou des recettes propres dans les recettes locales, années de décentralisation, 2) VI : part moyenne du budget public par rapport au budget privé et part moyenne des dépenses publiques par rapport aux dépenses privées dans les districts voisins, TE : MCO, DMC.	Les décideurs locaux consacrent moins de ressources à la santé à mesure que le processus de décentralisation s'engage et que les dépenses publiques des voisins augmentent (phénomène de passager clandestin).

DP = données de panel, DT = données transversales, PED = pays en développement, PD = pays développés, VD = variable dépendante, VI = variable indépendante, TE = technique économétrique, MCO = moindres carrés ordinaires, DMC = double moindres carrés, I = instrument, EF = effets fixes

Tableau 1.1 (suite 4): Principales études économétriques testant les effets de la décentralisation dans les PED

Auteurs	Données	Modèle testé et technique économétrique	Principaux résultats
Arze et al., 2008	DT : Indonésie, 279 districts, 2004	1) VD : dépenses publiques/niveau des taxes de la juridiction, VI : dépenses publiques/niveau des taxes des juridictions voisines (matrice géographique et de migration), 2) VD : satisfaction dans la juridiction, VI : niveau de taxe dans la juridiction, niveau de taxe et satisfaction dans les juridictions voisines.	Ils trouvent une complémentarité stratégique des dépenses entre les juridictions voisines et des preuves de l'existence d'une concurrence par comparaison.
Chavis, 2009	DP : Indonésie, 12000 villages, 1998-2003.	VD : coût du mètre carré de route, VI : nombre de villages dans le district qui sont en compétition pour l'obtention d'une subvention, TE : MCO avec cluster sous-district et EF provinces ou districts.	Le coût au mètre carré des routes en Indonésie décroît avec le nombre de villages qui sont en compétition pour l'obtention de subvention.
		Effet sur les performances macroéconomiques	
De Mello, 2000	DP : 30 pays, 1970-95	VD : part des déficits dans le PIB, VI : autonomie fiscale locale, dépendance aux transferts, part des dépenses publiques locales dans le total des dépenses publiques, interaction entre autonomie et part des dépenses publiques locales, TE : SURE.	L'autonomie fiscale locale accroît les déficits au niveau local et la dépendance locale aux transferts détériore la situation fiscale du gouvernement central dans les PED.
Wibbels, 2000	DP : 46 PED, 1979-95	VD : déficit, inflation, dette, VI : variable discrète (fédéral, mixte, unitaire), TE : MCO, MCG, logit.	La décentralisation a un effet négatif sur les performances macroéconomiques.
King et Ma, 2001	DT : 42 PD et PED, moyenne 1973–1994	VD : taux d'inflation, VI : part des recettes fiscales qui reviennent au gouvernement central, TE : MCO.	Les pays centralisés ont des taux d'inflation plus élevés.
Rodden, 2002	DT : 43 PD et PED, DP : les 43 pays, 1986-96	VD : part des déficits locaux par rapport aux dépenses publiques locales, VI : part des ressources locales propres, autonomie d'emprunt, TE : TMC, GMM.	Des déficits persistants sont associés à une situation où les gouvernements locaux sont dépendants des transferts et autorisés à emprunter.
Sepulveda et Martinez-Vasquez, 2011	DP : 65 PD et PED, 1971-2000	VD : part des dépenses (/ recettes) publiques locales dans le total des dépenses (/ recettes) publiques (+terme quadratique), VI : part de la population pauvre, "poverty gap", IDH, indice de Gini, TE : EF, EA, MCG avec dummies temporelles.	La décentralisation accroît la pauvreté mais contribue à réduire les inégalités si le gouvernement central représente une part significative de l'économie (plus de 20%).

DP = données de panel, DT = données transversales, PED = pays en développement, PD = pays développés, VD = variable dépendante, VI = variable indépendante, TE = technique économétrique, MCO = moindres carrés ordinaires, TMC = triple moindres carrés, EF = effets fixes, EA = effets aléatoires, MCG = moindres carrés généralisés, SURE = seemingly unrelated regression equation, GMM : generalized method of moments

Partie II

Décentralisation et interactions inter-juridictionnelles

Décentralisation et interactions inter-juridictionnelles

Alors qu'une importante littérature s'est attachée à tester la pertinence de l'argument de compétition dans les pays développés (Kelejian et Prucha, 1998, Sole-Olle, 2006, Redoano, 2007 et Foucault, Madies, et Paty, 2008), les études consacrées aux pays en développement se sont quant à elles largement focalisées sur le principe de proximité. Cette approche est justifiée par le fait que le contexte institutionnel des pays en développement est radicalement différent de celui des économies industrialisées et que certaines hypothèses des théories traditionnelles du fédéralisme budgétaire ne sont alors pas raisonnables (Bardhan, 2002). En particulier, la possibilité d'un "vote avec les pieds" est *a priori* écartée considérant une faible mobilité de la population et celle d'une "*yardstick competition*" est largement mise en doute du fait du caractère peu ou nouvellement démocratique de ces pays. De plus, des limites propres aux pays en développement, telles que les problèmes de capacités administrative et fiscale limitées ou de corruption, sont mises en évidence (Prud'homme, 1995 et Bardhan et Mookherjee, 2005), contribuant à justifier l'abandon de l'examen de tels arguments.

Dans cette partie, nous revisitons la pertinence du principe de compétition dans un contexte de ressources budgétaires faibles (cas du Bénin, chapitre 2) et d'absence de démocratie locale (cas de la Chine, chapitre 3).

Le chapitre 2 traite de l'existence d'interactions stratégiques entre les gouvernements locaux dans un pays en développement, le Bénin. Le fait que les juridictions locales aient des capacités fiscales limitées pourrait suffire à considérer l'absence de comportements stratégiques des décideurs locaux. Pour prendre en compte l'extrême pauvreté de certaines juridictions, nous proposons un modèle théorique où les gouvernements locaux déterminent leur niveau de dépenses publiques en présence d'externalités, considérant une version généralisée de l'équilibre de Nash : l'équilibre de Nash contraint. Nous mettons ainsi en évidence le fait que des interactions inter-juridictionnelles ne peuvent exister qu'en cas de ressources budgétaires suffisantes. Par l'estimation d'un modèle spatialement décalé pour des données de panel constituées des 77 communes du Bénin de 2002 à 2008, nous validons les prédictions de notre modèle théorique, établissant l'existence d'interactions stratégiques conditionnelle à un niveau suffisant de ressources de la juridiction locale. De plus, les dépenses publiques locales apparaissent comme étant des compléments stratégiques, un accroissement des dépenses publiques dans une juridiction conduisant à des variations similaires des dépenses dans les communes voisines (géographiquement ou ethniquement proches). Nous montrons ainsi que la décentralisation dans les pays en développement peut induire des comportements stratégiques similaires à ceux observés dans les pays développés. De plus, la nature de ces interactions tend à confirmer l'existence

d'un multiplicateur comparable à celui exposé par Glaeser, Sacerdote, et Scheinkman (2003), renforçant ainsi les arguments en faveur de la décentralisation de l'aide extérieure.

Le chapitre 3 s'intéresse à l'existence d'une competition entre les gouvernements provinciaux chinois, qui sont encastrés dans un système politique fortement centralisé. Alors que Zhuravskaya (2000) défend l'idée selon laquelle la décentralisation en Chine aurait fourni de fortes incitations à promouvoir l'efficacité économique des dépenses publiques locales, les éléments de discipline traditionnels que sont le "vote par les pieds" ou par les urnes ne sont pas disponibles en Chine. Ils ne peuvent donc pas expliquer de telles incitations. En effet, les gouverneurs sont nommés par le gouvernement central à Pékin et la mobilité de la population entre les provinces reste limitée (système Hukou). Reprenant les arguments de Blanchard et Shleifer (2001), nous estimons néanmoins que le contrôle vertical peut assurer la redevabilité des gouvernements locaux en créant une compétition inter-juridictionnelle. Nous modifions alors le modèle de concurrence par comparaison de Besley et Case (1995), considérant que la compétition n'est plus induite par les électeurs mais par le gouvernement central. Nous faisons apparaître que, de la même manière que dans le modèle traditionnel, lorsque le gouvernement central utilise la performance des juridictions voisines pour juger un gouverneur, ce dernier est encouragé à considérer les décisions budgétaires voisines de sorte à ce que nous devrions observer des interactions stratégiques entre les provinces. De plus, nous démontrons que de telles interactions ne devraient pas apparaître dans un système budgétaire centralisé. Estimant un modèle spatialement décalé pour 29 provinces de 1980 à 2004, notre analyse économétrique confirme l'existence d'interactions stratégiques entre les provinces chinoises et, comme attendu, ces interactions sont renforcées par le degré de décentralisation. Ce travail offre une explication théorique et une validation économétrique à la présence d'interactions stratégiques entre les provinces chinoises en dépit de l'absence de redevabilité électorale et d'une mobilité aisée des agents. Alors que, généralement, le processus de décentralisation doit être total pour créer les conditions nécessaires à l'émergence d'une compétition inter-juridictionnelle, en Chine, au contraire, c'est le système politique centralisé associé à un système budgétaire décentralisé qui assure la redevabilité politique des décideurs locaux.

La partie II est organisée comme suit : le chapitre 2, issu de l'article intitulé "*Decentralisation in Africa and the nature of local governments' competition: Evidence from Benin*" écrit en collaboration avec Martial Foucault et Grégoire Rota-Graziosi, étudie les conditions d'existence et la nature des interactions stratégiques au Bénin ; le chapitre 3 propose un modèle théorique et des preuves économétriques de la présence d'une compétition inter-juridictionnelle entre les provinces chinoises dans l'article "*Yardstick competition in a federation: Theory and evidence from China*".

Chapitre 2

"Decentralization in Africa and the nature of local governments' competition: Evidence from Benin"*

Abstract

Decentralization has been put forward as a powerful tool to reduce poverty and improve governance in Africa. The aim of this paper is to highlight the presence of spillovers resulting from local expenditures policies and to identify the nature of the induced strategic interactions among local governments. A two-jurisdiction model of public expenditure is developed, which differs from the literature by capturing the extreme poverty of some local governments in developing countries through a generalized notion of Nash equilibrium: the constrained Nash equilibrium. We show how and under which conditions spillovers among jurisdictions induce strategic behaviors of local officials. By estimating a spatial lag model for a panel data of the 77 *communes* in Benin from 2002 to 2008, our empirical analysis not only establishes the existence of interactions between local governements, but also defines the nature of such interactions by highlighting strategic complementarity of jurisdictions' public spending. These results raise the issue of coordination among local governments and more broadly it may question the efficiency of decentralization in developing countries in lines with the Oates' theorem.

* This chapter is a version of a paper co-authored with Martial Foucault and Grégoire Rota-Graziosi, under submission in the Journal of Development Economics.

2.1 Introduction

For a decade, decentralization has been implemented by a large number of developing countries, especially in Africa. The World Bank in particular views this devolution as one of the major economic reforms on its agenda. In response to the failure of central states to lead the countries' development or to limit the risk of civil conflicts in ethnically fragmented countries, decentralization is perceived as a way to ensure political stability, to improve accountability and responsiveness of local leaders, to increase the efficiency of public policies, and ultimately to reduce poverty.

Two main (and non-exclusive) arguments might explain this infatuation with decentralization in developing countries. The first one is what we can call the "proximity principle": decentralization moves local public decision-makers closer to citizens. By doing this, decentralization improves preferences matching by providing a greater diversity of public services to a heterogeneous population (Oates, 1972). Moreover, by reducing informational asymmetries between those in power and those governed, decentralization should induce a higher accountability of governments and a better efficiency in public spending. The second principle dates at least from Tiebout (1956) and may be called the "competition principle". Indeed, decentralization is supposed to induce some interjurisdictional competition among political powers: "Voting with feet" and yardstick competition (Salmon, 1987) may be other ways to increase the efficiency of public spending.

However, the literature on decentralization in developing countries essentially focuses on the "proximity principle". A reason is for Bardhan (2002) that "the institutional context (and therefore the structure of incentives and organisation) in both developing and transition economies is quite different from those in advanced industrial economies". This author recommends "to go beyond the traditional fiscal federalism literature" which is essentially associated with the "competition principle". To some extent most developing countries would not meet implicit or explicit assumptions posed by the First-Generation Theory of Fiscal Federalism.[30] The Tiebout model could not be applied to developing countries where the population mobility appears to be strongly limited. Then the existence of a yardstick competition is at least debatable in the context of young democracies. Finally, apart from the corruption issue emphasized by Prud'homme (1995) or Bardhan and Mookherjee (2005), developing countries face some administrative capacity constraints that the rich countries do not suffer.

These pitfalls have induced the literature on decentralization in developing countries to focus

[30] See Oates (2005) and Vo (2010) for comprehensive surveys of this literature specifying First and Second-Generation Theory of Fiscal Federalism.

on the effectiveness of the first argument, the "proximity principle". For instance, Faguet (2004) shows that decentralization in Bolivia has improved the responsiveness of public investment to local needs. Alderman (2002) establishes that Albanian local officials manage anti-poverty programs more accurately and cost-effectively than a central government agency since they are better informed. Bardhan and Mookherjee (2005) and Galasso and Ravallion (2005b) have also highlighted that decentralization improves anti-poverty policies in particular through better intra-regional targeting. These analysis suggest that decentralization may lead to poverty reduction through a bottom up process. However none of these authors consider the other side of decentralization, the "competition principle", which stresses the jurisdictions' interactions.

The aim of this paper is to study the relevance of the "competition principle" in a developing economy. This principle relies on the existence of local public goods spillovers which are a widespread feature in developed countries. Kelejian and Prucha (1998), Sole-Olle (2006), Redoano (2007) or Foucault, Madies, and Paty (2008) estimate expenditure reaction functions and provide empirical evidence on expenditure spillovers among (local) governments respectively in US, EU, Spain and France. In the context of decentralization, an important distinction between developing and developed countries concerns the limited administrative capacities for which the rich countries do not face. This constraint may be sufficient to explain the absence of any strategic behavior among local governments in poor countries and to justify the current dominant approach of decentralization in development economics.

To deal with the extreme poverty of some local governments and their very limited administrative capacity in developing countries, we develop a theoretical framework where two jurisdictions determine their level of public good in presence of spillovers. We consider a generalized version of Nash equilibrium(s), i.e. constrained Nash Equilibrium(s), which distinguish our framework from preceding studies in fiscal federalism. We establish under which conditions interactions among local governments emerge. Our empirical strategy consists in estimating expenditure reaction functions, looking for interactions between geographically or ethnically close jurisdictions. It relies on a spatial lag model for a panel data of the 77 *communes* of Benin, a representative African country, from 2002 to 2008. We unambiguously establish the existence of local expenditure interactions, contingent on a sufficient level of local fiscal resources. Moreover, we tackle the theoretical vagueness on the nature of interjurisdictional competition: Local public spending are strategic complements. Interactions exist not only among neighboring *communes* but also among those similar in terms of ethnic composition.

Our analysis contributes to a more comprehensive view of decentralization in developing countries. It is in line with some previous works such as Akin, Hutchinson, and Strumpf (2005) or Arze, Martinez-Vasquez, and Puwanti (2008) who consider local governments interactions:

The former analyzes decentralized health care in Uganda and the latter investigates local public spending in Indonesia.[31] Decentralisation induces strategic behaviors even in an African country as Benin. Moreover, the nature of these interactions, that is strategic complementarity, raises the issue of coordination among local governments. The level of spillovers is a critical condition to the efficiency of decentralization as Oates (1972) emphasized it. Finally, the interjurisdictional interactions that we highlight may involve some kind of competition among local governments. The "competition principle" and the "proximity principle" are both at work in developing countries. Their final effect in terms of populations' welfare remains however to appreciate.

The remainder of the paper is divided into four sections. Section 2.2 develops a theoretical analysis of local public spending interactions which takes into account resource constraints of some local governments. In Section 2.3, after a brief overview of Benin, we test the existence of interactions among Beninese local governments between 2002 and 2008. Section 2.4 discusses the main results by exploring the relevance of two mechanisms of the "competition principle": "Voting with feet" and yardstick competition. Section 2.5 concludes and raises some future challenges to appreciate the decentralization's efficiency in presence of the strategic complementarity of local officials behavior.

2.2 Theoretical background

In this section, we present a simple theoretical model to capture the behavioral logic of local governments in defining the levels of public spending in a developing country. We take into account some constraints on these strategic behaviors which result from the extreme poverty of some local governments. Finally beyond its realism the proposed framework is built in a such way to fit with our empirical tools and their underlying assumptions, in particular those of spatial econometrics.

2.2.1 The model

We consider two jurisdictions (i and j) of the same level. We do not study political issues and then adopt a normative approach. The utility function of a representative individual in jurisdiction i is given by $W^i(x_i, g_i, \theta_{ij} g_j)$, where x_i is the private consumption, g_i the public

[31] Chavis (2009) studies the effect of competition on decentralisation efficiency in Indonesia. The author considers the extent to which the cost per square meter of road project decreases in the number of villages which compete to obtain grants from the central government. The appreciation of competition is limited to the number of competitors. There is no analysis of interactions.

spending in jurisdiction i, and θ_{ij} is an exogenous non negative parameter, which represents the degree of spillover effect for inhabitants in jurisdiction i from the public good provided in jurisdiction j. We consider situations where spillovers are not symmetric ($\theta_{ij} \neq \theta_{ji}$).[32] We define $\theta = (\theta_{ij}, \theta_{ji})$.

Since spatial empirics use weighting matrices for the strategic variables (g_{ij}), the unique consistent aggregation technology of local public goods is the weighted summation. Thus, it follows:

$$W^i(x_i, g_i, \theta_{ij} g_j) = V^i(x_i, g_i + \theta_{ij} g_j),$$

where the weight is the parameter θ_{ij}.

Our analysis focuses exclusively on current local public spending, since it is better controlled by local governments than investment expenditures. Indeed these latter are often ordered and financed by central government. Current spending are a mix of public and merit goods. We are not able to say whether local public spending is a complement or a substitute to private consumption. Thus, without loss of generality concerning our analysis of jurisdictions' interactions, we consider a quasi-linear utility function where both local public spending and private consumption are Edgeworth-independent:

$$V^i(x_i, g_i + \theta_{ij} g_j) = x_i + v(g_i + \theta_{ij} g_j),$$

where the function $v(.)$ is the appreciation of local public goods in jurisdiction i (assumed to be identical accros jurisdictions). This function is increasing in its argument $v'(.) > 0$. The sign of its second derivative, however, remains indeterminate. Indeed the concavity of function $v(.)$, which is often assumed in the literature, would restrict our theoretical analysis of jurisdictional interactions to the case of strategic substitutes.

We ignore the issue of local debt, which is the focus of an important literature on soft budget constraints. Very few countries in Africa allow their local governments to run into debt. Thus, private consumption is equal to net income, and the local government faces the following hard budget constraint:

$$R_i = x_i + c(g_i), \tag{1}$$

where R_i is the income of jurisdiction i and $c(.)$ is the cost of providing an amount g_i of local

[32] This assumption is linked to our empirical work too. Since proximity matrices are normalised, their sum is equal to unity for each i. Thus, we have $\theta_{ij} = \theta_{ji}$ if and only if jurisdictions i and j have the same number of neighbours for a proximity matrix based on contiguity.

public good. This cost is assumed to be increasing and convex: $\frac{dc(g_i)}{dg_i} > 0$ and $\frac{d^2c(g_i)}{dg_i^2} > 0$. This convexity reflects the increasing marginal cost of public funds. Since we focus on current spending and not on public investments, we ignore scale economies. This assumption is not rejected by a preliminary empirical test on our data.[33] In order to have some interior solutions when the jurisdiction is not constrained by its wealth, we assume that

$$\forall i, j, \quad c''(g_i) > v''(g_i + \theta_{ij} g_j). \tag{2}$$

The convexity of the cost function of public spending must be superior to the variation of the marginal utility of public goods. This condition obviously holds as long as the function $v(.)$ is concave.

Substituting the expression of the private consumption given by (1) into the initial welfare function, we obtain the following objective function, denoted by U^i, which only depends on the strategic variables (g_i, g_j):

$$U^i(g_i, \theta_{ij} g_j) = R_i - c(g_i) + v(g_i + \theta_{ij} g_j).$$

Each local government chooses its level of public spending, considering as given the levels of public good in the other jurisdiction. The played game is static and the Nash equilibrium may be constrained. Indeed, we take into account situations where a local government is too poor to finance the minimum of public spending. For instance in 2007, some Beninese *communes* like Lalo, So-Ava and Materi had a total budget respectively equal to \$15,432, \$31,148 and \$32,955, which corresponds to a total per capita revenue of \$0.17, \$0.35 and \$0.33**.** At the same period, Cotonou had a municipal budget about 1000 times higher (\$19 millions or \$26 per capita*)*. These financial gaps incite us to generalize the notion of Nash Equilibrium by considering a constrained Nash equilibrium denoted by $g_i^*(\theta)$,

$$g_i^*(\theta) = \min\{\overline{g}_i, \widetilde{g}_i(\theta)\},$$

where $\overline{g}_i$ is given by the budget constraint: $R_i - c(\overline{g}_i) = 0$; and $\widetilde{g}_i(\theta)$ is the solution of the

[33] We show the absence of scale economies in providing current public spending according to the size of jurisdiction (measured by the population density, *dens*). Both signs of first and second derivatives are positive and significantly different from zero: $g_i = 3.751^{**}.dens_i + 0.001^{***}.dens_i^2$. Detailed results are provided in Table 2.1 in the Appendix 2.6.

unconstrained Nash equilibrium:

$$\begin{cases} \widetilde{g}_i(\theta) \equiv \underset{g_i \geqslant 0}{\arg\max} U^i\left(g_i, \theta_{ij} g_j^*\right) \\ \widetilde{g}_j(\theta) \equiv \underset{g_j \geqslant 0}{\arg\max} U^j\left(g_j, \theta_{ij} g_i^*\right) \end{cases}$$

The set of strategies for each jurisdiction i is compact and it corresponds to $[0, \overline{g}_i]$. The First Order Condition (FOC) of the preceding program for player (*commune*) i is

$$-\frac{dc(g_i)}{dg_i} + v'\left(g_i + \theta_{ij} g_j^*(\theta)\right) = 0. \tag{3}$$

The Second Order Condition (SOC) is respected under condition (2).

We focus on the nature of competition among jurisdictions when it exists. These strategic interactions are captured through the sign of $\frac{dg_i}{dg_j}$. Following Bulow, Geanakoplos, and Klemperer (1985), we define local public goods as strategic complements (resp. substitutes) if and only if the marginal utility of public good in jurisdiction i is increasing (resp. decreasing) in the level of local public goods in the other jurisdictions, more formally if $\frac{\partial^2 U^i(g_i, \theta_{ij} g_j)}{\partial g_i \partial g_j} > 0$ (resp. < 0). If jurisdiction i is constrained by its wealth, that is, if $c(\widetilde{g}_i(\theta)) > R_i$, we have $g_i^* = \overline{g}_i$ and $\frac{\partial g_i}{\partial g_j} = 0$; otherwise $g_i^* = \widetilde{g}_i(\theta)$ and the application of the envelope theorem to (3) yields:

$$\frac{\partial g_i}{\partial g_j} = -\frac{\frac{\partial^2 U^i(g_i, \theta_{ij} g_j)}{\partial g_i \partial g_j}}{\frac{\partial^2 U^i(g_i, \theta_{ij} g_j)}{\partial g_i^2}}. \tag{4}$$

Since the denominator corresponds to the SOC of the maximisation program, the sign of $\frac{\partial g_i}{\partial g_j}$ is then equivalent to the sign of $\frac{\partial^2 U^i(g_i, \theta_{ij} g_j)}{\partial g_i \partial g_j}$, which also corresponds to the sign of $v''(.)$.[34]

2.2.2 Comparative statics

We will now consider a unilateral change in the degree of the spillovers experienced in jurisdiction i from jurisdiction j. By so doing we can compare the impact of an increase of public spending by a neighboring jurisdiction and the same variation of a more distant jurisdiction on the level of public spending in jurisdition i. In other words, we estimate the consequences of geographic or ethnic proximity on local governments' public spending.

[34] If this last expression is positive, then the game played by each jurisdiction is supermodular and at least one equilibrium exists.

For comparative statics' analysis, we follow Caputo (1996). Indeed, unlike single-agent models, knowing of how a parameter affects the marginal value of the i th player's decision variables in a static game is not sufficient to determine the Nash equilibrium comparative statics for the level of the i th player's decision variables. We also have to determine how the parameter's change affects the other player's best reply, and finally how these last variations impact on the marginal value of the i th player's decision variable.

Considering the unconstrained Nash equilibrium ($\forall i,\ g_i^*(\theta) = \widetilde{g}_i(\theta)$) the differentiation of (3) with respect to θ_{ij} for both jurisdictions yields:

$$\begin{pmatrix} U_{11}^i(.) & \theta_{ij}v''(.) \\ \theta_{ji}v''(.) & U_{11}^j(.) \end{pmatrix} \begin{pmatrix} \frac{\partial \widetilde{g}_i(\theta)}{\partial \theta_{ij}} \\ \frac{\partial \widetilde{g}_j(\theta)}{\partial \theta_{ij}} \end{pmatrix} = \begin{pmatrix} -\theta_{ij}\widetilde{g}_j(\theta)v''(.) \\ 0 \end{pmatrix}.$$

Applying the Cramer rule we then obtain:

$$\begin{array}{l} \frac{\partial \widetilde{g}_i(\theta)}{\partial \theta_{ij}} = -\frac{\theta_{ij}\widetilde{g}_j(\theta)}{|J|}v''\left(\widetilde{g}_i(\theta) + \theta_{ij}\widetilde{g}_j(\theta)\right)U_{11}^j\left(\widetilde{g}_j(\theta), \theta_{ji}\widetilde{g}_i(\theta)\right), \\ \frac{\partial \widetilde{g}_j(\theta)}{\partial \theta_{ij}} = \frac{\theta_{ij}\theta_{ji}\widetilde{g}_j(\theta)}{|J|}v''\left(\widetilde{g}_i(\theta) + \theta_{ij}\widetilde{g}_j(\theta)\right)v''\left(\widetilde{g}_j(\theta) + \theta_{ji}\widetilde{g}_i(\theta)\right). \end{array} \tag{5}$$

where J is the Jacoby matrix and its determinant is given by

$$|J| = \begin{vmatrix} U_{11}^i\left(\widetilde{g}_i(\theta), \theta_{ij}\widetilde{g}_j(\theta)\right) & \theta_{ij}v''\left(\widetilde{g}_i(\theta) + \theta_{ij}\widetilde{g}_j(\theta)\right) \\ \theta_{ji}v''\left(\widetilde{g}_j(\theta) + \theta_{ji}\widetilde{g}_i(\theta)\right) & U_{11}^j\left(\widetilde{g}_j(\theta), \theta_{ji}\widetilde{g}_i(\theta)\right) \end{vmatrix}. \tag{6}$$

Generally, the sign of $|J|$ remains indeterminate, since it does not rely on the sign of the Hessian matrix of a single optimisation problem as Caputo (1996) emphasizes it. Thus, without additional assumptions about the stability or uniqueness of the Nash equilibrium, for instance, we cannot sign $|J|$. We then obtain the following PROPOSITION:

Proposition 1 *Under our assumptions, we have:*
(i) If the jurisdiction i is constrained by its wealth ($c\left(\widetilde{g}_i(\theta)\right) > R_i$), a change in θ_{ij} has no effect on the level of provided public good in both jurisdictions;
(ii) If the jurisdiction j is constrained by its wealth, a change in θ_{ij} has no effect on the level of provided public good in jurisdiction j but increases (decreases) the level of public good in jurisdiction i if public goods are strategic complements (substitutes);
(iii) If no jurisdiction is constrained, an increase in the degree of spillover from jurisdiction j to i (θ_{ij}) involves a variation in the same (opposite) sense in both jurisdictions if local public goods are strategic complements (substitutes).

Proof. (i) If $g_i^*(\theta) = \overline{g}_i$, it is then obvious that $\frac{\partial g_i^*(\theta)}{\partial \theta_{ij}} = 0$ and $\frac{\partial g_j^*(\theta)}{\partial \theta_{ij}} = 0$ from differentiation of (3) with respect to θ_{ij}.
(ii) If $g_j^*(\theta) = \overline{g}_j$ and $g_i^*(\theta) = \widetilde{g}_i(\theta)$, then we have $\frac{\partial g_j^*(\theta)}{\partial \theta_{ij}} = 0$ which yields

$$\frac{\partial g_i^*(\theta)}{\partial \theta_{ij}} = -\frac{\theta_{ij}\overline{g}_j v''\left(g_i + \theta_{ij}\overline{g}_j\right)}{\frac{\partial^2 U^i(g_i, \theta_{ij} g_j)}{\partial g_i^2}},$$

which is positive if the function $v(.)$ is convex, given (4) local public goods are strategic complements.
(iii) If $g_i^*(\theta) = \widetilde{g}_i(\theta)$ and $g_j^*(\theta) = \widetilde{g}_j(\theta)$, we obtain from (5)

$$\frac{\partial \widetilde{g}_i(\theta)}{\partial \theta_{ij}} \frac{\partial \widetilde{g}_j(\theta)}{\partial \theta_{ij}} = -\theta_{ji}\left(\frac{\theta_{ij}\widetilde{g}_j(\theta) v''\left(\widetilde{g}_i(\theta) + \theta_{ij}\widetilde{g}_j(\theta)\right)}{|J|}\right)^2 v''\left(\widetilde{g}_j(\theta) + \theta_{ji}\widetilde{g}_i(\theta)\right) U_{11}^j\left(\widetilde{g}_j(\theta), \theta_{ji}\widetilde{g}_i(\theta)\right).$$

■

The parameter θ_{ij} represents the degree of "proximity" that jurisdiction i experiences from the local public good provided by jurisdiction j. This "proximity" will be expressed in geographic or ethnic terms in our empirical analysis. An increase in θ_{ij} may represent for instance the reduction of the transportation costs to move across *communes* i and j, or a stronger similarity in their ethnic composition. Such a variation would induce two effects on g_i, a direct effect and an indirect (strategic) one through the level of public good provided by the neighbor (g_j). If jurisdiction i is constrained by its wealth, any change in θ_{ij} does not affect the equilibrium value. Indeed, neither the direct effect, nor the strategic effect would come into play, since the level of public spending in this jurisdiction is at the corner. If the other jurisdiction, namely j, is constrained, then only the direct effect of θ_{ij} would influence g_i. An increase of θ_{ij} induces an increase (decrease) in g_i local public expenditures are strategic complements (substitutes). Finally, if no jurisdiction is constrained, then both effects are at play. Without additional assumptions, however, particularly on the sign of $|J|$, we can only conclude that an increase in θ_{ij} would induce an increase or a decrease of levels of local public goods in both jurisdictions in the presence of strategic complements. Otherwise, that is in the presence of strategic substitutes, an exogenous change of θ_{ij} would involve opposite variations among jurisdictions.

Following Dixit (1986) or Kolstad and Mathiesen (1987), we may assume the uniqueness

and the stability of the Nash equilibrium through the following assumption:[35]

$$|J| > 0. \tag{7}$$

This relation enables us to pinpoint the sense of variations resulting from the two kinds of parameter changes. We obtain the following PROPOSITION:

Proposition 2 *Under our assumptions and (7),*
(i) An increase in the degree of spillover from jurisdiction j to i (θ_{ij}) entails an increase in the level of public goods in both jurisdictions if local public goods are strategic complements.
(ii) An increase in the degree of spillover from jurisdiction j to i (θ_{ij}) entails a decrease in the level of public good in jurisdiction i and an increase in the level of public good in jurisdiction j if local public goods are strategic substitutes.

Proof. Immediate from (5). ■

Assuming the uniqueness of the Nash equilibrium allows us to specify the sense of deviation of public spending when the degree of spillovers varies. To sum up our theoretical results, we show that spillovers among jurisdictions may involve strategic behaviors, which in turn lead to a competition process. However, the presence of local public goods spillovers is not a sufficient condition of strategic behaviors among *communes*. Without restricting the nature of such a competition, we estimate to what extent the level of provided public good is affected by a deviation in the degree of spillovers.[36]

Our theoretical framework yields the following implications: (1) The provision of local public goods with spillovers may induce two cases: (a) Strategic interactions in terms of complements or substitutes (classical result), (b) No strategic interactions due to the insufficient level of fiscal resources and despite positive externalities (largely ignored by the relevant literature); (2) Under the presence of strategic complements, the expected quantity of public goods in jurisdiction i will positively depend on the level of public good allocated by jurisdiction j; (3) In the presence of strategic substitutes, an opposite relationship is expected; (4) The sign of

[35] If we adopt the contraction approach (see Vives, 1999), the condition of equilibrium uniqueness involves

$$U^i_{11}\left(g_i, \theta_{ij} g_j\right) + \left|v^i_{12}\left(g_i, \theta_{ij} g_j\right)\right| < 0,$$

which yields that $|J|$ is positive.

[36] PROPOSITION 2 (*ii*) is similar to Proposition 8 in Bloch and Zenginobuz (2007) who consider only the case of strategic substitutes.

such a strategic interaction is not determined *a priori*, since different measures of contiguity (geographical or ethnic) may be put forward.

2.3 Empirical evidence of public spending interactions in a less developed country: The case of Benin

Our empirical analysis focuses on Benin, a young democracy, which is representative of the sub-Saharan region. After a brief overview of this country, we test the existence of strategic interactions among local governments' spending by estimating a spatial dynamic econometric model.

2.3.1 Benin overview

With a per capita income of $570 in 2007 and a ranking of 163th out of 177 countries,[37] Benin remains one of the poorest countries of the world. As many African countries, Benin is ethnically fragmented with about 42 recorded ethnies.[38] Since its independence on August 1^{rst}, 1960, the history of Benin has been chaotic. A succession of military governments ended in 1972 with the last military coup led by Mathieu Kerekou and the establishment of a government based on Marxist-Leninist principles. A move to democracy began in 1989. Two years later, free elections ushered in former Prime Minister Nicephore Soglo (a former World Bank official) as President. Kerekou regained power in 1996 in elections fraught with irregularities and won subsequent elections in 2001. Having served two terms and being over 70, he was ineligible to run in the presidential elections of 2006. He was succeeded by Thomas Boni Yayi, an independent political outsider who had previously headed the West African Development Bank. In March 2007, President Yayi Boni strengthened his position after the legislative elections where his coalition, "Force Cauris pour un Bénin Emergent (FCBE)" won the largest number of seats (35 out of 83) and negotiated a pro-government majoritarian coalition in Parliament with seven minor parties.

This democratic evolution was accompanied by a huge transformation of the political and administrative organisation. Since 1998, Benin has undergone a decentralization process that became effective with the first local elections in 2002. The second local elections took place in

[37] Human Development Report (2007).

[38] Among the 42 ethnic groups, the most prominent are the Fon and the Adjas in the south, the Baribas and the Sombas in the north and the Yorubas in the south-east.

2008.[39] As depicted in Figure 2.1, Benin is divided into twelve *départements* which are after decentralization subdivided into 77 *communes*, themselves divided into 546 districts. *Départements* are managed by a representative of the central government. In contrast, *communes* are governed by a directly elected local government. The average size of *communes*, presented in the following map, reaches about 90,000 inhabitants.

In January 1999, law 97-029 defined the transferred competencies from the central government to the 77 *communes*. Theoretically, competencies of Beninese *communes* range from elementary school to economic development and include transport infrastructure, environment (hygiene), health and social goods, tourism, security or market-place management. As in most of African countries, however, this competencies' transfer was not accompanied by an adequate transfer of resources. Beninese *communes* are characterised by a very low level of resources (only about 4.5% of country tax revenues or equivalently 0.7% of GDP).[40] Moreover, important inequalities appear between *communes*: The resources of the ten poorest *communes* represent 5 per cent of the five richest ones.

[39] The first round of municipal elections held on December 15^{th}, 2002 and the second round on January 19^{th}, 2003 with an average rate of turnout estimated at 70 per cent.

[40] Local resources are mainly *communes*' own resources (about 70%). Property taxes and licences to exercise a trade or profession ('patente') represent 90% of local tax revenues (see Chambas, 2010 for a detailed analysis of local fiscal resources in Sub-Saharan Africa, particularly in Benin). Retroceded taxes, which come from transfers of state tax revenue to local governments, account for about 10% of local resources.

Figure 2.1: Administrative map of Benin

2.3.2 Econometric framework

Horizontal interactions entail a fiscal reaction function that depicts how the decision variable for a given jurisdiction depends on the decisions of other jurisdictions. To test the existence and the strenght of such functions, we test spatial dependence in a panel data framework. Following the relevant empirical literature, we consider a specification in the most general form in which *commune* i public expenditure in year t, defined by G_{it}, is a function of its neighbors' same public choice, G_{jt}. It gives the following specification:

$$G_{it} = \sum_{ij} \rho_{ij}.G_{jt} + \beta.X_{it} + \alpha_i + \varepsilon_{it}, \tag{8}$$

where $i = 1, \ldots, n$ denotes a *commune* and $t = 1, \ldots, T$ a time period, α, β and ρ are unknown parameters and ε_{it} a random error. We allow G_{it} to depend on a vector of specific controls X_{it} and we include a *commune*-specific effect, α_i. In this way**,** we correct for all time-invariant *communes'* characteristics, observed or unobserved.

Since there are too many parameters ρ_{ij} to be estimated, the usual procedure is to consider:

$$G_{it} = \rho.A_{jt} + \beta.X_{it} + \alpha_i + \varepsilon_{it}, \tag{9}$$

where $A_{jt} = \sum \theta_{ij}.G_{it}$ is the weighted average vector of public spending in the set of the other local governments j at time t**.**

We explore a variety of weighting schemes to allow different patterns of spatial interactions. First, we choose a common geographical definition of neighboring jurisdictions based on a contiguity matrix, denoted by θ^{neigh}, where the value one is assigned if two jurisdictions share the same border and zero otherwise. Second, we define an ethnic weight matrix, θ^{ethn}, based on the ethnic proximity of *communes*' inhabitants.[41] In doing so, we test the existence of spending interactions between *communes* which are similar with respect to ethnicity. Finally, we consider two benchmark weighting schemes: A uniform weight matrix $\left(\theta^{uni}\right)$ where weights are assumed to be identical for all *communes* j and a "placebo" weight matrix $\left(\theta^{plac}\right)$ where weights are random.[42] The uniform scheme captures the critic of Manski (1993): The interdependence of

[41] More precisely, ethnic proximity is defined as the probability that two individuals randomly drawn from two distinct *communes* belong to the same ethnic group.

[42] We generate a random number distributed between zero and one for each *commune*. Then, the weight

fiscal choices may result from a "common intellectual trend" that drives fiscal choices in the same directions and not from jurisdictions' strategic behaviors. The "placebo" matrix, also used in Lockwood and Migali (2009), ascertains that observed interactions are not an artefact of the estimation procedure.[43]

In order to take into account the persistency in public expenditure we consider a dynamic version of equation (9) and introduce the lagged dependent variable, G_{it-1} as a right-hand side:

$$G_{it} = \lambda.G_{it-1} + \rho.A_{jt} + \beta.X_{it} + \alpha_i + \varepsilon_{it}. \tag{10}$$

Regression (10) raises some important econometric issues as described by Brueckner (2003). First, public spending are jointly determined. Thus neighbors' decisions are endogenous and correlated with the error term ε_{it}. Ordinary least squares estimation of the parameters is then inconsistent**,** requiring alternative estimation methods based on the instrumental variables method (IV) or on maximum likelihood (ML).[44] Second, the omission of explanatory variables that are spatially dependent may generate spatial dependence in the error term, which is given by: $\varepsilon_{it} = \tau\theta\varepsilon_{it} + v_{it}$.[45] Ignoring spatial error dependence may provide false evidence of strategic interaction. To deal with this problem, two approaches are available: The ML estimator which takes into account the error structure (see Case, Rosen, and Hines, 1993) or the IV method which yields consistent estimations even with spatial error dependence (see Kelejian and Prucha, 1998).[46] Previous analysis of local governments interactions[47] use the tests of Anselin, Bera, Florax, and Yoon (1996) to verify the hypothesis of error independence, since these are not contaminated by uncorrected spatial error dependence and may detect the presence of spatial lag dependence. Third, as Nickell (1981) mentionned, the introduction of a lagged dependent variable induces the inconsistency of the previous estimators. We then use

assigned between two *communes* is the difference between its random numbers.

[43] Weights are normalised so that their sum equals unity for each i for all weight matrices. This assumes that spatial interactions are homogeneous: Each neighbour has the same impact on the *commune*.

[44] With the IV approach, a typical procedure is to use the weighted average of neighbours' control variables as instruments (see Kelejian and Prucha, 1998). The ML method consists in using a non-linear optimisation routine to estimate the spatial coefficient ρ (see Brueckner, 2003).

[45] Using a data panel helps to eliminate spatial error dependence which arises through spatial autocorrelation of omitted variable, since the influence of such variables is partly captured in community-specific intercept terms.

[46] With the IV approach, a typical procedure is to use the weighted average of neighbours' control variables as instruments (see Kelejian and Prucha, 1998). The ML method consists in using a non-linear optimisation routine to estimate the spatial coefficient ρ (see Brueckner, 2003).

[47] For instance, Brueckner (1998), Brueckner and Saavedra (2000), Saavedra (2000) or Foucault, Madies, and Paty (2008).

the GMM System estimator after verifying the hypothesis of error independence and estimating the static model with the ML estimator. This econometric strategy is commonly shared in the relevant literature. The GMM estimators allow us to control for both unobserved country-specific effects and potential endogeneity of the explanatory variables. We also introduce a trend variable, T_t, to capture shocks in each period which are common to all local governments and other specific controls commonly used in the empirical literature. We then obtain:

$$\begin{aligned} G_{it} = \quad & \lambda.G_{it-1} + \rho.A_{jt} + \beta_1.D_{it} + \beta_2.N_{dt} + \beta_3.O_{ct} + \beta_4.PR_{it} \\ & + \beta_5.E_{t-1} + \beta_6.E_t + \beta_7.E_{t+1} + \beta_8.T_t + \alpha_i + \varepsilon_{it}, \end{aligned} \tag{11}$$

where D_{it} is the population density of jurisdiction i on year t, which captures scale economies in public spending and may be spatially distributed.[48] Due to the lack of data at the *communes*' level to appreciate wealth variations we consider the employment rate in département d on year t, denoted by N_{dt}. This variable enables a partial control of common shocks which would also be spatially correlated. O_{ct} is a trade openness measure at country level which controls for macroeconomic shocks, since developing countries are vulnerable to foreign trade (Rodrik, 1998).[49] Other control variables are introduced in regression (11): a dummy variable, denoted by PR_{it}, captures some partisan effects;[50] dummies for election years, denoted by E_{t-1}, E_t and E_{t+1}, allow to test the opportunistic behavior hypothesis of local policymakers.[51] With respect to our theoretical results (Proposition 1), $\rho \neq 0$ involves the existence of some strategic interactions. Moreover, $\rho > 0$ ($\rho < 0$) means that an increase in the degree of spillovers involves a variation in the same (opposite) sense of local public goods' levels, that is public spending are strategic complements (substitutes).

In the theoretical section we also highlighted that strategic interactions may be restricted by the extreme poverty of some local governments. To test this hypothesis, we define a common

[48] Population density is the number of inhabitants per square kilometer. Per capita expenditures and population density are in log. Per capita expenditures are corrected for inflation.

[49] We measure the trade openness as a ratio of total foreign trade (exports plus imports) to GDP as it is most often used in empirical studies.

[50] The variable takes the value1 if the local government in jurisdiction i has the same partisan affiliation than the president in office. Until he stepped down in March 2006, Mathieu Kérékou enjoyed strong support in the north of the country (Alibori, Atacora, Borgou and Donga) which was considered as his fief. When Boni Yayi was elected, he affirmed his desire for political openness. His fiefs are concentrated in the south of the country, in particular, Atlantic, Collines and Mono. Finally, over the whole time period, about 40% of the departments have shared the same partisan affiliation as the President in office.

[51] E_{t-1}, E_t and E_{t+1} are dummy variables which take the value one respectively the year before, the year of and the year after the election and zero otherwise.

indicator of fiscal autonomy, denoted by F_{it}, which is the ratio of jurisdictions' own resources to their total resources, and we consider the following specification:

$$\begin{aligned} G_{it} = \quad & \lambda.G_{it-1} + \rho.A_{jt} + \varphi.AF_{it} + \beta_1.D_{it} + \beta_2.N_{dt} + \beta_3.O_{ct} \\ & + \beta_4.PR_{it} + \beta_5.E_{t-1} + \beta_6.E_t + \beta_7.E_{t+1} + \beta_8.T_t + \beta_9.F_{it} + \alpha_i + \varepsilon_{it}, \end{aligned} \tag{12}$$

where $AF_{it} = A_{jt} * F_{it}$. If strategic interactions are actually contingent on *communes*' fiscal autonomy, we should observe: (1) the coefficient of A_{jt} is not significant; and (2) the coefficient of AF_{it} is significant and positive (negative) if public spending are strategic complements (substitutes).

2.3.3 Results

Our dataset covers the 77 *communes* of Benin for the period 2002-2008. The *communes*' data for current spending come from the Beninese Ministry of Finances and Economy. The other control variables are drawn from World Development Indicators, Afrobarometers, Demographic and Health Surveys and 77 monographs provided by the European Union.

First, we investigate whether jurisdictions' public spending are correlated and which are the more likely sources of correlation: Spatial lag or spatial error dependence. We follow Anselin, Le Gallo, and Jayet (2006) who proposed two in-depth tests based on the Lagrange Mutiplier principle for panel data that indicate the most likely source of spatial dependence. We first estimate (11) using OLS for both contiguity and ethnic matrix without taking into account the influence of public spending in other jurisdictions ($\rho = 0$) and the lagged value of our dependent variable ($\lambda = 0$). Spatial tests results are shown in Table 2.2 (Appendix 2.6). They indicate the presence of spatial lag dependence for public spending but not the existence of spatial error dependence for both matrices.

Second, since the hypothesis of error independence is verified, we estimate (11) using ML with specific-effects for both contiguity and ethnic matrices without taking into account the lagged value of our dependent variable ($\lambda = 0$). However we consider the influence of the expenditure set by other jurisdictions ($\rho \neq 0$). The estimation results are presented in Table 2.3 (Appendix 2.6). The coefficient of the weight average vector is always significant and positive.

Finally, the one step robust GMM System provides an estimation of our dynamic model (11) for all weighting schemes, taking into account the lagged value of our dependent variable ($\lambda \neq 0$). We adopt the assumption of weak exogeneity of employment rates and trade openness

while other explanatory variables are assumed to be strictly exogenous. The weighted average vector of per capita public spending of other local governments is, as noted before, suspected of endogeneity. The lagged levels of variables are used as instruments in the regressions in level as well as in the regressions in difference. We collapse instruments and limit their number since too many instruments lead to inaccurate estimation of the optimal weight matrix, biased standard errors and, therefore, incorrect inference of overidentification tests (see Roodman, 2009).[52] Table 2.4 (Appendix 2.6) displays estimation results.

We focus our attention on (1) (2) (3) (4) and (5), that is, the GMM System estimations for contiguity, ethnic, uniform and placebo matrices. First we note: (*i*) The orthogonality conditions are respected;[53] (*ii*) The coefficient on the lagged dependent variable is always significant and positive, confirming the consistency of the autoregressive specification;[54] (*iii*) After correction for endogeneity, the coefficient of the weighted average vector of public spending in the set of the other local governments is significant at least at 1% level and positive for ethnic and contiguity matrices.

Following Manski (1993) these preliminary results are not sufficient to conclude to the existence of strategic interactions. Indeed a common trend would drive local governments' decisions in the same direction, yielding a positive sign of the interactions' coefficient but not a specific pattern in the type of *communes* with which to interact. The coefficient of interaction with the uniform matrix is significant (column (3)). To go beyond Manski's critic we estimate the coefficient for the contiguity matrix after checking for common trends. It appears in column (4) that the neighboring interactions coefficient remains significantly positive: Local governments actually interact with each other.[55] Moreover, the placebo matrix (column (5)) does not show any evidence of strategic interactions. Interactions among jurisdictions which are geographically or ethnically close are then not an artefact of our estimation procedure. Note that we also establish in Table 2.5 (Appendix 2.6) that there were no strategic interactions before 1998, the date of the beginning of the decentralization process in Benin.[56]

[52] The lags of at least two earlier periods for weak exogenous variables and three earlier periods for endogenous variables are used as instruments. The lagged dependent variable is instrumented by lags of the dependent variable from at least two earlier periods. We use two lags for endogenous and weak exogenous variables.

[53] The consistency of the estimator depends on whether lagged values of explanatory variables are valid instruments. The criteria for the selection of instruments are two specification tests (Arellano and Bond, 1991). With the Hansen test, we test the null hypothesis of the overall validity of instruments' orthogonality conditions. The second test is about the serial correlation of residuals. It examines the hypothesis that the residuals from the first-differentiated estimating equation are not second-order correlated. In our case, both statistics confirm the validity of the instruments used.

[54] As this coefficient provides an estimate λ varying between 0.411 and 0.629, the result indicates some level of persistency in public expenditure.

[55] The interactions' coefficient also remains significantly positive for the ethnic matrix after a similar correction.

[56] We run the same regressions as previously for the period 1994 to 1998. The coefficients of interaction with

We conclude that there are strategic interactions between neighboring jurisdictions**.** Moreover, public spending are strategic complements, as it is the case in most empirical studies.[57] An average increase of 10% in the neighboring jurisdictions' public spending induces an increase of around 6.2% in local expenditure. These interactions also exist between *communes* that are ethnically close but they are less important (5.1%).[58] Columns (7) and (8) provide some robustness tests of these results. We consider some alternative matrices: The θ^{neigh2} matrix, in which the value of one is assigned if two *communes* belong to the same *département* and zero otherwise; the θ^{ethn2} matrix where the value of one is assigned if two *communes* have the same dominant ethnic group and zero otherwise. The coefficient of the weighted average vector of public spending of the other local governments remains positive and significant at the 5% level for the θ^{neigh2} matrix and at 10% for the ethnic matrix θ^{ethn2}.

Columns (9) and (10) concern regression (12), which allow us to appreciate the effect of *communes*' wealth constraints. As expected, the coefficient of the interaction variable between neighbors' spending decisions and the indicator of fiscal autonomy (φ) is positive and significant. Moreover the coefficient for strategic interaction alone (ρ) is no longer significant. We unambiguously conclude that strategic interactions only exist among unconstrained local governments. Finally, considering the proposed control variables we observe an opportunistic behavior of local jurisdictions since dummies associated with the pre-election years indicate an increase in public spending.[59] Moreover having a local government with the political affiliation of the President in office increases public expenditure too.[60]

Our empirical work suggests that decentralization has induced interjurisdictional strategic interactions among Beninese *communes* with regard to current expenditure that appear to be strategic complements. Moreover, our results confirm that such strategic interactions are contingent on *communes*' fiscal autonomy in this developing country.

---

all matrices are not significant.

[57] Note that, in their study of Public Health Sector in Uganda Akin, Hutchinson, and Strumpf (2005) provide evidence for the hypothesis that spillover effects cause spending on public goods in one district to reduce spending on public goods in neighbouring districts. Local public spending are, in this case, strategic substitutes.

[58] Since different ethnic groups are located in close geographical areas, we can assume that the geographic matrix overlies the ethnic matrix. We estimate the coefficient for the ethnic matrix after checking for geographical interactions in column (6) and it remains significant and stable.

[59] To understand the sign of the coefficient associated with the election year dummy, one must refer to the election calendar and budget votes. Local elections took place at the beginning of March and the definitive budget must be adopted before 31 March. Therefore, in the year before the elections, decision-makers increase current expenditures and decrease them the year after, since the definitive budget is approved.

[60] Note that we find a positive and significant sign for the parameter associated with the employment rate, which indicates the effect of economic conjuncture. The trend variable remains, as expected, significant and negative. Indeed, per capita public expenditure has decreased by 75% over the period despite little growth between 2004 and 2006.

2.4 Discussion

Before concluding we return to some potential explanations of the existence of interjurisdictional spillovers, more specifically on two mechanisms of the "competition principle": The interjurisdictional migration, that is the Tiebout hypothesis and the electoral pressure or in other words the yardstick competition. The existence of interjurisdictional interactions we have established leads us to reconsider these arguments.

Despite the lack of relevant data, we may mention some facts concerning interjurisdictional migrations in Benin. It is straightforward to show that differences in relative demographic growth of Beninese *communes* cannot be explained by differences in birthrate alone. For instance, Abomey-Calavi, a dynamic *commune* which spreads over Cotonou has an annual population growth rate of 9.44 % while Boukoumbé, a very rural *commune*, has an annual population growth rate of 0.41 %. Internal migrations exist in Benin and seem to be largely guided by the opportunities offered by cities.[61] The migration's motives are various[62] - schooling, job search or family link - but could be connected, at least partially, to the provision of public goods at local level as in developed countries. Moreover, these migrations occur generally between *communes* belonging to the same département[63] which could explain the existence of strategic interactions between geographically close *communes*.

Since our dataset covers two local elections (2002 and 2008), we are able to extend our preceding empirical analysis to test the existence of some kind of yardstick competition among Beninese *communes*. During electoral period political campaigns should increase interactions among local governments, since more information is available on the fiscal policies of local decision-makers, inducing or reinforcing a yardstick competition effect. Hence, the empirical challenge consists in evaluating the impact of elections on strategic interactions. A straightforward way to test such an effect is to interact the neighbors' spending decisions (A_{jt}) with the election years dummy and estimate two different interaction coefficients, one for years of election (EY_t) and one for all the other periods (NEY_t).[64] If elections actually reinforce the

[61] The analysis of the migrants' distribution (Third Census of Population and Housing, 2002) shows that the *départements* of Atlantique and Littoral, the most urbanized, welcome 41.3 % of migrants, that is more than 4 migrants on 10.

[62] Third Census of Population and Housing (2002)

[63] For instance, in the *département* of Couffo, more than half of the migrants lived in the same *département*. Moves between contiguous *départements* are also important: more than half of immigrants of the *département* of Atlantique lived in the *département* of Littoral.

[64] Formally, we test

$$\begin{aligned} G_{it} = \quad & \lambda S_{it-1} + \rho'.(A_{jt} \times EY_t) + \rho''.(A_{jt} \times NEY_t) + \beta_1.D_{it} + \beta_2.N_{dt} \\ & + \beta_3.O_{ct} + \beta_4.PR_{it} + \beta_5.EY_t + \beta_6.NEY_t + \beta_7.T + \alpha_i + \varepsilon_{it}, \end{aligned} \tag{13}$$

exposure of jurisdictions, we should observe the coefficient of $(A_{jt} \times EY_t)$ being more significant and higher than the coefficient of $(A_{jt} \times NEY_t)$ as policymakers should be particularly concerned about their neighbors' decisions during election periods.

As expected, Table 2.6 (Appendix 2.6) shows that the coefficient is slightly higher and more significant in election periods than in other periods with both matrices, indicating that expenditure decisions are slightly more dependent on neighbors during election periods. However Wald tests do not indicate that coefficients are significantly different at the 10% level. Yardstick competition may have some effects, but it is not the main channel of *communes*' interactions.

2.5 Conclusion

The aim of our paper was to study local governments' interactions in Benin. These interactions could be very modest given the scarcity of local public resources. We show that this is not the case. Indeed, we establish that decentralization in Benin entailed interjurisdictional interactions. These interactions are not a common trend. They exist not only among neighboring local jurisdictions but also among *communes* which are close in terms of ethnic composition. We also emphasize both the influence of partisan affiliation and the opportunistic behavior of local governments before elections. This African democracy appears to be as concerned as developed democracies with strategic fiscal interactions.

The existence of strategic complementarity among local governments in developing countries may have some attractive consequences for the issue of decentralization in these countries. In the game theory literature, strategic complementarity is often associated to the issue of the multiplicity of Nash Equilibriums, that is a coordination issue, while strategic substituability raises the question of existence of a Nash Equilibrium. In the context of decentralization in developing countries, our result mean that several equilibria may exist and some may be Pareto-dominated. A theoretical indecision then remains on the success or failure of decentralization in terms of populations' welfare. This indecision may only be solved through further empirical studies. However, strategic complementarity may also induce some interesting features in particular in the context of foreign aid. Assume for instance that a *commune* receives foreign aid which leads to increase local public spending. Due to our result of strategic complementarity, such an increase will induce similar variations of public spending in neighboring *communes*. A multiplier comparable to the social multiplier put forward by Glaeser, Sacerdote, and Scheinkman (2003) should exist since it is a direct consequence of strategic complementarity and positive spillovers.

where $EY_t = E_{t-1} + E_t$ and $NEY_t = (1 - (E_{t-1} + E_t))$.

This multiplier which remains to evaluate in Benin and more broadly in African countries may reinforce the appeal of decentralized foreign aid.

2.6 Appendix

Table 2.1: Estimation results for the presence of scale economies - Specific effects

Dependent variable: Current expenditure of *commune* i ($G_{i;t}$)	
Population density	2.540** (1.41)
Squared Population density	0.001*** (0.00)
Haussman test: p-value	0.34
Observations	429

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level.

Table 2.2: LM tests - Spatial lag and spatial error dependence

Weighting scheme	(1) θ^{neigh}	(2) θ^{ethn}
LMlag (p-value)	13.33 (0.001)	11.97 (0.005)
LMerr (p-value)	1.35 (0.25)	0.60 (0.43)
Observations	462	462

Table 2.3: Estimation results with spatial lag dependence - ML estimator

Dependent variable: Current expenditure of *commune' i* ($G_{i;t}$)				
Weighting scheme	(1) θ^{neigh}		(2) θ^{ethn}	
Spending in *commune j*	0.255***	(0.07)	0.443**	(0.19)
Population density	0.025	(0.06)	0.022	(0.06)
Employment rate	-0.003	(0.01)	-0.003	(0.01)
Trade openness	0.115**	(0.05)	0.167***	(0.05)
Partisan Affiliation	0.288**	(0.11)	0.244**	(0.11)
Trend	-0.124**	(0.05)	-0.065**	(0.01)
Election year t-1	0.214**	(0.09)	0.169*	(0.10)
Election year t	-0.666***	(0.19)	-0.361	(0.30)
Election year t+1	-0.568***	(0.09)	-0.549***	(0.10)
Log-likelihood	-206.54		-207.57	
N	462		462	

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level.

Table 2.4: Estimation results for dynamic model- GMM-System[65]

Dependent variable: Current expenditure of *commune* i ($G_{i;t}$)										
Weighting scheme	(1) θ^{neigh}	(2) θ^{ethn}	(3) θ^{uni}	(4) θ^{uni}	(5) θ^{plac}	(6) θ^{ethn}	(7) θ^{neigh2}	(8) θ^{ethn2}	(9) θ^{neigh}	(10) θ^{ethn}
Lagged dep. var.	0.569***	0.527***	0.580**	0.411**	0.629***	0.403**	0.410*	0.768***	0.678***	0.652***
	(0.22)	(0.21)	(0.22)	(0.20)	(0.21)	(0.19)	(0.27)	(0.14)	(0.21)	(0.21)
Spending in j	0.623**	0.513***	0.384*	0.472**	-0.202	0.468***	0.653***	0.769**	0.155	0.130
	(0.28)	(0.19)	(0.20)	(0.19)	(0.20)	(0.18)	(0.18)	(0.32)	(0.40)	(0.33)
Population density	0.104	0.252**	0.222*	0.179	0.173	0.210*	0.275	0.101	0.088	0.158
	(0.11)	(0.11)	(0.12)	(0.12)	(0.10)	(0.12)	(0.12)	(0.08)	(0.11)	(0.10)
Employment rate	0.052***	0.020*	0.011*	0.061***	0.015	0.060***	0.059***	0.037**	0.032**	0.017*
	(0.02)	(0.01)	(0.008)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Trade openness	-0.080	-0.073	-0.094	-0.001	-0.148**	-0.025	-0.054	-0.106	-0.117*	-0.135*
	(0.06)	(0.07)	(0.08)	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)	(0.06)	(0.07)
Partisan Affiliation	0.395**	0.722**	0.239	0.612***	0.143	0.953***	0.528**	0.813**	0.131	0.453*
	(0.15)	(0.31)	(0.18)	(0.21)	(0.15)	(0.31)	(0.23)	(0.33)	(0.38)	(0.35)
Trend	-0.469***	-0.285***	-0.297***	-0.347***	- 0.419***	-0.345***	-0.443***	-0.419***	-0.512***	-0.463*
	(0.11)	(0.09)	(0.10)	(0.11)	(0.05)	(0.10)	(0.09)	(0.06)	(0.11)	(0.09)
Election year t-1	0.347***	0.294**	0.348**	0.207**	0.434***	0.190*	0.305***	0.343***	0.494***	0.584***
	(0.11)	(0.13)	(0.14)	(0.11)	(0.10)	(0.11)	(0.10)	(0.11)	(0.17)	(0.16)
Election year t	-0.055	-0.482**	-0.502**	0.672	-1.077***	-0.244	-0.215	-0.241	-0.044	-0.112
	(0.02)	(0.24)	(0.25)	(0.42)	(0.39)	(0.38)	(0.49)	(0.53)	(0.63)	(0.29)
Election year t+1	-0.307**	-0.357***	-0.391***	-0.090*	-0.569***	-0.318	-0.318***	-0.257*	-0.497**	-0.567***
	(0.12)	(0.09)	(0.09)	(0.11)	(0.10)	(0.10)	(0.11)	(0.14)	(0.19)	(0.11)
Spending in j				0.794***		0.617**				
				(0.20)		(0.20)				
Interact term AF_{it}									0.592**	0.673**
									(0.25)	(0.32)
Fiscal autonomy									-4.405**	-4.784*
									(1.78)	(2.56)
AR(1) test: p-value	0.004	0.001	0.001	0.005	0.000	0.002	0.030	0.000	0.001	0.000
AR(2) test: p-value	0.240	0.138	0.101	0.300	0.102	0.315	0.425	0.209	0.117	0.152
Hansen test: p-value	0.176	0.201	0.126	0.568	0.007	0.502	0.403	0.130	0.242	0.584
Nb of instruments	19	19	19	28	19	28	19	19	25	25
Nb of units	63	63	63	63	63	63	62	62	63	63
N	324	324	324	324	324	324	319	318	324	324

Table 2.5: Estimation results for dynamic model 1994-1998 - GMM-System[65]

Dependent variable: Current expenditure of *commune i* ($G_{i;t}$)				
Weighting scheme	(1) θ^{neigh}	(2) θ^{ethn}	(3) θ^{neigh2}	(4) θ^{ethn2}
Lagged dep. var.	0.835***	0.872***	0.887***	0.965***
	(0.14)	(0.12)	(0.11)	(0.10)
Spending in *communes j*	-0.093	0.205	0.002	0.926
	(0.13)	(0.25)	(0.35)	(0.85)
Population density	0.082	0.061	0.041	0.001
	(0.05)	(0.04)	(0.02)	(0.05)
Employment rate	0.012	0.008	0.001	0.005
	(0.01)	(0.01)	(0.01)	(0.01)
Trade openness	-0.001	-0.001	-0.001	-0.006
	(0.005)	(0.005)	(0.005)	(0.005)
Partisan Affiliation	0.095	0.225	0.022	0.001
	(0.12)	(0.23)	(0.07)	(0.08)
Trend	-0.001	-0.038	-0.001	-0.168
	(0.11)	(0.04)	(0.03)	(0.14)
AR(1) test: p-value	0.001	0.001	0.001	0.001
AR(2) test: p-value	0.840	0.726	0.881	0.751
Hansen test: p-value	0.262	0.467	0.494	0.553
Nb of instruments	16	16	16	16
Nb of units	63	63	62	63
N	241	241	237	241

[65] Robust standard errors. are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level. We adopt the assumption of weak exogeneity of employment rates and trade openness. The weighted average vector of per capita public spending of other local governments is, as noted before, suspected of endogeneity. Other explanatory variables (Population density, time dummies, election dummies, partisan affiliation, trends) are assumed to be strictly exogenous. The lagged levels of variables are used as instruments in the regressions in level as well as in the regressions in difference. We collapse instruments and limit the number. The lags of at least two earlier periods for weak exogenous variables and three earlier periods for endogenous variables are used as instruments. The lagged dependent variable is instrumented by lags of the dependent variable from at least two earlier periods. We use two lags for endogenous and weak exogenous variables.

Table 2.6: Testing for yardstick competition - GMM-System[65]

Dependent variable: Current expenditure of *commune* i ($G_{i;t}$)				
Weighting scheme	(2) θ^{neigh}	(2) θ^{ethn}	(3) θ^{neigh2}	(4) θ^{ethn2}
Spending in non election years	0.915***	1.239***	0.897***	1.013***
	(0.11)	(0.12)	(0.14)	(0.11)
Spending in election years	0.989***	1.289***	1.002***	1.449***
	(0.09)	(0.13)	(0.09)	(0.26)
Lagged dep. var.	0.569***	0.434**	0.695***	0.521*
	(0.22)	(0.24)	(0.21)	(0.29)
Population density	0.052	0.333***	0.190*	0.222
	(0.11)	(0.12)	(0.10)	(0.16)
Employment rate	0.068***	0.031**	0.070***	0.068***
	(0.01)	(0.01)	(0.01)	(0.02)
Trade openness	-0.138*	-0.020	-0.212***	-0.016
	(0.07)	(0.08)	(0.07)	(0.11)
Partisan Affiliation	0.476**	1.510***	0.507**	1.462***
	(0.24)	(0.28)	(0.22)	(0.36)
Trend	-0.430***	-0.097	-0.482***	-0.365***
	(0.08)	(0.08)	(0.07)	(0.12)
Election years	-0.387	0.353	-0.570	3.577*
	(0.40)	(0.76)	(0.72)	(2.17)
AR(1) test: p-value	0.003	0.001	0.001	0.201
AR(2) test: p-value	0.193	0.186	0.517	0.106
Hansen test: p-value	0.153	0.123	0.492	0.125
Wald test: p-value	0.157	0.438	0.264	0.112
Nb of instruments	20	20	20	20
Nb of units	62	63	62	62
N	324	324	319	318

Chapitre 3

"Yardstick competition in a federation: Theory and evidence from China"

Abstract

In this paper, we test empirically for competition among Chinese provinces embedded in a centralized political system. To motivate the empirical work, we adapt Besley and Case's model (American Economic Review, 1995) to a model of yardstick competition "from the top". In this model, the central government (rather than local voters) creates competition among local officials by rewarding or punishing them on the basis of relative performance in providing public services. Our theoretical framework predicts that, in this context, the central government involves strategic interactions among local governors as voters do in democratic countries. Then, for the first time in our knowledge, by estimating a spatial lag dynamic model for a panel data of 29 Chinese provinces from 1980 to 2004, we provide empirical evidence of the existence of such public spending interactions. We propose a rigorous empirical framework which takes into account heterogeneity, endogeneity problems and spatial error dependence. The results suggest that the centralized governance structure ensures political accountability of local governments in China.

* This chapter is a version of a paper under submission in the China Economic Review.

3.1 Introduction

China's remarkable growth in the 1980s and 1990s coincided with fiscal decentralization so that some scholars like Zhuravskaya (2000) argue that the latter gave Chinese local officials strong incentives to promote efficiency at local level, creating a basis for nationwide high economic performance. This paper tests empirically for competition among the Chinese provincial governors in providing public services. It also proposes an explanation for the existence of such competition between Chinese local governments by considering a yardstick competition "from the top" in which the central government creates competition among local governors by judging them on the basis of relative performance in providing public spending.

Fiscal decentralization has been a critical component of economic reform in China but "Chinese style decentralization" is actually conceptually different from decentralization in many other countries. First, China's current fiscal system is largely decentralized while its governance structure is rather centralized with strong top-down mandates. According to Maskin, Qian, and Xu (2000), it can be described as a multidivisional-form hierarchy structure in which the central government exerts great influence on the local administrations' actions. In particular, the power of provincial governments is not based on a system of electoral representation: the governors are appointed by the central government in Beijing.[66] Second, population mobility between provinces still limited in spite of the relaxations of the *Hukou* system.[67] In traditional fiscal federalism theory, decentralization is supposed to increase the efficiency of public spending by inducing competition between local officials, especially through a "vote with feet" or a "yardstick competition" created by local voters. In China, traditional disciplining devices such as local elections and exit option are not available at the provincial level.[68] Hence, fundamentally, these theories are not relevant in this context.

Following Blanchard and Shleifer (2001), we argue that vertical control can ensure accountability of local governors and induce interjurisdictional competition. Indeed, Tsui (2005) describes how Chinese provincial leaders operate within a well-defined career structure inside the political hierarchy. They undergo detailed performance reviews by their superiors, and are rewarded or penalized according to their success in achieving specific targets. Promotions, demotions, and job-related benefits all depend on such reviews, which have become increasingly

[66] We can note that there are elections at village level.

[67] The Hukou system is a household registration system which imposes limits on Chinese citizens changing their permanent place of residence.

[68] Meng and Zhang (2011) show empirically that village elections have positive consequences, including the enhancement of public expenditure and the improvement in efficiency in public administration, through the check and balances provided by the villagers' representatives meetings.

formal.[69] Maskin, Qian, and Xu (2000) actually show that provincial officials are more often promoted to the Party's Central Committee if their province's relative performance increases. Similarly, Li and Zhou (2005) examined the careers of top officials in 28 provinces from 1979 to 1995 and found that promotions are significantly more likely in provinces with higher growth. Hence, local governors may consider the risk of damaging their careers since the probability of their reappointment depends on how well they perform in fulfilling their mandates from above (Tsui and Wang, 2008). So we consider that career concerns may create incentives to improve local performance, as in democratic countries.

The idea that the performance of local governments can be evaluated by making comparisons between them was previously proposed by Salmon (1987) and formally developed by Besley and Case (1995). Here we modify the model of the latter to apply yardstick competition to China. This competition is not "from the bottom" but "from the top" since the principal is the central government, and not the local voting populations. Moreover, while Besley and Case (1995) provide a model of political economy of tax-setting, we focus on public spending choices. Indeed, although provincial autonomy in managing fiscal resources is controversial, everybody agrees that local governments have a lot of freedom to determine the amount of extrabudgetary financing and, hence, the level of public expenditure. Hence, firstly, we develop a model of public spending choices in a multijurisdictional world with asymmetric information, where the central government makes comparisons between local governors to overcome political agency problems. As in the traditional yardstick competition model, information spillovers from other jurisdictions affect the delivery of public services in a jurisdiction. Thus, when the central government uses neighboring performance to judge a governor, the latter is encouraged to consider neighboring fiscal decisions so that we should observe strategic interactions among local decision-makers as in democratic countries. Moreover, we show that we should not observe such strategic interactions in a centralized fiscal system. In this way, we propose a possible explanation for the existence of competition among Chinese local governments despite the absence of electoral accountability and population mobility and we motivate the empirical test for interjurisdictional competition among Chinese provinces.

Secondly, we estimate a spatial lag model for a panel data of 29 Chinese provinces from 1980 to 2004 taking into account heterogeneity, endogeneity problems and spatial error dependence to test the theoretical model's predictions. To our knowledge, this study is the first attempt to test public spending interactions in China. Indeed, most of the empirical literature focuses on

[69] Under Mao, promotion in part depended on ideological conformity but as reformers came to dominate in the 1980s, targets increasingly focused on economics. As of the mid-1990s, the system for evaluating provincial leaders assigned 60 out of 100 points to targets related to economic performance (Zhang, 2006).

strategic interactions with respect to taxes in developed countries. Little attention has been paid to the public expenditure side,[70] especially in developing or emerging countries.[71] Our empirical analysis, which follows the empirical strategy used in the relevant literature, actually provides evidence of the existence of strategic interactions among Chinese local governments operating in a vertical bureaucratic control system. Moreover, we show that these horizontal strategic interactions concern categories of public spending related to the performance criteria formally used by the central government to evaluate governors. We also find that such interactions are reinforced by a higher degree of fiscal decentralization.

The paper is structured as follows: Section 3.2 develops a theoretical model of yardstick competition "from the top"; Section 3.3 estimates a spatial lag model for a panel data of 29 Chinese provinces from 1980 to 2004 to test the existence of public spending interactions; Section 3.4 concludes.

3.2 Theoretical framework: Yardstick competition "from the top"

Besley and Case (1995) introduced yardstick competition between governments as a discipline device for rent-seeking politicians in the context of a developed and democratic country. We modify the traditional approach by considering a model of yardstick competition "from the top" and by focusing on public spending choices to apply yardstick competition to the particular context of China. We then analyze the effect of such yardstick competition on the existence of strategic interactions among local governments.

3.2.1 The model

Following Besley and Case (1995), we consider a principal/agent model. The agents are local officials, assumed to know more about the short term economic shocks at local level than do the central government. The principal here is the central government, assumed to use perfor-

[70] We can mention the works of Redoano (2007), Foucault, Madies, and Paty (2008) or Saavedra (2000). They find that some interactions take place among neighboring jurisdictions with respect to expenditures for EU countries, French municipalities and the states using the cash support program Aid to Families with Dependent Children.

[71] Akin, Hutchinson, and Strumpf (2005) analyze the decentralization of health care provision in Uganda and provide evidence for the hypothesis that spillover effects cause spending on public goods in one district to reduce spending in neighboring districts. Arze, Martinez-Vasquez, and Puwanti (2008) focus on local discretionary expenditures in Indonesia and highlight strategic complementarity of local public spending. Caldeira, Foucault, and Rota-Graziosi (2008) have also found strategic complementarity among local public spending among Beninese municipalities.

mance indicators of neighboring local officials as a benchmark to appraise whether agents waste resources and deserve to remain in office. The main incentive mechanisms used to discipline governors are reappointment.

We consider a jurisdiction whose local government provides public services of a given quality (G_i) financed by taxes (t). The final level of fiscal revenue is $t\varphi_k$, with φ_k the product stochastic and observed only by the local government. φ_k can take three values assumed to be evenly spaced with difference $\frac{\Delta}{t}$: high (H), medium (M) or low (L) with probabilities p_H, p_M and p_L.[72] The local governments are of two kinds: it can be "good" (g) with probability γ or "bad" (b) with probability $(1-\gamma)$. Good local governors do not rent-seeking or waste resources while bad ones do. The latter can subtract 0, Δ or 2Δ as rent or waste, r_i. We assume that $\gamma \geq \frac{1}{2}$.[73] Agent's strategies are denoted by $G(\varphi_k;\theta_i)$, with $k \,\epsilon\, (H;M;L)$ and $\theta_i \,\epsilon\, (g;b)$:

$$G(\varphi_k;g) = t\varphi_k, \tag{14}$$

and

$$G(\varphi_k;b) = t\varphi_k - r_i, \tag{15}$$

with r_i, the rent.

As in Besley and Case (1995), we consider two time periods with a discount parameter δ satisfying $\frac{1}{2} < \delta < 1$. The central government observes public spending decisions and reviews its belief that the agent is "good" using Bayes' rule.[74] It chooses whether or not to reappoint him since it wants to maximize public spending for a given level of taxes in period 2. The central government strategy is denoted by

$$\mu(G_i)\epsilon[0;1], \tag{16}$$

which corresponds to the probability that it reappoints a local governor who sets a public spending level G_i. A "bad" local official chooses public spending to maximize his discount utility:

$$E\left[V\left(G_i\,|\varphi_k\right)\right] = r_i + \mu(G_i)\delta 2\Delta. \tag{17}$$

[72] Note that three levels of product are necessary to obtain interesting results.

[73] This hypothesis will allow us to highlight the discipline effect of the yardstick competition. Indeed, if $\gamma < \frac{1}{2}$, under yardstick competition, bad local governments will never reduce their rent since the central government won't be willing to reappoint them even if they both reduce their rent (see Section 3.2.3).

[74] Note that we can easily consider that the central government has no capacity to make a credible pre-commitment on transparent rules of career evolution depending on fiscal performance only. Indeed, promotions of a close relative of the leaders of the central government are common in China. For instance, recently, Li Xiaopeng, the son of former Chinese premier Li Peng was promoted to governor of Hunan province.

A "bad" official who is reappointed sets no period 2 discipline and takes a rent equal to 2Δ. So, he contemplates between the rent in period 1 and the expected rent in period 2.[75]

3.2.2 The centralized fiscal system

As a benchmark, we first consider the case in which the fiscal system is centralized. All tax revenues are collected by the central government at local level and transferred back to local governments according to a spending plan made by the center. It corresponds to the perfect information case. Formally, we have:

$$G(T_i, g) = T_i \text{ and } G(T_i, b) = T_i - r_i, \tag{18}$$

with T_i, the fiscal revenue transferred by the central government. In this case, a local governor who sets a level of public spending lower than the fiscal revenue transferred by the central government will be automatically revealed as a "bad" local governor and will not be reappointed. Strict dominance arguments rule out any equilibrium in which $G(T_i, b) = T_i$ ($\Delta = 0$) as long as $\delta < 1$. Then, providing $G_i = T_i - \Delta$ gets less rent with no gain in the probability of staying governor so that "bad" local governors are not encouraged to reduce their rent and take 2Δ.

Lemma 1 *Under perfect information, a centralized fiscal system is characterized by:*
(*i*) *Good governors set:* $G(T_i, g) = T_i$.
(*ii*) *Bad governors set:* $G(T_i, b) = T_i - 2\Delta$.
(*iii*) *Central government sets:* $\mu(T_i - \Delta) = \mu(T_i - 2\Delta) = 0$ and $\mu(T_i) = 1$.

Proof. See Appendix 3.5.1 (Proof of Lemma 1) ■

In this case, the information about the nature of the local government is revealed. Yardstick competition is useless and has no effect on local officials' public spending choices which are independent of what other agents are doing.

Proposition 1 *Under our assumptions, when the fiscal system is centralized, there is no horizontal strategic interaction.*

3.2.3 The decentralized fiscal system

We now consider a decentralized case with asymmetric information between the local officials and the central government. The nature selects the type of the local governor (θ_i) and the

[75] Note that it is assumed that there is no sanction, i.e., a local governor is not bound to give back what he took as a rent in period 1.

product (φ_k). We deduce five possible public spending levels, $\{G_1; G_2; G_3; G_4; G_5\}$ with $G_1 > G_2 > G_3 > G_4 > G_5$.

Table 3.1: Levels of public spending depending on product and rent levels

Type\Product	High			Medium			Low		
Good	G_1			G_2			G_3		
Bad	$\mathbf{r = 0}$	$\mathbf{r = \Delta}$	$\mathbf{r = 2\Delta}$	$\mathbf{r = 0}$	$\mathbf{r = \Delta}$	$\mathbf{r = 2\Delta}$	$\mathbf{r = 0}$	$\mathbf{r = \Delta}$	$\mathbf{r = 2\Delta}$
	G_1	G_2	G_3	G_2	G_3	G_4	G_3	G_4	G_5

Table 3.1 sums up the possible levels of public spending.[76]

Perfect Bayesian Equilibrium without yardstick competition

We consider one jurisdiction and find Perfect Bayesian Equilibrium of the public spending game. With $\delta < 1$, strict dominance argument rules out any equilibrium where $G(\varphi_H; b) = G_1$, $G(\varphi_M; b) = G_2$ and $G(\varphi_L; b) = G_3$. Moreover, the central government will always believe that a local government who sets G_4 or G_5 is "bad", so that $\mu(G_4) = \mu(G_5) = 0$. Hence, a "bad" governor will always take a maximal rent when the product is low: $G(\varphi_L; b) = G_5$. Then, observing G_3, using Bayes' rule, the central government is willing to reappoint the local government if $p_L \geqslant 1/2$, a high enough value for it to be sufficiently likely that a governor who chooses G_3 is actually "good". Hence, since $\delta > 1/2$, the governor is encouraged to reduce his rent when the product is medium to be reappointed: $G(\varphi_M; b) = G_3$. On the contrary, when the product is high, it is worse off playing G_2 since it gets less rent with no gain in the probability of reappointment so that a "bad" governor takes a maximal rent when the product is high: $G(\varphi_H; b) = G_3$.

The following lemma illustrates Perfect Bayesian Equilibrium in an interesting and simple case: $p_L \geqslant 1/2$.

---

[76]

- A good governor provides:
  - $G(\theta_H; g) = t\theta_H = G_1$ and $G(\theta_M; g) = t\theta_M = G_2$ and $G(\theta_L; g) = t\theta_L = G_3$.
- A bad governor can choose to take no rent, a rent of Δ or 2Δ:
  - $G(\theta_H; b) = t\theta_H = G_1$ or $(t\theta_H - \Delta) = t\theta_M = G_2$ or $(t\theta_H - 2\Delta) = t\theta_L = G_3$,
  - $G(\theta_M; b) = t\theta_M = G_2$ or $(t\theta_M - \Delta) = t.\theta_L = G_3$ or $(t\theta_M - 2\Delta) = G_4$,
  - $G(\theta_L; b) = t\theta_L = G_3$ or $(t\theta_L - \Delta) = (t\theta_M - 2\Delta) = G_4$ or $(t\theta_L - 2\Delta) = G_5$.

Lemma 2 *Under asymmetric information, without yardstick competition, if* $p_L \geqslant 1/2$, *the Perfect Bayesian Equilibrium is:*
(*i*) *A "bad" local governor sets:*

$$\begin{cases} G(\varphi_H; b) = t\varphi_H - 2\Delta = G_3, \\ G(\varphi_M; b) = t\varphi_M - \Delta = G_3, \\ G(\varphi_L; b) = t\varphi_L - 2\Delta = G_5. \end{cases}$$

(*ii*) *Central government sets:*

$$\begin{cases} \mu(G_1) = \mu(G_2) = \mu(G_3) = 1, \\ \mu(G_4) = \mu(G_5) = 0. \end{cases}$$

Proof. See Appendix 3.5.1 (Proof of Lemma 2) ■

Without yardstick competition, a local governor can be encouraged to reduce his rent to be reappointed. But local governments' public spending choices are independent of what other local officials are doing.

Perfect Bayesian Equilibrium with yardstick competition

We now consider two neighboring jurisdictions with identical environments and shocks in which appointed officials may be of different types. Like Besley and Case (1995), we assume that local officials know each other's types. We analyze the effect of the central government's information about public spending in both jurisdictions.[77] We keep considering the case where $p_L \geqslant 1/2$ to compare equilibrium with and without yardstick competition. We note $\mu(G_i|G_j)$ the probability that the central government reappoints a local governor i who sets a public spending level G_i, observing a level G_j in the neighboring local jurisdiction j and $G(\varphi_k; \theta_i|\theta_j)$ the strategy of the local governor i who knows the type of its neighboring local government θ_j.

We have three cases to consider (see Appendix 3.5.1, Proof of Lemma 3). First, if both local governments are "good", both set public spending equal to $t\varphi_k$, $k \in (H; M; L)$. Second, if both local governments are "bad", both local governors choosing the same strategy gives the central government more confidence that they are "good". In particular, it is now willing to reappoint a governor if it observes G_3 in both jurisdictions if $p_L \geqslant 1 - \gamma$. This condition is

[77] In other words, we suppose that neighboring local governments know more about each other than the central government do.

weaker than the previous one since, by assumption, $\gamma \geq 1/2$. Hence, both "bad" governors act in the same way and reduce their rent to G_3 when the product is medium to be reappointed. Third, we consider the case where one local government is "good" and the other is "bad". In this case, the "bad" incumbent will be found out by providing a level of public spending above his neighbor. Hence, when the product is medium playing G_3 now results in being unseat so that the "bad" government takes the maximal rent, G_4.

Lemma 3 *Under asymmetric information, with yardstick competition, if $p_L \geqslant 1/2$, the Perfect Bayesian Equilibrium is:*

(*i*) *If both local governments are "good", they both set:*

$$\begin{cases} G(\varphi_H; g|g) = t\varphi_H = G_1, \\ G(\varphi_M; g|g) = t\varphi_M = G_2, \\ G(\varphi_L; g|g) = t\varphi_L = G_3. \end{cases}$$

If both local governments are "bad", they both set:

$$\begin{cases} G(\varphi_H; b|b) = t\varphi_H - 2\Delta = G_3, \\ G(\varphi_M; b|b) = t\varphi_M - \Delta = G_3, \\ G(\varphi_L; b|b) = t\varphi_L - 2\Delta = G_5. \end{cases}$$

If one local government is "good" and the other is "bad", they set:

$$\begin{cases} G(\varphi_H; b|g) = t\varphi_H - 2\Delta = G_3, & G(\varphi_H; g|b) = t\varphi_H = G_1, \\ G(\varphi_M; b|g) = t\varphi_M - 2\Delta = G_4, & G(\varphi_M; g|b) = t\varphi_M = G_2, \\ G(\varphi_L; b|g) = t\varphi_L - 2\Delta = G_5. & G(\varphi_L; g|b) = t\varphi_L = G_3. \end{cases}$$

(*ii*) The central government sets:

$$\begin{cases} \mu(G_1|G_j) = \mu(G_2|G_2) = \mu(G_3|G_3) = 1, \\ \mu(t\varphi_k - r_i \ |t\varphi_k) = \mu(G_4|G_j) = \mu(G_5|G_j) = 0. \end{cases}$$

Proof. See Appendix 3.5.1 (Proof of Lemma 3) ■

Our results are similar to those of Besley and Case (1995) and we distinguish the two effects of the yardstick competition highlighted by Canegrati (2006): the discipline and the selection effect. When both local officials are "bad", local governors are better able to make the central

government believe that both are "good" by choosing the same strategy and reducing their rent. It follows that yardstick competition involves a discipline effect which leads "bad" governments to increase the level of public spending in period 1. When one local official is "good" and another is "bad", the good local government inflicts an externality on the bad one, reducing the latter's reappointment chances. In this case, the yardstick competition separates "good" governments from "bad" governments (selection effect) but involves a decrease of public spending in period 1. Finally, when the central government makes comparisons between local jurisdictions, local officials care about what other local governments are doing since it affects its own probability of being reappointed.[78]

Proposition 2 *Under our assumptions, the yardstick competition "from the top" involves horizontal strategic interactions among neighboring local governments.*

3.3 Empirical evidence of strategic interactions among Chinese provincial governments

Our theoretical framework, by highlighting that a yardstick competition "from the top" involves strategic interactions among neighboring local governments as in democratic countries (Proposition 2), motivates the empirical test of the existence of horizontal strategic interactions in determining provincial public spending in China. We do not pretend that strategic interactions always arise through a yardstick competition only. But, in the Chinese context, such interactions cannot arise through traditional channels like population mobility or electoral discipline so that we argue that yardstick competition "from the top" should be the principal source of strategic interactions. Moreover, we test horizontal strategic interactions for various categories of public spending to ascertain that interactions concern items related to the performance criteria formally used by the central government to evaluate governors.

Then, according to Proposition 1, when the fiscal system is centralized, we should not observe any horizontal strategic interactions. Empirically, we test the effect of the degree of centralization on the existence of horizontal strategic interactions. Before that, we provide a brief overview of the decentralization process in China and some descriptive statistics.

[78] Note that results are similar or even reinforced when we generalize to the case where the central government compares n neighboring jurisdictions with identical environments to appraise whether agents waste resources and deserve to remain in office.

3.3.1 Decentralization in China

The basic hypothesis of our analysis is that the Chinese provinces acquired an autonomous budgetary power which allows them to determine the amount of their spending. One of the major objectives of the fiscal reform was to make local governments fiscally self-sufficient (see Jin, Qian, and Weingast (2005) for a detailed overview of the decentralization process in China.). Provincial governments have been given considerable latitude in shaping local policies and managing fiscal resources: more than 70 percent of the entire public expenditure was incurred at local levels in 2004 (see Figure 3.1 in Appendix 3.5.2).[79]

Before 1979, China practiced a "unitarian budgetary system" (*tongshou tongzhi*). This fiscal system was characterized by centralized revenue collection and centralized fiscal transfers. Most taxes and profits were collected by local governments and were remitted to the central government, and then in part transferred back to the local governments according to expenditure needs approved by the center. This system was in accord with the planned economy. The fiscal decentralization policy was implemented in 1980. The highly centralized system was changed into a revenue-sharing system called "fiscal contracting system" (*caizheng chengbao zhi*). Although the central government retained the responsibility for defining the fiscal system, the administration and the collection of taxes were widely devolved to provinces. There were three basic types of revenue under this reformed system: central revenues that accrue to the center, local revenues that accrue to the local governments, and shared revenues.[80] Actually, during this period, the local governments controlled the effective tax rates and bases by offering varying degrees of tax concessions to enterprises and shifted budgetary funds to extrabudgetary funds.[81] This period is generally considered as one of great autonomy for provincial governments. From 1980 to 1993, the central government's share of total budgetary revenue declined from 51 percent to 28 percent. Hence, the central government decided in late 1993, to replace this system with a "separating tax system", a system of allocation of the various categories of taxes between the center and the provinces. The center and provinces became responsible for the administration and collection of their own taxes. To a certain extent, the reform may have strengthened the fiscal autonomy of provinces. Indeed, local governments' tax revenue no

[79] Provincial levels are first-level local state administrative organs in China. By conventional measure, there are five tiers in the China fiscal system: the central government, 33 province-level regions, 333 prefecture-level regions, 2,862 county-level regions and 44,741 township-level regions.

[80] Ma (1995) shows that revenue-sharing methods are time-inconsistent and that the localities are tempted to reduce their tax collection efforts.

[81] They thus minimized tax sharing with the central government. Moreover, for most local governments, there was a strong incentive to conceal their revenue capacities, as the center tended to revise the rules of the game to penalize local governments with fast-growing revenues.

longer depends on negotiation with the center, provincial taxes have an important fiscal potential and the provinces benefit from tax revenues they collect.[82] Provincial autonomy results in a very different fiscal effort from one province to another and in the existence of deficits during the execution of the budgets (Bahl, 1999). Moreover, although provincial fiscal autonomy evolution from one reform to another is controversial, everybody agrees that they have a lot of freedom as regards the amount of their extrabudgetary spending. In spite of their name, these fiscal revenues belong to the budget since provinces plan formally to collect them and to spend them.[83] The development of the extrabudgetary financing illustrates central government's tolerance of the fiscal initiatives of local governments (Zhang, 1999). Hence, we can consider that local governments are not deprived of their freedom to determine the amount of their public expenditure.

3.3.2 Data and descriptive statistics

Our panel dataset covers the period 1980-2004 for 29 provinces. We consider the 22 provinces or *sheng* (Anhui, Fujian, Gansu, Guangdong, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan and Zhejiang), the 5 autonomous regions or *zizhiqu* (Guangxi, Nei Mongol, Ningxia, Xinjiang Uygur, Xizang) and the 4 municipalities or *shi* (Beijing, Chongqing, Shanghai and Tianjin).[84] Data for provinces' public expenditure come from the *China Statistical Yearbook* for various years. Public expenditure is divided into five spending categories: appropriation for capital construction, expenditure for enterprise innovation, expenditure for supporting agricultural production, culture, education, science & health care and government administration spending (see Figure 3.2 in Appendix 3.5.2).

Over the past 30 years, China has transformed itself, posting extraordinary rates of growth. At the same time, it has become a far less equal nation, with vast differences emerging between those living in rural and urban areas or inland and coastal areas. In particular, incomes in coastal areas have grown faster than in inland provinces, opening a coastal-inland income gap that has widened continuously. This pattern is not surprising given that much of China's economic development was led by expanding exports, financed to a considerable extent by

[82] See Herschler (1995) for an analysis of consequences of the 1994 Chinese tax reform.

[83] In 1978, total extra-budgetary revenue was about 10% of the GDP while total budgetary revenue was about 31%. In 1993, the extra-budgetary revenue was up to 16% of the GDP and the budgetary revenue was down to 16% of the GDP (Statistical Yearbook of China, 1995).

[84] We excluded the Xizang region (Tibet) since data are likely to be overvalued. Moreover, in 1997, Chongqing separated from Sichuan to become an independent prefecture in its own right but we have no data for this prefecture before 1997. So, we have combined Chongqing with Sichuan.

foreign direct investment. Local governments play an essential role in providing social services. However, many local governments, especially those in poor western regions, are providing fewer and lower quality public services. Regarding total public spending we see that coastal provinces account for 65% of the total local governments' expenditure. The distribution of per capita central transfers by province increases these inequalities: Shanghai, the richest province, is the largest recipient of central transfers per capita in 2004 (5,079 yuan) while Henan, a relatively poor province, is the smallest one (646 yuan). Hence, the level of public spending seems to be largely spatially correlated due to spatial heterogeneity of provinces. Our empirical framework consists of testing the existence of substantive strategic interaction between Chinese neighboring local governments. So, we have to ascertain that the observed spatial auto-correlation can be attributed to a real strategic interaction process among local authorities and not to spatial exogenous correlation in omitted provinces characteristics or common shocks to local fiscal policy, that could be important as these descriptive statistics show.

3.3.3 Are there public spending interactions among Chinese provinces?

Econometric framework

To test the existence of horizontal strategic interactions, in line with earlier literature, we consider a specification in which (the log of) public expenditure in province i in year t, G_{it}, is a function of (the log of) its neighbors' public spending, G_{jt}.[85] We allow G_{it} to depend on a vector of specific controls X_{it} and we include a province-specific effect α_i.

$$G_{it} = \sum_{i \neq j} \rho_{ij} G_{jt} + \beta X_{it} + \alpha_i + \varepsilon_{it}, \tag{20}$$

where $i = 1, \ldots, n$ denotes a province and $t = 1, \ldots, T$ a time period, ρ_{ij}, β and α_i are unknown parameter vectors and ε_{it} a random error. All time-invariant community characteristics, observed or unobserved are represented by α_i. Since there are too many parameters ρ_{ij} to be estimated, we consider:

$$G_{it} = \rho A_{jt} + \beta X_{it} + \alpha_i + \varepsilon_{it}, \tag{21}$$

where $A_{jt} = \sum_{i \neq j} w_{ij} G_{jt}$ is the weighted average vector of public spending in the set of neighbors local governments j at time t.

The first problem concerns the way the neighbors of a province are defined. An *a priori*

[85] See, for instance, Devereux, Lockwood, and Redoano (2008), Foucault, Madies, and Paty (2008) or Redoano (2007).

set of interactions has to be defined. We try to rely on insights derived from our theoretical model. In the latter, the central government introduces a yardstick competition among local jurisdictions which are comparable, with identical environments and shocks. A scheme that assigns weights based on geographical proximity is commonly used in the empirical literature of interjurisdictional interactions and seems to be particularly relevant in China where heterogeneity of provinces is widely spatially distributed. Hence we have first chosen two geographical definitions of neighboring communities. The first is based on the Euclidean distance between provinces, w_{ij}^{dist}.[86] The second, w_{ij}^{cont}, is based on a contiguity matrix where the value one is assigned if two provinces share the same border and zero otherwise. Then, following Lockwood and Migali (2009), we compare these weights to "placebo" weights, w_{ij}^{plac}, which are chosen randomly without regard to any economic considerations.[87] This placebo weighting scheme gives us a useful benchmark to ascertain that the potential observed spatial auto-correlation can be attributed to a substantive strategic interaction process and not to some general positive correlation between all public spending generated by omitted common shocks.[88]

Following Devereux, Lockwood, and Redoano (2008), Foucault, Madies, and Paty (2008), Veiga and Veiga (2007) and Redoano (2007), we also introduce the lagged dependent variable, G_{it-1} , as a right hand side in order to take into account persistency in public expenditure:

$$G_{it} = \lambda G_{it-1} + \rho A_{jt} + \beta X_{it} + \alpha_i + \varepsilon_{it}. \tag{22}$$

Lastly, we introduce specific control variables commonly used in the relevant empirical literature to avoid exogenous correlation in omitted provinces characteristics or shocks to local fiscal policy which may generate spatial error dependence and provide false evidence of strategic interactions between neighboring provinces,

$$G_{it} = \lambda G_{it-1} + \rho A_{jt} + \beta_1 P_{it} + \beta_2 G\mathrm{R}_{it} + \beta_3 U_{it} + \beta_4 O_{it} + \beta_5 F_{it} + \beta_6 Tr_t + \beta_7 T_{it} + \alpha_i + \varepsilon_{it}, \tag{23}$$

where P_{it} is the population density of province i in year t, which captures the possibility of economies of scale in public spending and may be spatially distributed,[89] $G\mathrm{R}_{it}$ is the Gross Domestic Product (GDP) growth rate in province i in year t, which controls for common

[86] Weights w_{ij} are given by $1/d_{ij}$ where d_{ij} is the Euclidian distance between provinces i and j for $j \neq i$.

[87] We generate a random number distributed between 0 and 1 for each province. Then, the value 1 is assigned if the difference between random numbers of two provinces is higher than 0.5 and 0 otherwise.

[88] Weights are normalized so that their sum equals unity for each i for all weight matrices. This assumes that spatial interactions are homogeneous: each neighbor has the same impact on the province.

[89] Per capita expenditures and population are in logarithmic terms.

shocks spatially correlated, U_{it} is the fraction of urban population in the total population of provinces, knowing that urbanization is spatially distributed and may increase public spending needs in particular in terms of infrastructures (Guillaumont Jeanneney and Hua, 2001 and Rodrik, 1998), O_{it} is a trade openness measure[90] at provincial level which could have many effects on public finances,[91] as well as F_{it}, the foreign direct investment inflow in province i in year t. Tr_t is a trend variable which captures a common trend for all provinces.[92] We also introduce T_{it}, the central government transfers for province i in year t, the centre may want to transfer more resources to increase spending in a specific part of the country. The central government transfers are introduced as control variable only as a robustness check, this data reducing our observations number since it is available only from 1995 to 2004.

In estimating equation (23) we are confronted with important econometric issues (Brueckner, 2003). First, as already mentioned, the omission of explanatory variables that are spatially dependent may generate spatial dependence in the error term. To deal with this problem, one possible approach is to use the maximum likelihood (ML) estimator, taking into account the error structure or the instrumental variables (IV) method which yields consistent estimates even with spatial error dependence (see Kelejian and Prucha, 1998).[93] Another possibility is to use, as Saavedra (2000) or Foucault, Madies, and Paty (2008) do, the robust tests of Anselin, Bera, Florax, and Yoon (1996) to verify the hypothesis of error independence.[94] Secondly, because of strategic interactions, public expenditure in different provinces is jointly determined: if local governments react to each others' spending choices, neighbors' decisions are endogenous and correlated with the error term ε_{it}. In this case, ordinary least squares estimation of the parameters is inconsistent, requiring alternative estimation methods based on the IV method or on the ML (Brueckner, 2003). Under IV approach, a typical procedure is to use the weighted average of neighbors' control variables as instruments (Kelejian and Prucha, 1998). Lastly, since

[90] We measure the trade openness as a ratio of total foreign trade (exports plus imports) to GDP as it is most often used in empirical studies.

[91] In particular, Rodrik (1998) shows that there is a positive correlation between an economy's exposure to international trade and the size of its government because government spending plays a risk-reducing role in economies exposed to a significant amount of external risk. Jiang (2011) also emphasizes the effects of openness on China's provinces.

[92] We cannot introduce time dummies since we use GMM System with external instruments and we have too many instruments with time dummies. However, introduce a trend is a good way to ascertain that the potential observed spatial auto-correlation can be attributed to an interaction process and not to a "common trend". Indeed, Manski (1993) suggests that fiscal choices appear to be interdependent not because jurisdictions behave strategically but because they actually follow a "common trend" that drives fiscal choices in the same directions.

[93] Case, Rosen, and Hines (1993) or Brueckner (1998) use the maximum likelihood approach. Brett and Pinkse (2000), Heyndels and Vuchelen (1998), Figlio, Kolpin, and Reid (1999) and Buettner (2001) are examples of empirical studies that use the IV approach to estimate spatial coefficients.

[94] The use of panel helps to eliminate spatial error dependence which arises through spatial autocorrelation of omitted variables which are time-invariant.

we introduce the lagged dependent variable as a right hand side to consider the autoregressive component of the time series, the previous estimators are inconsistent (Nickell, 1981).

We propose to follow the empirical strategy commonly used in the relevant literature by using the GMM-System estimator in addition to the IV estimator of the spatial coefficient, after verifying the hypothesis of error independence and estimating the static model with ML estimator (see, for instance, Foucault, Madies, and Paty, 2008). As for the neighbors' spending decisions, we also use the weighted average of neighbors' control variables, i.e., their socio-economic characteristics ($w_{ij}X_{jt}$), as additional external instruments. The GMM estimators allow controlling for both unobserved country-specific effects and potential endogeneity of the explanatory variables. Blundell and Bond (1998) show that the GMM-System estimator is preferable to that of Arellano and Bond (1991) when the dependent variable, the independent variables, or both are persistent.

Results

To investigate whether spatial lag or spatial error dependence are the more likely sources of correlation, we use two robust tests (for spatial lag dependence and for spatial error dependence) based on the Lagrange Multiplier principle for panel data (Anselin, Le Gallo, and Jayet, 2006). As shown in the Table 3.2 (see Appendix 3.5.2), spatial tests indicate the presence of spatial lag dependence for public spending but not the existence of spatial error dependence for both matrices with our specification. As the hypothesis of error independence is verified, we estimate equation (23) using ML with specific-effects for both contiguity and distance matrices without taking into account the lagged value of our dependent variable ($\lambda = 0$) (Table 3.2). In these first estimations, the coefficient of the weighted average vector of public expenditure in the set of other local governments is always significant and positive for both matrices.

We then estimate with GMM-System the dynamic model (equation 23) for both weighting schemes taking into account the lagged value of our dependent variable ($\lambda \neq 0$). We adopt the assumption of weak exogeneity of GDP growth rate, trade openness, foreign direct investment inflow and central government transfers and the assumption of strict exogeneity of other explanatory variables.[95] As noted before, the weighted average vector of per capita public spending in other provinces is also instrumented by the weighted average of neighbors' control variables. We collapse instruments and limit their number since too many instruments leads to inaccurate estimation of the optimal weight matrix, biased standard errors and, therefore,

[95] Population density, trend and urbanization rate.

incorrect inference in overidentification tests (see Roodman, 2009).[96] Table 3.3 and Table 3.4 show estimation results for distance matrix and contiguity matrix (see Appendix 3.5.2). The consistency of GMM-System estimator is given by two specification tests (Arellano and Bond, 1991): the Hansen test and the serial correlation of residuals tests. Here, we conclude that orthogonality conditions are correct and instruments used valid. We introduce the control variables progressively to check the robustness of our results. We can also note that the coefficient of the lagged dependent variable is always significant and positive. As this coefficient provides an estimated λ varying between 0.45 and 0.89 significant at 1% level, the result indicates persistency of public expenditure and confirms the consistency of the autoregressive specification.

The coefficient of the weighted average vector of public expenditure in the set of other provinces is significant at least at 5% level and positive for both matrices. Moreover, it is robust and relatively stable with the introduction of the control variables. However, if we had continued to find evidence of strategic interactions with the placebo matrix, it would cast doubt on our claim that we have found evidence of public spending interactions. But we see from Table 3.4 (last column), that placebo matrix do not show any evidence of positive strategic interactions. This shows that the phenomenon of fiscal interactions detected with geographical matrices is not an artefact of the estimation procedure. So, we can conclude that there are strategic interactions between Chinese provinces and that public expenditure seem to be strategic complements: an average public spending increase of 10% in the neighboring provinces induces an increase of around 4.5% with the distance matrix and 2.5% with the contiguity matrix in provincial expenditure.[97] These results are similar to those obtained in previous tests carried out in other countries.[98]

[96] The lags of at least two periods earlier for weak exogenous variables and three periods earlier for endogenous variables are used as instruments. The lagged dependent variable is instrumented by lags of the dependent variable from at least two periods earlier.

We use two lags for endogenous and weak exogenous variables. Note that we consider external instruments as weak exogenous but we use only one lag when the number of instruments exceeds the number of units.

[97] As expected, the parameter associated with population is negative and significant: it indicates the presence of economies of scale in public spending. We find a positive and significant sign for the parameter associated with the GDP growth rate, which indicates the effect of economic conjuncture. Results also tend to show that urbanization actually increases public spending needs. The coefficient associated with the central government transfers is also positively correlated with the level of public expenditure, as it is generally the case for trade openness.

[98] The empirical evidence for public spending interactions and their strategic complementarity relates to the United States (Case, Rosen, and Hines, 1993 and Figlio, Kolpin, and Reid, 1999), European countries (Redoano, 2007), Indonesia (Arze, Martinez-Vasquez, and Puwanti, 2008) or French municipalities (Foucault, Madies, and Paty, 2008). For empirical evidence of yardstick competition see Ashworth and Heyndels (1997) for Flemish Belgium, Bordignon, Cerniglia, and Revelli (2003) for Italy, Schaltegger and Kuttel (2002) for Switzerland and Revelli (2006) for the United Kingdom.

Extension

Case, Rosen, and Hines (1993) and Foucault, Madies, and Paty (2008) suggested that there is no reason to assume that patterns of expenditure interactions are identical for all categories of public spending. In our case, if it is actually to answer the requirements of the central government that local governors are competing with their neighbors in providing public services, we should observe that strategic interactions concern items related to performance criteria used by the central government.

If local governors are evaluated in accordance with a set of various performance criteria including "social development", economic items are more numerous. Indeed, apart from ideological conformity, the *Target Responsibility System* contains seven economic criteria out of eleven criteria such as "enterprise operation and development" or "infrastructure" including transportation, energy, telecommunications, urban construction etc. (Tsui and Wang, 2004). One item titled "education, science and technology, culture and sports" concerns social expenditures. Hence, we expect strategic interactions being higher for economic than for social expenditure items and non significant for expenditures which are not related to performance criteria such as government administration spending. Estimation results for the various categories of public spending are provided in Tables 3.5 and 3.6 (see Appendix 3.5.2) for distance and contiguity matrices.

Regarding coefficients associated with weighted average vector of public expenditure in neighboring provinces for the various categories of public spending, interactions seem to be actually strongest and most significant for the category "appropriation for capital construction" and for "expenditure for enterprise innovation". Estimations provide estimated coefficients of 0.35 and 0.24 respectively, significant at 1% level with the distance matrix. Strategic interactions are significant but smaller for local social expenditure ("culture, education, science & health care") and results provide no evidence of interactions for expenditure for supporting agricultural production and local government administration spending. These results are consistent with our expectations: it tends to confirm that interactions have their origin in the central government evaluation. An alternative and additional explanation of these results was provided by Foucault, Madies, and Paty (2008). They also found a higher coefficient for investment expenditure and argued that there are spending interactions between neighboring French municipalities for the most visible category of expenditure.

3.3.4 The effect of the degree of centralization on strategic interactions

As already stated, according to Proposition 1, when the fiscal system is centralized, local officials' public spending choices are independent of what other agents are doing so that we do not expect any horizontal strategic interactions. We cannot test this hypothesis directly since we lack data for the period before decentralization. So we propose to test the effect of the degree of centralization on the existence of horizontal strategic interactions. To test this, we interact the neighbors' spending decisions (A_{jt}) and an indicator of the degree of centralization (C_{it}) and we estimate:

$$G_{it} = \lambda G_{it-1} + \rho' A_{jt} + \rho''(A_{jt} * C_{it}) + \beta_1 P_{it} + \beta_2 G\mathrm{R}_{it} + \beta_3 N_{it} + \beta_4 O_{it} + \beta_5 U_{it} + \beta_6 T_t + \beta_7 C_{it} + \alpha_i + \varepsilon_{it}. \tag{24}$$

If the degree of centralization actually reduces strategic interactions, we should observe the coefficients ρ' being significantly positive and ρ'' being significantly negative. To rely on insights derived from our theoretical model, fiscal centralization is defined as transfers from central government as a percentage of local government revenue.

Table 3.7 (see Appendix 3.5.2) gives the estimation results of equation (24) for both matrices. Our results tend actually to show that public spending interactions are reduced by fiscal centralization (column (1) and (2)). Indeed, the coefficient associated with the interaction between the neighbors' spending decisions (A_{jt}) and the indicator of centralization (C_{it}), which can be considered as an indicator of the degree of dependence or a sign of weakness in terms of local autonomy, is significantly negative while coefficients associated with (A_{jt}) is positive. As a robustness test, we use an approximation of fiscal decentralization and evaluate its effect on the existence of strategic interactions in columns (3) and (4). Following the relevant literature,[99] we choose a usual approximation of fiscal decentralization, Dec_{it}, local expenditure as a percentage of national expenditure.[100] As expected, for both matrices, coefficients associated with A_{jt} and $(A_{jt} * Dec_{it})$ are significantly positive indicating that public spending interactions are reinforced by fiscal decentralization.[101]

[99] In particular, Huther and Shah (1998), Fisman and Gatti (2002), Arikan (2004), Treisman (2000), Rodríguez-Pose and Krøijer (2009) or Enikolopov and Zhuravskaya (2007) in their studies of the effects of fiscal decentralization on governance, corruption, growth and political institutions.

[100] More precisely, we use the ratio of local government's public spending per capita over the total central government public spending per capita, for each province.

[101] Note that we tested the joint significance of the coefficients.

3.4 Conclusion

There is a divergence between the assumptions of orthodox fiscal federalism theories and the institutional realities in China so that these theories cannot explain that fiscal decentralization induced incentives to promote local economic growth in China. Our work fills a gap in the existing literature by providing an explanation and evidence of the existence of competition among Chinese local governments despite the absence of electoral accountability and population mobility. First, we show that the central government can create a yardstick competition among local officials by rewarding or punishing them on the basis of relative performance as voters do in democratic countries. Second, the empirical analysis emphasizes the existence of public spending interactions among Chinese local governments through the estimation of a spatial lag model for a panel data of 29 provinces from 1980 to 2004.

Generally, a necessary assumption for the existence of interjurisdictional competition is that local governments are directly elected by the constituents. Moreover, the fiscal decentralization process has to be total. In China, on the contrary, it is the centralized political system associated with the decentralized fiscal system which seems to ensure political accountability of local leaders and leads to competition between local authorities. Indeed, we formally show that yardstick competition is equally valid whether the principals are local voters or central leaders. Finally, an alternative explanation for local officials' increasing efforts to promote efficiency is the system's enduring centralization. We may wonder if control by the citizens is always more effective than control from the center.

3.5 Appendix

3.5.1 Theoretical framework

Proof of Lemma 1: Centralized fiscal system

- Strict dominance arguments rule out any equilibrium in which $G(T_i, b) = T_i$ as long as $\delta < 1$

$$\begin{aligned} E\left[V\left(T_i \left| T_i\right.\right)\right] &= 0 + \mu(T_i)\delta 2\Delta \\ &< E\left[V\left(T_i - 2\Delta \left| T_i\right.\right)\right] = 2\Delta + \mu(T_i - 2\Delta)\delta 2\Delta \end{aligned}$$

  If the central government observes $G_i = T_i$, it will always believe that the local government is "good" and reappoints him:

$$\mu(T_i) = 1. \tag{25}$$

- If the central government observes G_i smaller than T_i ($G_i = T_i - \Delta$ or $G_i = T_i - 2\Delta$), it will always believe that the local government is "bad" with probability 1, so, we have:

$$\mu(T_i - \Delta) = \mu(T_i - 2\Delta) = 0. \tag{26}$$

  Hence, we establish by applying strict dominance argument that local governments will never play $G_i = T_i - \Delta$ since

$$\begin{aligned} E\left[V\left(T_i - \Delta \left| T_i\right.\right)\right] &= \Delta + \mu(T_i - \Delta)\delta 2\Delta = \Delta \\ &< E\left[V\left(T_i - 2\Delta \left| T_i\right.\right)\right] = 2\Delta + \mu(T_i - 2\Delta)\delta 2\Delta = 2\Delta. \end{aligned}$$

  Indeed, playing $G_i = T_i - \Delta$ gets less rent with no gain in the probability of staying governor. Hence, a "bad" local governor will always sets

$$G_i = T_i - 2\Delta, \tag{27}$$

Proof of Lemma 2: Decentralized fiscal system without yardstick competition (with $p_L \geqslant 1/2$)

- First, we show that, by applying strict dominance arguments rule, we are always left with cases in which $G(\varphi_H; b) = G_2$ or G_3 and $G(\varphi_M; b) = G_3$ or G_4 and $G(\varphi_L; b) = G_5$ and that $\mu(G_1) = 1$ and $\mu(G_4) = \mu(G_5) = 0$.
  - Strict dominance arguments rule out any equilibrium in which $G(\varphi_H; b) = G_1$,

$G(\varphi_M; b) = G_2$ and $G(\varphi_L; b) = G_3$ as long as $\delta < 1$

$$\begin{aligned} E\left[V\left(G_1 \left|\varphi_H\right.\right)\right] &= 0 + \mu(G_1)\delta 2\Delta \\ &< E\left[V\left(G_3 \left|\varphi_H\right.\right)\right] = 2\Delta + \mu(G_3)\delta 2\Delta \end{aligned}$$

$$\begin{aligned} E\left[V\left(G_2 \left|\varphi_M\right.\right)\right] &= 0 + \mu(G_2)\delta 2\Delta \\ &< E\left[V\left(G_4 \left|\varphi_M\right.\right)\right] = 2\Delta + \mu(G_4)\delta 2\Delta \end{aligned}$$

$$\begin{aligned} E\left[V\left(G_3 \left|\varphi_L\right.\right)\right] &= 0 + \mu(G_3)\delta 2\Delta \\ &< E\left[V\left(G_5 \left|\varphi_L\right.\right)\right] = 2\Delta + \mu(G_5)\delta 2\Delta \end{aligned}$$

Hence, the central government will always believe that a local official who sets G_1 is "good" with probability 1. Indeed, the probability that a local government is "good" given a choice G_1 is

$$P\left[g \left|G_1\right.\right] = \frac{\gamma p_H}{\gamma p_H} = 1,$$

So that

$$\mu(G_1) = 1. \tag{28}$$

– If, the central government observes G_4 or G_5, it will always believe that the local official is "bad" with probability 1, or in other terms

$$P\left[g \left|G_4\right.\right] = P\left[g \left|G_5\right.\right] = 0,$$

and then we have

$$\mu(G_4) = \mu(G_5) = 0. \tag{29}$$

Hence, we establish by applying strict dominance argument that local governments will never play $G(\varphi_L; b) = G_4$ since it gets less rent than playing G_5 with no gain in the probability of reappointment.

$$\begin{aligned} E\left[V\left(G_4 \left|\varphi_L\right.\right)\right] &= \Delta + \mu(G_4)\delta 2\Delta = \Delta \\ &< E\left[V\left(G_5 \left|\varphi_L\right.\right)\right] = 2\Delta + \mu(G_5)\delta 2\Delta = 2\Delta. \end{aligned}$$

A local government will always chooses

$$G(\varphi_L; b) = G_5. \tag{30}$$

- Second, we consider the case where $p_L \geqslant 1/2$ and show that Proposition 2 defines a Perfect Bayesien Equilibrium

  - Using Bayes' rule, if the central government observes G_3, it believes that a local governor is "good" with the following probability

$$P\left[g \left| G_3 \right.\right] = \frac{\gamma p_L}{\gamma p_L + (1-\gamma)(p_H + p_M)}.$$

    which is higher or equal to γ if $p_L \geqslant 1/2$, so that the central government is willing to reappoint a local government who sets G_3, in other terms we have

$$\mu(G_3) = 1 \tag{31}$$

  - Since by assumption $\delta > 1/2$, when φ_M a local government never finds it worthwhile to deviate from G_3 (Δ) to G_4 (2Δ) given that it will not then be reappointed.

$$\begin{aligned} E\left[V\left(G_4 \left| \varphi_M \right.\right)\right] &= 2\Delta + \mu(G_4)\delta 2\Delta = 2\Delta \\ &< E\left[V\left(G_3 \left| \varphi_M \right.\right)\right] = \Delta + \mu(G_3)\delta 2\Delta = \Delta + \delta 2\Delta \end{aligned}$$

    So we have

$$G(\varphi_M; b) = G_3. \tag{32}$$

  - When φ_H, it is always worse off playing G_2 since it gets less rent than playing G_3 with no gain in the probability of reappointment (whether the central government reappoint a local government who sets G_2 or not).

$$\begin{aligned} E\left[V\left(G_2 \left| \varphi_H \right.\right)\right] &= \Delta + \mu(G_2)\delta 2\Delta \\ &< E\left[V\left(G_3 \left| \varphi_H \right.\right)\right] = 2\Delta + \mu(G_3)\delta 2\Delta = 2\Delta + \delta 2\Delta. \end{aligned}$$

    So, we have

$$G(\varphi_H; b) = G_3. \tag{33}$$

– Lastly, under the proposed strategy

$$P\left[g\left|G_2\right.\right] = \frac{\gamma p_M}{\gamma p_M} = 1.$$

So that

$$\mu(G_2) = 1 \tag{34}$$

- Third, we show that Proposition 2 defines the unique Perfect Bayesien Equilibrium when $p_L \geqslant 1/2$. After applying strict dominance arguments rule, we are left with cases in which $G(\varphi_H; b) = G_2$ or G_3 and $G(\varphi_M; b) = G_3$ or G_4. So, we have three other strategy profiles to consider:

  – $G(\varphi_H; b) = G_2$ and $G(\varphi_M; b) = G_3$. This strategy profile is not rational. A "bad" local government will reduce its rent and provide G_3 when φ_M only if the central government is willing to reappoint an official who sets G_3. Under the proposed strategy profile, using Bayes' rule, the central government will actually reappoint a local government who sets G_3 ($P\left[g\left|G_3\right.\right] = \frac{\gamma p_L}{\gamma p_L + (1-\gamma) p_M} \geqslant \gamma$ if $p_L \geqslant 1/2$). However, in this case, when φ_H, a "bad" local government will play G_3 since playing G_2 gets less rent with no gain in the probability of reappointment.

  – $G(\varphi_H; b) = G_3$ and $G(\varphi_M; b) = G_4$. This strategy profile cannot be rational given the belief system and the belief system consistent given the strategy profile. A "bad" local government will take a maximal rent and provide G_4 when φ_M only if the central government is not willing to reappoint a local government who sets G_3. But, under the proposed strategy profile, using Bayes' rule, the central government will reappoint an official who sets G_3 ($P\left[g\left|G_3\right.\right] = \frac{\gamma p_L}{\gamma p_L + (1-\gamma) p_H} \geqslant \gamma$ if $p_L \geqslant 1/2$).

  – $G(\varphi_H; b) = G_2$ and $G(\varphi_M; b) = G_4$. Once again, as previously, a "bad" local government will provide G_4 when φ_M only if the central government is not willing to reappoint a local government who sets G_3. But, under the proposed strategy profile, using Bayes' rule, the central government will reappoint an official who sets G_3 ($P\left[g\left|G_3\right.\right] = \frac{\gamma p_L}{\gamma p_L} = 1 > \gamma$).

The full characterization of the equilibrium is available upon request.

Proof of Lemma 3: Perfect Bayesian Equilibrium with yardstick competition (with $p_L \geqslant 1/2$)

Applying strict dominance arguments rule, we are left with cases in which $G(\varphi_H; b) = G_2$ or G_3 and $G(\varphi_M; b) = G_3$ or G_4 and $G(\varphi_L; b) = G_5$ and we have $\mu(G_1) = 1$ and $\mu(G_4) = \mu(G_5) = 0$.

Both local governments are "good"

- Good local governors always play:

$$G(\varphi_k; g) = t\varphi_k,$$

So, we have

$$\left\{ \begin{array}{l} G(\varphi_H; g|g) = t\varphi_H = G_1, \\ G(\varphi_M; g|g) = t\varphi_M = G_2, \\ G(\varphi_L; g|g) = t\varphi_L = G_3. \end{array} \right\} \tag{35}$$

Both local governments are "bad"

- We consider the case where $p_L \geqslant 1/2$. Using Bayes' rule, if the central government observes G_3 in both jurisdictions, it believes that a local governor is "good" with the following probability

$$P\left[g\,|G_3|G_3\right] = \frac{\gamma^2 p_L}{\gamma^2 p_L + (1-\gamma)^2(p_H + p_M)}.$$

$P\left[g\,|G_3|G_3\right] \geqslant \gamma$ if $p_L \geqslant 1-\gamma$ which is true since $\gamma > 1/2$. In this case, the central government is willing to reappoint a local government who sets G_3 if it observes G_3 in both jurisdictions

$$\mu(G_3|G_3) = 1 \tag{36}$$

- Since by assumption $\delta > 1/2$, when φ_M a local government does not find it worthwhile to raise its rent given that it will not then be reappointed. So we have

$$G(\varphi_M; b|b) = G_3. \tag{37}$$

- When φ_H, playing G_2 gets less rent with no gain in the probability of reappointment so that

$$G(\varphi_H; b|b) = G_3. \tag{38}$$

- Then, under the proposed strategy profile, if the central government observes G_2 in both jurisdictions, it believes that a local governor is "good" with the following probability

$$P\left[g\,|G_2|G_2\right] = \frac{\gamma^2 p_M}{\gamma^2 p_M} = 1.$$

So that

$$\mu(G_2 \mid G_2) = 1 \tag{39}$$

One local government is "good" and the other is "bad"

- Good local governors always play: $G(\varphi_k; g) = t\varphi_k$. The "bad" official will be found out by providing a level of public spending above his neighbor's

$$\mu(t\varphi_k - r_i \mid t\varphi_k) = 0 \tag{40}$$

- Hence, the "bad" local government will always take the maximal rent when the product is medium or low:

  - If the central government observes G_3 in one jurisdictions and G_2 in another, it knows that the local governor who sets G_3 is "bad". Now, playing G_3 when φ_M gets less rent with no gain in the probability of reappointment so that the "bad" local government plays:

$$G(\varphi_M; b|g) = G_4. \tag{41}$$

  - If the central government observes G_2 in one jurisdictions and G_1 in another, it knows that the local governor who sets G_2 is "bad". Playing G_2 when φ_L gets less rent with no gain in the probability of reappointment. The "bad" local government takes the maximal rent:

$$G(\varphi_L; b|g) = G_3. \tag{42}$$

3.5.2 Empirical analysis

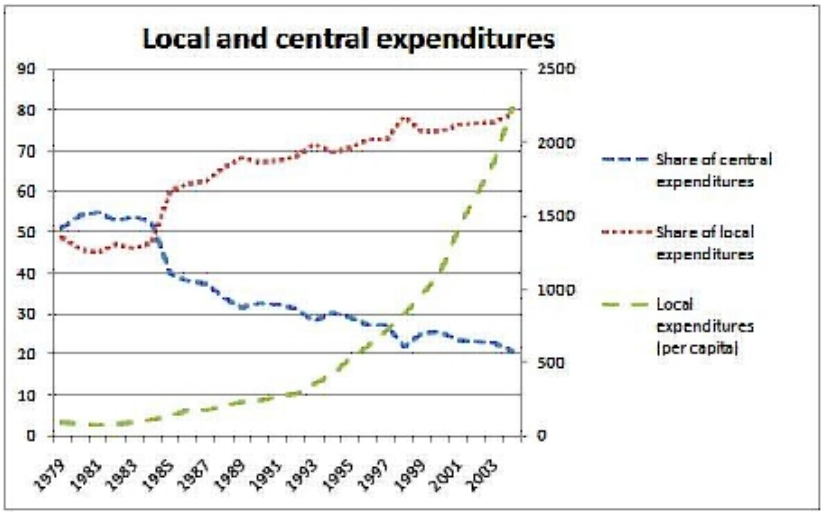

Figure 3.1: Local and central expenditures

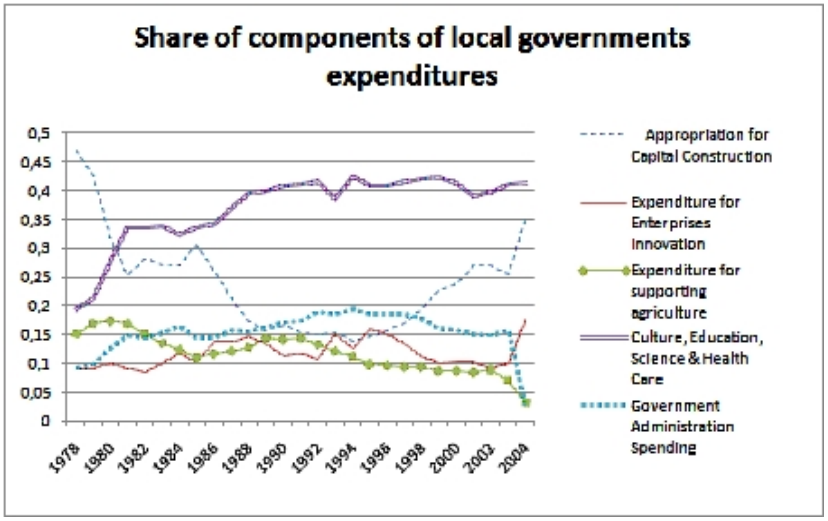

Figure 3.2: Share of components of local governments expenditures

Table 3.2: Estimation results with LM and spatial tests

Dependent variable: Local Government expenditure				
Weighting scheme:	w_{ij}^{dist}		w_{ij}^{cont}	
Spending in j	0.659***	(0.10)	0.462***	(0.02)
Population density	-0.278	(0.18)	-1.600***	(0.33)
GDP growth rate	0.633***	(0.03)	-0.041	(0.06)
Urbanization rate	1.001***	(0.12)	1.559***	(0.25)
Trade openness	0.067***	(0.01)	0.015*	(0.01)
FDI inflow	0.960***	(0.13)	1.700	(2.60)
Trend	0.025*	(0.01)	-0.120***	(0.03)
Log-Likelihood	-377.17		-381.12	
LMlag (p-value)	12.33	(0.002)	11.02	(0.005)
LMerr (p-value)	1.35	(0.25)	1.25	(0.20)

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level.

We use ML-Estimation with specific effects. The robust Anselin tests for spatial lag dependence and for spatial error dependence are based on the Lagrange Mutiplier principle and require only the OLS residuals from the non-spatial model.

Table 3.3: Estimation results with GMM-System - Distance matrix

Dependent variable: Local Government expenditure							
Lagged dep.var	0.524***	0.573***	0.526***	0.452***	0.461***	0.490***	0.783***
	(0.07)	(0.08)	(0.08)	(0.08)	(0.13)	(0.12)	(0.08)
Spending in j	0.511***	0.459***	0.479***	0.550***	0.532***	0.596***	0.459**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.12)	(0.15)	(0.20)
Population density	-0.203***	-0.184***	-0.164***	-0.196***	-0.178***	-0.166***	-0.006
	(0.04)	(0.04)	(0.02)	(0.02)	(0.04)	(0.04)	(0.03)
GDP growth rate		0.378***	0.283***	0.241*	0.181	0.172	0.144
		(0.11)	(0.10)	(0.12)	(0.12)	(0.12)	(0.15)
Urbanization rate			0.578**	0.431*	0.448*	0.417*	0.086
			(0.25)	(0.21)	(0.25)	(0.23)	(0.07)
Trade openness				2.169***	2.035**	1.844**	1.185
				(0.77)	(0.79)	(0.71)	(0.76)
FDI inflow					0.619*	0.805*	-0.518
					(0.34)	(0.40)	(0.51)
Central transfers							0.022**
							(0.01)
Trend						-0.013	-0.063**
						(0.01)	(0.03)
AR(1) test: p-value	0.001	0.000	0.001	0.001	0.019	0.010	0.017
AR(2) test: p-value	0.114	0.115	0.174	0.205	0.120	0.163	0.366
Hansen: p-value	0.139	0.227	0.220	0.278	0.114	0.142	0.169
Nb of instruments	23	26	27	28	26	27	27
Nb of units	29	29	29	29	29	29	29
Observations	745	741	705	689	574	574	191

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level. We use one-step robust GMM-Estimation. We adopt the assumption of weak exogeneity of GDP growth rate, trade openness, foreign direct investment inflow and central government transfers and the assumption of strict exogeneity of population density, trend and urbanization rate. The weighted average vector of per capita public spending in other provinces is also instrumented by the weighted average of neighbors' control variables. We collapse instruments and limit its number.

Table 3.4: Estimation results with GMM-System - Contiguity and Placebo matrix

Weighting scheme:	w_{ij}^{cont}							w_{ij}^{plac}
Dependent variable:	Local Government expenditure							
Lagged dep.var	0.642***	0.763***	0.685***	0.768***	0.760***	0.768***	0.893***	0.875***
	(0.09)	(0.09)	(0.10)	(0.09)	(0.08)	(0.10)	(0.09)	(0.06)
Spending in j	0.395***	0.270***	0.335***	0.257***	0.240***	0.286***	0.258**	0.014
	(0.09)	(0.08)	(0.10)	(0.09)	(0.07)	(0.09)	(0.11)	(0.01)
Population density	-0.103***	-0.069*	-0.069*	-0.047*	-0.045*	-0.036	-0.047	-0.029
	(0.04)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)
GDP growth rate		0.523***	0.491***	0.521***	0.434***	0.420***	0.085	0.304***
		(0.09)	(0.09)	(0.09)	(0.10)	(0.11)	(0.18)	(0.08)
Urbanization rate			0.361*	0.204*	0.242*	0.216*	0.083	0.120
			(0.16)	(0.11)	(0.12)	(0.12)	(0.09)	(0.09)
Trade openness				0.646	0.765**	0.668*	0.695	0.794**
				(0.44)	(0.35)	(0.38)	(0.71)	(0.34)
FDI inflow					-0.168	0.071	-1.66**	-0.075
					(0.27)	(0.36)	(0.72)	(0.38)
Central transfers							0.020**	
							(0.08)	
Trend						-0.005	-0.047*	0.018*
						(0.01)	(0.02)	(0.01)
AR(1) test: p-value	0.001	0.000	0.001	0.000	0.000	0.000	0.015	0.000
AR(2) test: p-value	0.271	0.195	0.196	0.259	0.133	0.172	0.305	0.166
Hansen: p-value	0.170	0.165	0.208	0.155	0.283	0.213	0.225	0.214
Nb of instruments	23	26	27	28	26	27	27	27
Nb of units	29	29	29	29	29	29	29	29
Observations	721	717	685	675	572	572	191	574

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level. We use one-step robust GMM-Estimation. We adopt the assumption of weak exogeneity of GDP growth rate, trade openness, foreign direct investment inflow and central government transfers and the assumption of strict exogeneity of population density, trend and urbanization rate. The weighted average vector of per capita public spending in other provinces is also instrumented by the weighted average of neighbors' control variables. We collapse instruments and limit its number.

Table 3.5: Estimation results with GMM-System for each category - Distance matrix

Weighting scheme: w_{ij}^{dist}					
Dependent variable:	Capital construction	Enterprises innovation	Agriculture support	Social expenditures	Government admin.
Lagged dep.var	0.665***	0.822***	0.763***	0.800***	0.812***
	(0.05)	(0.07)	(0.13)	(0.06)	(0.04)
Spending in j	0.353***	0.240***	0.169	0.160***	0.020
	(0.09)	(0.11)	(0.12)	(0.05)	(0.07)
Population density	-0.159***	-0.053	-0.122*	-0.044**	-0.057**
	(0.03)	(0.03)	(0.06)	(0.01)	(0.02)
GDP growth rate	0.338	0.547	0.483***	0.463***	0.537***
	(0.28)	(0.43)	(0.15)	(0.05)	(0.09)
Urbanization rate	0.245	0.201	-0.049	0.171*	0.097
	(0.23)	(0.31)	(0.08)	(0.08)	(0.06)
Trade openness	1.178	1.333	1.415**	1.08**	0.060
	(0.99)	(1.41)	(0.58)	(0.42)	(0.42)
FDI inflow	4.173***	1.414***	-1.513**	0.128	0.251
	(1.34)	(1.73)	(0.66)	(0.26)	(0.46)
Trend	-0.003	-0.004	0.018	0.007	0.025***
	(0.009)	(0.01)	(0.02)	(0.06)	(0.007)
AR(1) test: p-value	0.000	0.000	0.002	0.013	0.000
AR(2) test: p-value	0.359	0.127	0.563	0.158	0.293
Hansen test: p-value	0.122	0.402	0.201	0.172	0.097
Nb of instruments	27	27	27	27	27
Nb of units	28	28	28	28	28
Observations	550	502	546	550	555

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level. We use one-step robust GMM-Estimation. We adopt the assumption of weak exogeneity of GDP growth rate, trade openness, foreign direct investment inflow and central government transfers and the assumption of strict exogeneity of population density, trend and urbanization rate. The weighted average vector of per capita public spending in other provinces is also instrumented by the weighted average of neighbors' control variables. We collapse instruments and limit its number.

Table 3.6: Estimation results with GMM-System for each category - Contiguity matrix

Weighting scheme: w_{ij}^{cont}					
Dependent variable:	Capital construction	Enterprises innovation	Agriculture support	Social expenditures	Government admin.
Lagged dep.var	0.710***	0.740***	0.742***	0.822***	0.738***
	(0.09)	(0.13)	(0.14)	(0.06)	(0.09)
Spending in j	0.251*	0.358*	0.123	0.055*	0.172
	(0.12)	(0.20)	(0.09)	(0.03)	(0.15)
Population density	-0.122***	-0.022	-0.120*	-0.038*	-0.068*
	(0.04)	(0.07)	(0.07)	(0.02)	(0.04)
GDP growth rate	-0.280	0.170	0.303*	0.540***	0.418***
	(0.32)	(0.61)	(0.24)	(0.09)	(0.12)
Urbanization rate	0.177	0.211	0.042	0.138**	0.093
	(0.19)	(0.36)	(0.10)	(0.05)	(0.12)
Trade openness	1.265	1.504	1.079*	1.011**	0.200
	(0.99)	(1.24)	(0.61)	(0.38)	(0.34)
FDI inflow	4.153**	2.536	-0.946	0.605	0.456
	(1.79)	(1.86)	(0.65)	(0.53)	(0.71)
Trend	0.007	-0.012	0.023	0.018**	0.014
	(0.01)	(0.014)	(0.01)	(0.008)	(0.01)
AR(1) test: p-value	0.001	0.013	0.008	0.034	0.010
AR(2) test: p-value	0.705	0.555	0.511	0.520	0.407
Hansen test: p-value	0.422	0.932	0.538	0.305	0.248
Nb of instruments	27	27	27	27	27
Nb of units	28	28	28	28	28
Observations	401	286	387	401	446

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level. We use one-step robust GMM-Estimation.. We adopt the assumption of weak exogeneity of GDP growth rate, trade openness, foreign direct investment inflow and central government transfers and the assumption of strict exogeneity of population density, trend and urbanization rate. The weighted average vector of per capita public spending in other provinces is also instrumented by the weighted average of neighbors' control variables. We collapse instruments and limit its number.

Table 3.7: Estimation results with GMM-System for decentralization degree effect

Weighting scheme:	(1) w_{ij}^{dist}	(2) w_{ij}^{cont}	(3) w_{ij}^{dist}	(4) w_{ij}^{cont}
Lagged dep. var.	0.690***	0.708***	0.643***	0.838***
	(0.07)	(0.10)	(0.07)	(0.05)
A_{jt}	0.783***	0.244***	0.619***	0.652**
	(0.22)	(0.06)	(0.12)	(0.03)
$(A_{jt} * C_{it})$	-0.031***	-0.011***		
	(0.007)	(0.003)		
$(A_{jt} * Dec_{it})$			0.288**	0.291**
			(0.10)	(0.11)
Population density	-0.072	0.029	-0.080**	-0.021
	(0.02)	(0.27)	(0.03)	(0.01)
GDP growth rate	0.169	-0.098	0.124	0.293***
	(0.15)	(0.13)	(0.09)	(0.07)
Urbanization rate	0.097	0.129*	0.146	0.087
	(0.09)	(0.07)	(0.10)	(0.05)
Trade openness	1.535***	1.608*	0.731	-0.334
	(0.64)	(0.79)	(0.49)	(0.44)
FDI inflow	-0.739	-1.012**	1.782***	0.421
	(0.56)	(0.42)	(0.47)	(0.43)
C_{it}	0.229***	0.112***		
	(0.04)	(0.03)		
Dec_{it}			-0.530	1.048*
			(0.53)	(0.55)
Trend	-0.066**	-0.019	-0.042***	-0.013*
	(0.03)	(0.02)	(0.01)	(0.007)
AR(1) test: p-value	0.003	0.030	0.006	0.000
AR(2) test: p-value	0.262	0.405	0.521	0.608
Hansen test: p-value	0.752	0.875	0.522	0.243
F-test: p-value	0.0006	0.0004	0.019	0.0001
Observations	191	191	454	454

Partie III

Décentralisation et transferts intergouvernementaux

Décentralisation et transferts intergouvernementaux

Tandis qu'un grand nombre de pays en développement se sont engagés dans un processus de décentralisation, un déséquilibre existe souvent entre la capacité des juridictions locales à mobiliser des ressources et les responsabilités qui leur sont transférées. Le transfert de ressources par le gouvernement central est alors essentiel pour permettre la fourniture des services publics de base tels que la santé et l'éducation primaire et assurer le succès de la décentralisation dans ces pays. Néanmoins, il soulève deux questions fondamentales (et non indépendantes l'une de l'autre). La première est liée au problème d'incitation à la mobilisation des ressources locales propres que les transferts engendrent. En effet, dans un contexte d'asymétries informationnelles, les subventions du gouvernement central peuvent constituer une aubaine permettant de réduire l'effort fiscal local et éroder la discipline budgétaire des gouvernements locaux, soulevant un problème d'aléa moral (Kornai, Maskin, et Roland, 2003 et Pisauro, 2001). De plus, la dépendance aux ressources du centre peut réduire la responsabilité des gouvernements locaux, à la base des effets positifs attendus de la décentralisation. La seconde question concerne le système et les critères d'allocation des transferts intergouvernementaux. Alors que la littérature s'accorde à dire que les bénéfices espérés de la décentralisation sont conditionnés à l'existence d'un système de transferts stable, équitable et efficace (Buchanan, 1950, Oates, 1972 et Gramlich, 1977), les études économétriques révèlent la prédominance d'autres facteurs, notamment politiques, sur les considérations économiques dans la détermination de l'allocation horizontale des transferts (Cox, 1986, Grossman, 1994, Case, 2001 et Banful, 2010).

Dans cette partie, nous analysons l'effet des transferts du centre vers les juridictions locales sur les recettes budgétaires propres des communes au Bénin (chapitre 4) et examinons la manière dont les transferts sont distribués entre les gouvernements locaux au Sénégal (chapitre 5).

Dans le chapitre 4, reprenant un modèle standard de détermination du niveau de taxe optimal, nous mettons tout d'abord en évidence une ambigüité théorique associée à l'effet des transferts inconditionnels, considéré généralement comme peu incitatif, sur la mobilisation des ressources locales propres. Notre analyse économétrique porte sur le Bénin et consiste à évaluer l'effet d'un transfert inconditionnel, la taxe de voirie. Cette taxe rétrocédée est collectée par le gouvernement central et redistribuée aux gouvernements locaux selon le poids démographique des juridictions. Allouée selon une règle fixe, elle nous permet de traiter rigoureusement le problème d'endogénéité, qui met souvent en doute les résultats des travaux antérieurs. A partir d'un panel de 74 communes béninoises de 2003 à 2008, notre analyse économétrique révèle alors un impact positif de ce transfert inconditionnel sur les ressources locales propres, conditionnel à un minimum de richesse de la commune. Cet impact est plus fort pour les juridictions ne partageant

pas la même affiliation politique que le président en poste, ces dernières étant davantage incitées à mobiliser des ressources par elles-mêmes. Ce résultat diffère de ceux obtenus par Shah (1990) et Rajaraman et Vasishtha (2000), respectivement au Brésil et en Inde. Néanmoins, ces derniers ne considéraient pas la potentielle endogénéité des transferts. Nos conclusions sont plus proches de celles des études de Skidmore (1999), Smart (2007), Buettner (2006) et Dahlberg, Mörk, Rattso, et Agren (2008), réalisées dans le contexte de pays développés, qui mettent en évidence un effet positif des transferts d'égalisation sur la mobilisation des ressources locales. Notre travail met quant à lui en lumière une qualité négligée des transferts inconditionnels dans les pays en développement. En effet, ces derniers, généralement considérés comme faiblement incitatifs, semblent alléger les contraintes financières qui pèsent sur les gouvernements locaux des pays en développement non seulement de manière directe mais aussi de manière indirecte en favorisant la mobilisation des ressources locales propres.

Dans le chapitre 5, nous tentons de déterminer si le système d'allocation des transferts entre les communes du Sénégal est conforme aux prescriptions de la théorie normative, notamment au principe d'équité (1), si ce système, basé en théorie sur des critères simples, est suffisant pour éliminer les considérations d'ordre politique dans l'allocation des ressources (2) et, si tel n'est pas le cas, la nature des facteurs politiques expliquant la distribution horizontale des transferts (3). Pour prendre en compte l'hétérogénéité des gouvernements locaux tout en évitant l'inefficience associée à l'estimation de l'effet de variables à faible variance temporelle, nous utilisons l'estimateur à décomposition vectorielle des effets fixes développé par Plümper et Troeger (2007). Explorant rigoureusement l'importance empirique des déterminants de l'allocation des transferts entre les 67 communes sénégalaises de 1997 à 2009, nos résultats tendent à montrer que les considérations d'équité n'affectent pas l'allocation des transferts intergouvernementaux au Sénégal. En outre, ils révèlent l'existence de motivations politiques dans l'affectation des ressources en dépit de la formule d'allocation. La distribution des ressources semble être tactique consistant à cibler les communes "*swing*", juridictions dont le choix de vote est plus vraisemblablement influencé par le montant des transferts. Ceci confirme les résultats de Banful (2010). Les gouvernements locaux mieux représentés au Parlement reçoivent également davantage de transferts, résultat couramment observé dans cette littérature (Wright, 1974, Porto et Sanguinetti, 2001 et Khemani, 2007). Enfin, la fragmentation ethnique apparaît être positivement corrélée aux transferts par tête indiquant que le gouvernement central pourrait utiliser les transferts comme instrument pour pacifier des zones potentielles de conflits (Treisman, 1996). Cette étude met ainsi en lumière l'incapacité d'un système d'allocation des transferts à éliminer seul les distorsions créées par l'arbitraire dans l'allocation des transferts et pose la question de la délégation de cette responsabilité à une agence indépendante, comme le suggère l'article de

Khemani (2007).

La partie III est organisée comme suit : le chapitre 4, issu de la co-écriture de l'article "*Do unconditional central transfers boost local own-revenue in developing countries?*" avec Grégoire Rota-Graziosi, étudie l'impact des transferts intergouvernementaux sur les recettes budgétaires locales propres des communes au Bénin. Le chapitre 5 analyse les déterminants de l'allocation des transferts au Sénégal, dans l'article intitulé "*Does the system of allocation of intergovernmental transfers in Senegal eliminate politically motivated targeting?*".

Chapitre 4

"Do unconditional central transfers boost local own-revenue in a sub-Saharan country?"*

Abstract

Intergovernmental grants design is an important issue for developing countries where decentralization is a recent process and the vertical imbalance is particularly severe. Our analysis considers the (dis)incentive effect of unconditional central grants on local own-revenue. We highlight a theoretical ambiguity on the nature of this effect in a very simple model of optimal taxation. Our empirical analysis focuses on Benin, a representative sub-Saharan French-speaking country. We study the impact of a particular lump-sum grant that has the properties to be collected at the borders by Customs, and allocated among local governments through a fixed rule (jurisdictions' population). Our empirical analysis covers panel data from 74 local governments, from 2003 to 2008, and addresses endogeneity issues of central transfer. We conclude unambiguously with a positive impact of lump-sum grants on local own-revenue. This effect is contingent on a minimum level of the jurisdiction's wealth, and is stronger for local governments that do not share the same political affiliation as the president in office. Our result highlights a neglected quality of lump-sum grants: they are not only simpler than formula-based equalization transfers, but they may also have an incentive property on local own-revenue.

* This chapter is a version of a paper co-authored with Grégoire Rota-Graziosi, under submission in the International Tax and Public Finance.

4.1 Introduction

Since the middle of the 1980s most African countries have started a decentralization process by transferring some power, resources, and responsibilities to their local governments. Expected benefits are an increase in the responsiveness of policy to citizens' preferences, a better accountability of governments, and the reduction of poverty. However, an imbalance often exists between the revenue-raising ability of local governments and their expenditure responsibilities. This vertical fiscal gap is particularly important in developing countries, since local governments' resources remain inadequate to provide sufficient financial support for the provision of essential services such as education and public health.[102] Central grants are essential in the success or failure of decentralization in these countries.

However, intergovernmental fiscal transfers modify local government behaviors and their design matters as much as their amount. Several effects have already been highlighted in the literature. Among the most documented, the flypaper effect is an empirical regularity: any increase in transfers leads to greater local public spending than an equivalent rise in the private revenue of the local population (Hines and Thaler, 1995). Another (dis)incentive effect of central transfers is linked to the issue of soft budget constraint, and the risk of excessive borrowing by subnational governments. In a context of informational asymmetries central grants challenge the fiscal discipline of local governments by raising a moral hazard problem (Kornai, Maskin, and Roland, 2003; Pisauro, 2001). Central grants are also perceived as a kind of windfall resource, which reduces the willingness of local governments to improve their tax effort.[103] More broadly, transfer dependency seems to erode the accountability of local officials, which is a condition of decentralization success.

Given the vertical fiscal gap on one hand and incentive effects of central grants on the other, an important literature has been devoted to designing the structure of central grants in developed and developing countries (Boadway and Shah, 2007; Martinez-Vazquez and Searle, 2007). Efficiency and equity concerns at the national level determine the form of transfers. Central grants may take different aspects. We can essentially distinguish two categories: general purpose (lump-sum) grants; and selective matching (block) grants. Matching transfers require that funds be spent for specific purposes. In practice, grants mechanisms vary among countries and combine matching and non-matching transfers.

A common view is that unconditional grants provide poor incentives for local government to

[102] About 60 percent of local public spending is financed through intergovernmental fiscal transfers in developing countries (Shah, 1990).

[103] See Shah (1990) for Brazilian municipalities, Panda (2009) for Indian states, and Mogues, Benin, and Cudjoe (2009) for districts of Ghana.

raise their own-revenues. To mitigate this trend, some countries developed equalization systems in which transfers depend on fiscal capacity, needs, or efforts. A growing literature focused on the tax-raising effects of these systems in rich federations such as Australia, Canada, Germany, the USA and Switzerland (Smart, 2007; Egger, Koethenbuerger, and Smart, 2010). Some emerging countries, such as Brazil, India, and Nigeria, also introduced performance criteria such as fiscal effort in their distributive formulas for central grants (see Boex and Martinez-Vazquez, 2005, for an international comparison of formula-based allocation mechanisms). However, the lack of relevant data at the local level, especially to appreciate local fiscal capacities, limits the use of sophisticated transfer systems in many developing countries.

We study the relationship between a lump-sum grant and local own-revenue. Assuming higher collection costs for local governments, we highlight a theoretical ambiguity on the (dis)incentive effect of unconditional central grants on local own-revenue. Neither the normality of the local public good, nor the complementarity/substituability between public and private spending is a sufficient condition to determinate the effect of grants on own-revenue in our very standard framework.

Our empirical analysis focuses on a sub-Saharan country, Benin, which is representative of the decentralization process in this region, especially among French-speaking countries. Their main characteristics include a common history of state, a recent top-down decentralization process, and hard budget constraints of local governments. We examine a specific lump-sum grant, which is collected at the borders by Customs and allocated among jurisdictions, depending on their population size. This unconditional grant represents around 55 percent of total transfers received by local governments.[104] Based on panel data from 74 local governments,[105] from 2003 to 2008, we conclude unambiguously with a positive impact of unconditional transfer on local own-revenue. This effect is contingent on a minimum level of local government wealth. It is also stronger for jurisdictions that do not share the same political affiliation as the president in office.

Our result highlights an ignored quality of lump-sum transfers, which may alleviate binding constraints on decentralization efficiency in developing countries. Simpler to implement than formula-based equalization grants, unconditional transfers appear to improve local government's autonomy, not only on the expenditure side since they do not require specific spending as matching or conditional grants, but also on the revenue side, through their incentive effect on

[104] The studied lump-sum grant actually depends on the jurisdiction population's size. It is then unconditional per capita.

[105] Benin has 77 local governments. We exclude the three main urban jurisdictions (Cotonou, Porto-Novo, and Parakou), which have a special status in the Beninese intergovernmental grants system.

local own-revenue.

The rest of the paper is organized as follows: Section 4.2 provides a brief theoretical discussion of the relationship between lump-sum grants and local own-revenue; Section 4.3 describes the decentralization process in Benin and presents our empirical findings; Section 4.4 concludes.

4.2 A simple theoretical framework

We adopt a standard model in optimal tax theory. Despite its simplicity, our formalization allows us to yield a counterintuitive result, which has not been emphasized sufficiently in the literature on decentralization, especially with regard to developing countries: unconditional grants may increase local own-revenue.

We consider an economy with a composite private good (X) and a locally provided public good (Y).[106] A representative local government maximizes the utility of its representative consumer. It has two sources of revenue: T_L is local own-revenue, resulting essentially from taxing the local population, and t is an unconditional intergovernmental grant.[107] The local government's budget constraint is then: $T_L + t \leqslant Y$.

We assume that local tax involves some deadweight losses, or equivalently that local authorities are less efficient to collect tax than the central government, all other things remaining equal (Hamilton, 1986; Aragon, 2009). This assumption allows Hamilton to explain the flypaper effect.[108] Without loss of generality, we normalize to zero the tax collection cost incurred by the central government. We denote by $g(T_L)$ the local taxation burden that is tax payment and induced collection costs. We have: $g(0) = 0$, $g'(T_L) > 1$, and $g''(T_L) > 0$. A partial equilibrium interpretation of our model is that central transfers are costless for recipient local governments.

The assumption of higher local collection costs appears particularly relevant in developing countries. First, a large part of central governments' revenue comes from Customs in these countries (see Baunsgaard and Keen, 2010 and Keen and Mansour, 2010 for a closer look at sub-Saharan Africa). Tax, duties, and tariffs paid at the borders are easier to collect than local taxes. Second, one of the main successful innovations in tax administration in past years, was the creation of large taxpayer units, which exploit scale economies, concentrating countries' effort on central taxes: Value Added Tax; Corporate Income Tax; and Personal Income Tax

[106] We follow the notation of Hamilton (1986).

[107] In Benin a significant share of local own-resource is actually non-tax revenue (fees, licenses...).

[108] Dahlby (2011) renewed the interest in Hamilton's model, which "has not received the attention that it deserves". He provides a short and clear analysis of the academic debate over the flypaper effect, explaining the neglect of Hamilton's explanation in the literature.

(Baer, 2002). Local taxes have not received the same support and attention in their design as central ones. Property tax remains the missing revenue in these countries (Bird, 2011).

Taxpayers' behavior can also explain the relative lower compliance and higher administrative costs of local taxation. Indeed, the function $g(.)$ may be considered as the reduced form of a microeconomic model, where the taxpayer and local government interact in a game à la Graetz, Reinganum, and Wilde (1986).[109] In particular, the limited capacity of local governments in tax enforcement (tax-base assessments and audits) induces some strategic behavior among taxpayers, who systematically under-declare their income or wealth because they expect similar underreporting by their neighbors. These social interactions are stronger in smaller jurisdictions, as a result of the decentralization process. In other words, a constrained budget of tax enforcement at the local level involves strategic complementarity among taxpayers in their reporting decisions. This yields to a multiplicity of equilibriums, in particular local tax riots, as analyzed by Bassetto and Phelan (2008) or Deneckere and Liang (2010).

We consider a local government maximizing its local own-revenue. We do not distinguish among potential tax instruments; essentially a higher tax rate or a better tax-base assessment. However, we note that the latter is more relevant in developing countries where tax rates remain strictly supervised by central government. The optimal local tax revenue, denoted by T_L^*, is the solution of the following maximization program:

$$T_L^* \equiv \arg\max_{T_L} U\left(y - g\left(T_L\right), t + T_L\right).$$

The First Order Condition is given by:

$$-g'\left(T_L\right) U_1\left(.\right) + U_2\left(.\right) = 0. \tag{43}$$

The Second Order Condition (SOC) is assumed to be respected as:

$$\frac{\partial^2 U\left(.\right)}{\partial T_L^2} = -g''\left(T_L\right) U_1\left(.\right) + \left(g'\left(T_L\right)\right)^2 U_{11}\left(.\right) - 2g'\left(T_L\right) U_{12}\left(.\right) + U_{22}\left(.\right) < 0.$$

Applying the Envelop theorem to (43), with respect to t, yields:

$$\frac{\partial T_L}{\partial t} = -\frac{-g'\left(T_L\right) U_{12}\left(.\right) + U_{22}\left(.\right)}{SOC} \lessgtr 0.$$

[109] A formal development of this game is beyond the scope of this paper.

We deduce the following proposition:

Proposition 1 *Unconditional central grants improve local own-revenue if the marginal utility of public good increases in local tax revenue ($\partial U_2(.)/\partial T_L > 0$).*

The variation of the marginal utility of the public good, with respect to local own-revenue, may be linked to individual preferences, scale economies in the provision of public goods, and the inefficiency of local administration in tax collection. For instance, central grants increase local public spending which, in turn, may improve voluntary tax compliance, and then local own-revenue ($\partial T_L/\partial t > 0$). In contrast, a raise of transfers may allow local governments to reduce their tax effort, keeping unchanged the level of local public goods ($\partial T_L/\partial t < 0$). The respect of the SOC does not preclude a specific sign of $U_{12}(.)$ and $U_{22}(.)$. The sign of the cross derivative of the utility function ($U_{12}(.)$), defining the complementarity or substituability between private and public consumption, is not restricted. Moreover, the normality of the public good is not a sufficient condition to obtain the intuitive negative relationship between central grants and local own-revenue.[110] Proposition 1 highlights a theoretical ambiguous relationship between unconditional central grants and local own-revenue. The following section is devoted to going beyond this theoretical ambiguity, through an econometric analysis of the Beninese case.

4.3 Empirical analysis

In this section, we present a short history of Benin and its decentralization process, which is representative of African French-speaking countries' experiences (20 countries, with around 243 million inhabitants in 2009). We then develop our empirical analysis of the relationship between central grants and local own-revenue, considering some nonlinear effects.

4.3.1 Benin overview

Decentralization in Benin is a top-down process, as in a lot of French-speaking African countries.[111] It began in 1998, through the transfer of several competences to local Beninese jurisdictions, called *communes*.

[110] The normality of the public good is given by:

$$\frac{\partial(t+T_L)}{\partial y} = \frac{\partial T_L}{\partial y} = -\frac{-g'(T_L)U_{11}(.)+U_{12}(.)}{SOC} > 0.$$

[111] A noteworthy exception is perhaps the Democratic Republic of Congo whose new constitution, approved in 2006, is a compromise between Federalists and Centralists.

With a total population of 8.93 million inhabitants, in 2009, Benin has 77 *communes* in 12 *départements*.[112] Population and geographical size differ significantly among *communes*: Tanguieta stretches out across more than 5,460 square kilometers, with a population of 62,321 inhabitants in 2008 (11.4 inhabitants per square kilometer), while Akro-Missérété contains 98,961 inhabitants on only 79 square kilometers (1,252 inhabitants per square kilometer). Indeed, as in many African French-speaking countries, the territorial shape of Beninese *communes* results from history and not from any economic consideration with regard to efficiency in public good provision. For instance, Burkina Faso has 351 *communes* for 16.2 million inhabitants, while Mali has 703 *communes* for 15 million inhabitants.

Table 4.1 presents Beninese *communes'* revenue, distinguishing local own-revenue (tax and non-tax) and central grants (conditional and unconditional) over the period 2003–2008. A local representative of the central tax administration (*Directions Départementales des Impôts*) collects local taxes, mainly property and patent taxes.[113] By contrast, local governments support the collection costs of non-tax own-revenue, related essentially to the public domain occupations (market stalls, parking tolls, kiosks, hoardings...), and to some administrative services. Central conditional grants represent about 15 percent of local revenue with some huge disparities: less than 3 percent for Atlantic, and more than 30 percent for Oueme. The unique type of unconditional transfers for Beninese *communes* is a retroceded tax called "road tax".[114]

Table 4.1: Average composition of Beninese *communes'* revenue 2003-2008 (million FCFA)

Years	Average level	% of global local revenue
Local tax own-revenue	7 709	46%
Local non-tax own-revenue	3 949	23%
Conditional central grants	2 335	14%
Unconditional central grants	2 805	17%
Total local revenue	16 798	100%

Source: Beninese Ministry of Finance and Economy.

Our empirical analysis focuses on the effect of road tax (*taxe de voirie*) on local non-tax own-

[112] *Communes* are themselves divided into 546 districts.

[113] Beninese local governments can also tax mining, advertisements, and taxi drivers, and have the opportunity to collect tax on local development (see Chambas, 2010, for a detailed analysis of local fiscal resources in sub-Saharan Africa).

[114] The authorities abolished this tax in 2009, for transit goods being exported to landlocked countries, such as Niger and Burkina Faso.

revenues that are collected by *communes*. Road tax is actually a lump-sum transfer collected by Customs on exports (0.85 percent of the value of exported goods). Generated revenue is shared among *communes* following a fixed rule: 80 percent is allocated to three "special" *communes* (Cotonou, 60 percent; Porto-Novo, 24 percent; and Parakou, 16 percent), while the rest is distributed among the 74 other *communes*, according to their respective demographic weight. Given its definition, road tax has two interesting features for our empirical analysis: (1) its amount varies over time, allowing the use of panel methods, which correct for time-invariant *commune* characteristics and year effects; (2) its allocation rule is fixed, ensuring the sense of causal relationship.

4.3.2 Econometric framework

We study the effect of unconditional central grants on local non-tax own-revenue, for which *communes* support collection costs. We then refine our empirical work by distinguishing *communes* by their wealth and their partisan affiliation. Our dataset covers the 74 relevant *communes* over the period 2003–2008.[115] We exclude the three "special" *communes* from our sample (Cotonou, Porto-Novo, and Parakou), since these urban jurisdictions differ strongly from the other 74.

The first relationship we study is given by

$$T_{Lit} = \beta t_{it} + \varphi X_{it} + \rho A_{jt} + \lambda T_{Lit-1} + \alpha_i + \theta_t + \varepsilon_{it}, \tag{44}$$

where T_{Lit} is the per capita non-tax own-revenue of jurisdiction i in date t, t_{it} is the per capita lump-sum transfer to local government i in t, and X_{it} is a set of specific controls. Among the latter, we include the employment rate in *département d*, denoted by N_{dt}, and the jurisdiction's population density (D_{it}), to apprehend some potential scale economies in the provision of public goods.[116] The variable A_{jt} captures spillovers among local governments, due to tax-base mobility or some yardstick competition.[117] It is defined as the weighted average vector of non-tax own-revenues among neighbors j at time t; more formally, we consider $A_{jt} = \sum w^c T_{Ljt}$, where w^c is a contiguity matrix, taking value 1 if two jurisdictions share a common border, otherwise it is zero. We also introduce a lagged dependent variable, T_{Lit-1} to capture the

[115] Data for *commune* revenues come from the Beninese Ministry of Finances and Economy. The other control variables are drawn from WDI (World Development Indicators), Afrobarometers, and Demographic and Health Surveys, provided by the National Institute of Statistic and Economic Analysis of Benin.

[116] Population density is the number of inhabitants per square kilometer. Note that we use a logarithmic form of the specification. Data is in CFA franc converted to constant value to consider inflation.

[117] Grant programs encouraging a jurisdiction to raise its own-revenue might, thereby, induce the others to increase their revenue too. This “copycat” effect should be considered.

persistency in local revenues (Veiga and Veiga, 2007). Variable α_i represents *communes'* fixed-effect, θ_t are time dummies, and ε_{it} is the error term.

An important issue, emphasized by Knight (2002), Gordon (2004), and Dahlberg, Mörk, Rattso, and Agren (2008), is the risk of endogenous central grants. Indeed, an unconditional transfer may actually become an implicit matching transfer if central government awards local ones that commit their own-revenue to some public spending. Under such a process of negotiation, local own-revenue is determined by central grants; the opposite relationship to that we want to analyze. In addition to the features of studied lump-sum transfers, we are able to instrument the road tax grant by its theoretical value, denoted by Tt_{it}, which is:

$$Tt_{it} = \frac{0.2\ Pop_{it}\ \Sigma t_{it}}{\Sigma Pop_{it} - \Sigma PopSpe_t},$$

where Σt_{it} is the sum of transfers received by jurisdiction i in year t, Pop_{it} is its population, ΣPop_{it} is the total population in Benin in t, and $\Sigma PopSpe_t$ is the population of the three "special" *communes*.

A second econometric issue results from the introduction of the lagged dependent variable (T_{Lit-1}), which yields the inconsistency of fixed-effect estimators (Nickell, 1981). We then follow Blundell and Bond (1998) and use the GMM-System estimator in addition to the "external" instrument of road tax, allowing the control of unobserved country-specific effects and the potential endogeneity of explanatory variables.

Finally, we refine our empirical model (44) by considering some economic and political heterogeneity among jurisdictions. We first distinguish *communes* by their wealth to apprehend differences in local tax bases, and/or local governments' ability to increase own-revenue. Equation (44) becomes:

$$T_{Lit} = \beta_1(t_{it} * P_i) + \beta_2(t_{it} * NP_i) + \varphi X_{it} + \lambda T_{Lit-1} + \rho A_{jt} + \alpha_i + \theta_t + \varepsilon_{it}, \qquad (45)$$

where P_i is a dummy variable taking value 1 if the local government i is poor, and zero otherwise, and $NP_i = 1 - P_i$. We consider a *commune* as poor if its local own-revenue is below the median value in 2003. Secondly, we look at *communes*' partisan affiliation, which may also affect local governments' fiscal behavior. To test this, we introduce a dummy variable, denoted by F_{it}, to distinguish jurisdictions belonging to the president's electoral heartland, also called fief *communes*, from the others. More formally, the variable F_{it} takes the value 1 if the local government in *commune* i has the same partisan affiliation as the president in office, and zero

otherwise, and $NF_{it} = 1 - F_{it}$. We obtain:

$$T_{Lit} = \beta_3(t_{it} * F_{it}) + \beta_4(t_{it} * NF_{it}) + \varphi X_{it} + \lambda T_{Lit-1} + \rho A_{jt} + \alpha_i + \theta_t + \varepsilon_{it}. \quad (46)$$

4.3.3 Results

Table 4.2 (Appendix 4.5) presents estimation results of the static version ($\lambda = 0$) of equations (44), (45), and (46) with fixed-effect estimator. To check the robustness of our results we introduce control variables progressively and instrument using two-stage least squares.

Columns (1) to (3) in Table 4.2 show a positive effect of central transfers on local non-tax own-revenue (β varying between 0.25 and 0.26 significant at 1 percent level). Estimation of equation (45) (columns 4 and 5) emphasizes a higher and more significant effect on non-poor *communes*.[118] Moreover, this effect does not exist for the poorest *communes*: the coefficient β_1 becomes insignificant if we consider very poor *communes* belonging to the first quartile (columns 6 and 7).[119] Local governments that do not have the president's political affiliation raise relatively more own-revenue in response to higher central grants (columns 8 and 9).[120] The coefficient of the weighted average vector of non-tax own-revenue (A_{jt}) is significantly positive at 1 percent level, as expected. This result is consistent with the relevant literature, which highlights strategic complementarity among local tax policies (Brueckner, 1998). Population size is correlated positively with local own-revenue, indicating scale economies in public goods provision. In contrast, economic conjuncture captured by the departmental employment rate has no effect on this revenue.

Table 4.3 (Appendix 4.5) presents estimation results for the dynamic version of our empirical models ($\lambda \neq 0$) with a two-step robust GMM-System in addition to the IV estimator of road tax.[121] We assume the potential endogeneity of non-tax own-revenue, as well as the weighted average vector of local own-revenue (A_{jt}), the weak exogeneity of employment rates, and the

[118] However, Fisher tests in these first estimations do not allow us to conclude that coefficients β_1 and β_2 are significantly different.

[119] A structural break between rich and poor *communes* may involve more appropriate results by separating regressions, rather than combining them into a unique one. Chow test indicates that independent variables do not have different impacts on the different subgroups of the population. We cannot reject the null hypothesis of coefficients stability when we define poor *communes* either as *communes* with local own-resources below the median value (column 1), or as *communes* belonging to the first quartile (column 2).

Test of the presence of structural break between poor and non-poor		
	(1)	(2)
Chow test: p-value	0.4591	0.3535

[120] Once again, Fisher tests do not allow us to conclude that coefficients β_3 and β_4 are significantly different.

[121] Estimation results without IV estimator of the road tax are similar and shown in Table 4.4 (Appendix 4.5).

strict exogeneity of other explanatory variables. The lagged levels of variables are instruments in regressions in level, as well as in regressions in difference. Following Roodman (2009), we collapse instruments and limit their number to avoid non-optimal weight matrix, biased standard errors, and incorrect overidentification tests.[122] The coefficient on lagged dependent variable is always significantly positive, confirming the consistency of autoregressive specification.

Columns (1) and (2) in Table 4.3 attest to a positive effect of central grants on local non-tax own-revenue (β remaining significantly positive and robust to the introduction of the control variables). Estimation results in Table 4.3 also highlight the heterogeneous impact of decentralization: this effect is smaller for poor *communes* (column 3),[123] disappears for the poorest ones (column 4), and is stronger for local governments not belonging to the president's electoral heartland (column 5).

Our analysis concludes unambiguously with the positive effect of unconditional transfers on local own-revenue. This result differs from Shah (1990), Rajaraman and Vasishtha (2000), and Panda (2009), who obtain an opposite relationship by studying Brazilian municipalities and Indian states, respectively. However, these authors do not consider any potential endogeneity bias. Addressing the issue of grants' endogeneity, Mogues, Benin, and Cudjoe (2009) also show that transfers (from the central government and donor funds) discourage local own-revenues in Ghana. A possible explanation for the difference between Mogues, Benin, and Cudjoe (2009) and our results is the lower fiscal autonomy of Ghana's districts with respect to Beninese *communes*. The main resources of the former are conditional grants, which restrict Ghanaian local governments in their expenditure choices. Less accountable in spending, districts have less incentive to raise revenue.

Turning to works on developed countries, our conclusion is close to Skidmore (1999), Smart (2007), Buettner (2006), and Dahlberg, Mörk, Rattso, and Agren (2008). The first two authors identify a positive effect of central grants on locally generated revenues in the USA and Canada, respectively. Buettner (2006) and Dahlberg, Mörk, Rattso, and Agren (2008) come to a similar conclusion in Germany and Sweden. Both studies use a discontinuity in the grants' allocation rule to deal with the endogeneity issue of grants. However, these works only focus on equalization or total transfers. Our analysis completes these by highlighting the incentive effect of unconditional grants on local own-revenue in a developing country.

As a final remark, we extend our empirical analysis by studying the differentiated effect of

[122] With the Hansen test we cannot reject the null hypothesis of the overall validity of instruments' orthogonality conditions.

[123] Fisher test confirms significant differences among these coefficients.

a positive (respectively negative) variation of grants, denoted by $\Delta t_{it}{}^{+}$ (respectively $\Delta t_{it}{}^{-}$).[124] Column (6) in Table 4.3 highlights that *communes* do not react to any decline in transfers, although they increase their own-revenue when central grants increase. Local governments do not behave symmetrically to transfers variations. This finding is in line with Volden (1999) who explains such behavior by local political and bureaucratic pressures to expand programs. This ratchet effect implies that fluctuations in central transfers result in the rise of the ratio of local own-revenue/transfers.

4.4 Conclusion

Adopting a simple model of optimal taxation, we highlight a theoretical ambiguity on the effect of unconditional central grants on local own-revenue. Our empirical analysis focuses on Benin, a representative country of sub-Saharan Africa. We study the effect of lump-sum grants that have the properties to be allocated among local governments through a fixed rule (jurisdictions' population). Our results highlight a positive impact of this unconditional transfer on local own-revenues. This effect is contingent on a minimum level of local government wealth. Moreover, jurisdictions that do not share the same political affiliation as the president in office are more prone to mobilize revenue than other *communes*. Finally, we show that local policymakers' behavior is not symmetric to transfer variations, inducing a ratchet effect.

Central lump-sum grants alleviate revenue constraints of local governments directly and indirectly. The unconditional transfer that we study here, namely the road tax, is far from being perfect. Collected at the border, it is equivalent to a tax on exports, which may be detrimental for the Beninese economy. Moreover, despite its incentive quality on own-revenue, it does not seem to address the equity issue. A natural extension of our analysis would be to consider local public spending, to assess the overall and redistributional impact of lump-sum transfers on population welfare.

[124] More formally, we consider

$$\begin{aligned} \Delta t_{it}{}^{+} &= (t_{it} - t_{it-1})\, d_{it}, \\ \Delta t_{it}{}^{-} &= (t_{it} - t_{it-1})\, (1 - d_{it}), \end{aligned}$$

with

$$d_{it} = \begin{cases} 1 \text{ if } t_{it} \geqslant t_{it-1} \\ 0 \text{ if } t_{it} < t_{it-1}. \end{cases}$$

and regression (44) becomes

$$T_{Lit} = \beta_5 \Delta t_{it}{}^{+} + \beta_6 \Delta t_{it}{}^{-} + \varphi X_{it} + \rho A_{jt} + \lambda T_{Lit-1} + \alpha_i + \theta_t + \varepsilon_{it}, \tag{47}$$

However, our result contributes to the debate on designing an appropriate intergovernmental transfer system in developing countries. Allocating central grants on a performance basis is often presented as the only way to provide adequate incentives to local governments, in terms of fiscal discipline. An implicit assumption of such a statement is that lump-sum transfers reduce recipient governments' tax collection efforts. We emphasize that this hypothesis is not only untrue in Benin, but also that lump-sum grants actually have an incentive effect on local own-revenue. Further studies are clearly necessary to establish if Benin is only a counter example, or if our result holds more generally for developing countries. However, we have to highlight that lump-sum grants should be more closely considered to solve the vertical imbalance in developing countries. In addition to their potential incentive effect on local own-revenue, they are, in practice, easier to ascertain, and less vulnerable to discretion and manipulation in their allocation, than performance-based transfers, which often require some unavailable information at the local level in sub-Saharan Africa.

4.5 Appendix

Table 4.2: Estimation results- Static models

Dep. variable.: Local own-revenue	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Central transfer (t_{it})	0.225***	0.268***	0.267***						
	(0.06)	(0.07)	(0.07)						
$t_{it} * P_i$ or $t_{it} * F_{it}$				0.174**	0.208*	0.146	0.137	0.169*	0.128
				(0.08)	(0.11)	(0.15)	(0.21)	(0.10)	(0.10)
$t_{it} * NP_i$ or $t_{it} * NF_{it}$				0.302***	0.317***	0.234***	0.292***	0.235***	0.308***
				(0.09)	(0.07)	(0.06)	(0.06)	(0.07)	(0.08)
Local tax revenue in j (A_{jt})		0.373***	0.373***		0.385***		0.370***		0.369***
		(0.12)	(0.12)		(0.12)		(0.12)		(0.11)
Employment rate (N_{dt})		-0.153	-0.153		-0.034		-0.219		0.025
		(0.30)	(0.30)		(0.30)		(0.29)		(0.30)
Population density (D_{it})		2.976**	2.976**		3.031**		3.014**		2.928**
		(1.25)	(1.25)		(1.26)		(1.25)		(1.25)
Year 1	0.425***	0.191*	0.191	0.426***	0.179*	0.423***	0.191*	0.419***	0.173
	(0.07)	(0.11)	(0.11)	(0.07)	(0.11)	(0.07)	(0.11)	(0.07)	(0.11)
Year 2	0.878***	0.505**	0.505**	0.884***	0.484**	0.871***	0.499**	0.873***	0.495**
	(0.09)	(0.21)	(0.21)	(0.09)	(0.21)	(0.09)	(0.21)	(0.09)	(0.21)
Year 3	0.631***	0.200	0.200	0.633***	0.173	0.626***	0.196	0.628***	0.179
	(0.08)	(0.32)	(0.32)	(0.08)	(0.32)	(0.08)	(0.32)	(0.07)	(0.32)
Year 4	0.606***	0.062	0.062	0.615***	0.034	0.603***	0.065	0.605***	0.041
	(0.09)	(0.45)	(0.45)	(0.09)	(0.45)	(0.07)	(0.44)	(0.09)	(0.45)
Fixed-Effect	yes	yes	yes	yes	yes	yes	yes	yes	yes
Instrumental variable	no	no	yes	no	yes	no	yes	no	yes
Sargan test: p-value	-	-	0.001	-	-	-	-	-	-
Fisher test: p-value	-	-	-	0.193	0.353	0.674	0.459	0.562	0.115
Nb of units	74	60	60	74	60	74	60	74	60
Observations	318	263	263	318	263	318	263	318	263

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level.

Table 4.3: Estimation results- Dynamic models (with external instruments)

Dependent variable: Local own-revenue	(1)	(2)	(3)	(4)	(5)	(6)
Central transfer (t_{it})	0.425**	0.629***				
	(0.18)	(0.19)				
$(t_{it} * P_i)$ or $(t_{it} * F_{it})$ or $(\Delta t_{it})^+$			0.420***	0.132	0.590***	0.333**
			(0.16)	(0.15)	(0.15)	(0.15)
$(t_{it} * NP_i)$ or $(t_{it} * NF_{it})$ or $(\Delta t_{it})^-$			0.583***	0.383***	0.607***	0.139
			(0.17)	(0.11)	(0.13)	(0.11)
Lagged dep. var. (T_{Lit-1})	0.553***	0.407**	0.291*	0.358***	0.424***	0.827***
	(0.19)	(0.16)	(0.15)	(0.10)	(0.11)	(0.07)
Local tax revenue in j (A_{jt})		0.471*	0.479**	0.511***	0.436*	0376***
		(0.28)	(0.22)	(0.18)	(0.27)	(0.16)
Employment rate (N_{dt})		1.773	1.487	2.887*	1.223	1.682**
		(1.36)	(1.20)	(1.79)	(1.60)	(0.78)
Population density (D_{it})		-0.011 (0.08)	-0.059	-0.052	-0.026	-0.071
			(0.06)	(0.08)	(0.07)	(0.05)
Year 1	0.097	0.463**	0.233	0.492**	0.279	0.697***
	(0.16)	(0.17)	(0.18)	(0.23)	(0.24)	(0.17)
Year 2	0.428***	0.702***	0.565***	0.640***	0.638***	0.639***
	(0.08)	(0.16)	(0.14)	(0.18)	(0.18)	(0.14)
Year 3	-0.067	0.181	0.169*	0.150	0.141	-0.116
	(0.08)	(0.11)	(0.10)	(0.13)	(0.13)	(0.10)
AR (1): p-value	0.053	0.084	0.082	0.077	0.089	0.068
AR (1): p-value	0.687	0.289	0.274	0.251	0.293	0.393
Hansen test : p-value	0.338	0.993	0.989	0.557	0.743	0.536
Fisher test: p-value	-	-	0.001	0.004	0.718	-
Nb of instruments	13	22	27	27	27	25
Nb of units	74	60	60	60	60	59
Observations	246	204	204	204	204	181

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level.

Table 4.4: Estimation results- Dynamic models (without external instruments)

Dependent variable: Local own-revenue	(1)	(2)	(3)	(4)	(5)
Central transfer (t_{it})	0.300**	0.398***			
	(0.12)	(0.10)			
Lagged dep. var. (T_{Lit-1})	0.611***	0.447**	0.356*	0.419*	0.447**
	(0.22)	(0.18)	(0.21)	(0.21)	(0.19)
$t_{it} * P_i$ or $t_{it} * F_{it}$			0.249***	0.113	0.403***
			(0.08)	(0.13)	(0.12)
$t_{it} * NP_i$ or $t_{it} * NF_{it}$			0.402***	0.378***	0.389***
			(0.11)	(0.12)	(0.09)
Local tax revenue in j (A_{jt})		0.599*	0.482*	0.206	0.585
		(0.36)	(0.30)	(0.37)	(0.42)
Employment rate (N_{dt})		1.981	1.32	1.979	2.112
		(1.58)	(1.37)	(2.69)	(2.31)
Population density (D_{it})		-0.030 (0.09)	-0.046	-0.030	-0.093
			(0.08)	(0.12)	(0.08)
Year 1	0.114	0.444**	0.274	0.396	0.456
	(0.17)	(0.20)	(0.19)	(0.33)	(0.33)
Year 2	0.375**	0.585***	0.479***	0.613***	0.592***
	(0.08)	(0.13)	(0.13)	(0.22)	(0.20)
Year 3	-0.069	0.156	0.112	0.134	0.158
	(0.08)	(0.13)	(0.12)	(0.18)	(0.17)
AR (1): p-value	0.041	0.081	0.080	0.080	0.081
AR (1): p-value	0.594	0.275	0.259	0.234	0.272
Hansen test : p-value	0.223	0.897	0.856	0.877	0.887
Fisher test: p-value	-	-	0.015	0.132	0.825
Nb of instruments	9	18	19	19	19
Nb of units	74	60	60	60	60
Observations	246	204	204	204	204

Robust standard errors are in brackets.***: coefficient significant at 1 % level, **: at 5 % level, *: at 10 % level.

Chapitre 5

"Does the system of allocation of intergovernmental transfers in Senegal eliminate politically motivated targeting?"

Abstract

While there is a large body of literature on the determinants of allocation of intergovernmental fiscal transfers in developed countries, this kind of study is still very limited for developing countries, especially Subsaharan countries. Using an original micro-level public finance panel data from Senegal, we address three issues: (1) Does the Senegalese allocation system of fiscal transfers conform to the guidance of normative theory, in particular, to the equity principle? (2) Does this allocation system eliminate politically motivated targeting of transfers? (3) If not, what kind of political factors explain the horizontal allocation of fiscal resources? By rigorously estimating a panel data for 67 local governments (*communes*) from 1997 to 2009, our results tend to show that equity concerns do not affect the allocation of intergovernmental grants in Senegal, leading to the conclusion that the resources distribution system does not comply with the dictates of normative theory. Moreover, we find evidence that political considerations influence the horizontal allocation of transfers. In particular, our analysis suggests that transfers allocation follows a pattern of tactical redistribution more than patronage, swing *communes* being targeted while partisan *communes* are not.

* This chapter is a version of a paper accepted for publication in the Journal of African Economies.

5.1 Introduction

While fiscal decentralization has been adopted by a large part of the developing world, there is a broad consensus in the literature that the benefits expected from decentralization will not materialize if the system of intergovernmental fiscal transfers does not rely on an equitable and efficient horizontal allocation mechanism. Although a huge literature on the determinants of allocation of central grants in developed countries exists, this kind of study is still limited for developing countries, especially Subsaharan countries. This paper attempts to fill the gap in the empirical literature by raising the issue of how such transfers are allocated across local governments in a Subsaharan country, Senegal.

The traditional theoretical view on central transfers is that they should be guided by equity and efficiency considerations, a welfare maximizing government wanting to reallocate resources between richer and poorer jurisdictions and to correct for externalities (Buchanan, 1950, Oates, 1972, Gramlich, 1977). Actually, a number of empirical studies have pointed out that political factors are more relevant in explaining the allocation of grants. Beginning with Wright (1974), economic historians examined the question of how transfers were allocated amongst American states during the New Deal in the 1930s and found that political variables explained this allocation considerably better than economic considerations. As Banful (2010) notices, empirical studies have concerned an array of countries like Albania (Case, 2001), Argentina (Porto and Sanguinetti, 2001), Australia (Bungey, Grossman, and Kenyon, 1991, Worthington and Dollery, 1998), Canada (Albouy, 2010), Ghana (Banful, 2010, Miguel and Zaidi, 2003), India (Khemani, 2007, Cole, 2009, Arulampalam et al., 2009), Israel (Alperovich, 1984), Japan (Meyer and Naka, 1999), Portugal (Pereira, 1996, Veiga and Pinho, 2007), Russian Federation (Treisman, 1996), Sweden (Dahlberg and Johansson, 2002), Tanzania (Boex, 2003) and the United States (Anderson and Tollison, 1991, Wallis, 1998). An international comparison of these works shows that, besides local expenditure needs and fiscal capacity, other factors including electoral concerns and political influence play important roles in the horizontal allocation of grants. Central governments appear to be opportunistic, using transfers to maximize their chances of re-election or partisan, allocating grants to further interests of their political support groups (Cox, 1986, Grossman, 1994, Case, 2001, Banful, 2010).

A common view is that basing the allocation of fiscal transfers on a formula limits the discretionary power of politicians in distributing central grants so that this strategy has been widely adopted in the developing world (Banful, 2010). In this paper, we test the effectiveness of formulas in eliminating discretion by analyzing how transfers are allocated across local governments in Senegal where a formula allocation mechanism is employed. More precisely, we

intend to tackle the three following issues: (1) Does the Senegalese allocation formula allow a distribution of fiscal transfers that conforms to the dictates of normative theory, in particular, to the equity principle? (2) Is such an allocation system actually sufficient to eliminate politically motivated targeting of grants? (3) If not, what kind of political factors explain the allocation of fiscal resources? This paper adds to the existing empirical literature studying horizontal allocation of transfers and we believe its contribution to be twofold. First, to our knowledge, this is one of the first papers to exploit an original micro-level public finance panel data from a Subsaharan country to test political economy theories of fiscal transfers' allocation. It allows us to see to what extent results obtained for developed countries can be observed for a developing country.[125] Besides, Senegal is a particularly interesting case since a received wisdom says that transfers allocation is determined by political affinity between the central and local governments, as it is the case in many African countries (Banful, 2010), and some mayors deplore a discriminatory and opaque distribution of grants.[126] Second, we employ a consistent econometric method which generates credible empirical results. Indeed, we use the fixed effects vector decomposition (FEVD) estimator developed by Plümper and Troeger (2007) to avoid failure to control for heterogeneity of local governments and inefficiency in estimating the effect of variables that have little within variance, common issues in this kind of study. Moreover, to test whether equity concerns are dominant in the allocation of transfers, we compute an innovative poverty index at local level using the Demographic and Health Survey (DHS) and its geographic data.

After having briefly reviewed the literature on normative and political economy determinants of fiscal transfers, we rigorously investigate the empirical importance of such determinants in the distribution of central grants across local governments in Senegal by estimating a panel data for 67 *communes* from 1997 to 2009. (1) Estimation results tend to show that equity concerns do not impact the allocation of intergovernmental grants in Senegal, leading to the conclusion that the resources distribution system does not follow the dictates of the normative theory. (2) We also find evidence of politically motivated targeting of transfers despite the formula-based system. (3) In particular, our results highlight three kinds of political motivation. First, our analysis suggests that transfers allocation follows a tactical redistribution, which consists in targeting swing *communes* to achieve electoral success. Second, local governments

[125] The findings of Miguel and Zaidi (2003) concerning Ghana already suggest that in African democracies ruling parties are able to reward their supporters and use the advantages of incumbency to win subsequent elections.

[126] See, for instance, *Le ministre Aliou Sow brocardé par Alioune Sarr, le Pcr de Notto Diobasse*, Le Peuple, October 18th 2010 (http://lepeuple-sn.com) or *Fonds de dotation : Aliou Sow fait la part belle à sa collectivité selon le PCR de Ndindy*, Rewmi, November 2nd 2010 (http://www.rewmi.com/).

which are better represented in parliament seem to receive larger grants, confirming one of the most consistent empirical results in this literature. Third, ethnic fractionalization seems to be positively correlated with per capita transfers which might indicate that the central government uses fiscal resources as a way to pacify potentially troubled areas.

Section 5.2 offers a brief review of the literature on the determinants of intergovernmental transfers. Section 5.3 presents the institutional background of transfers in Senegal, the empirical model, strategy and findings. Section 5.4 concludes with some policy implications.

5.2 Normative and political economy determinants of intergovernmental fiscal transfers: A literature review

Three stands of the literature consider factors that may influence the distribution of central transfers across local governments (Boex and Martinez-Vazquez, 2005). First, public finance literature provides normative dictates on how intergovernmental transfers should be allocated. Second, voter-choice models in public choice literature explain how electoral concerns could affect the central government's fiscal choices in distributing fiscal resources to local jurisdictions. Third, political economy arguments contribute to understand the allocation of grants by considering non-electoral arguments.

First, there is a consensus in the local public finance literature that a system of fiscal transfers should be designed to achieve equity and efficiency in the allocation of resources (Buchanan, 1950, Oates, 1972, Gramlich, 1977). The central government is assumed to be a "benevolent planner", which maximizes social welfare. The rationale behind the equity principle is the need for a reduction in horizontal fiscal imbalances existing between local jurisdictions. Thereby, transfers should compensate the unequal access to local public goods and services generated by the uneven distribution of resources across the country. The pursuit of this objective leads to expect a pro-poor allocation of grants. However, most empirical studies find that wealthier local governments receive greater transfers, indicating that political considerations outweigh those of equity (see Kraemer, 1997, Alm and Boex, 2002, Wallis, 1998, Meyer and Naka, 1999). The economic efficiency objective seeks to correct for externalities and compensate spillover effects among jurisdictions in the provision of some local public services. This incentive objective would result in the central government providing greater grants in response to higher expenditure needs.[127] In empirical studies, local expenditure needs and costs generally have a positive

[127] Moreover, Albouy (2010) shows that providing higher grant levels to jurisdictions that pay higher central taxes is a mechanism for reducing inefficient migration.

impact on the level of transfers received by a local government. Exceptions include Nigeria (Alm and Boex, 2002) and Mexico (Kraemer, 1997) where expenditure needs have no effect and a negative impact on grants received, respectively.[128]

Second, the literature on targeted redistribution distinguishes between patronage, which consists in rewarding political supporters, and tactical redistribution, which aims at achieving electoral success. Greater political support for the central government in a particular jurisdiction can be rewarded by greater transfers. For instance, Miguel and Zaidi (2003) find evidence from Ghana of core supporters' targeting, districts from where the ruling party won all the parliamentary seats.[129] This patronage can also be tactical, however. Indeed, Cox (1986) argues that the optimal strategy for risk-averse opportunistic candidates is to favor partisan jurisdictions to maintain existing political supports. Similarly, Bungey, Grossman, and Kenyon (1991) and Leyden (1992) show that party closeness between central and local politicians increases returns in term of central government's support, and therefore the level of transfers. Case (2001) interprets empirical findings of greater grants in Albania to jurisdictions where the President received more votes in the past election as evidence of targeting of fief districts, considered as more "pivotal". If the central government can reward its supporters or target it to maintain political support, it can also favor its opponents (Treisman, 1996) or "swing" jurisdictions, where the distance of vote shares between the largest parties is small. Electoral results in these jurisdictions are assumed to be determined by how much they receive in resource transfers from the center. Arulampalam, Dasgupta, Dhillon, and Dutta (2009) construct a model where the federal government allocates transfers to states that are aligned with the incumbent party but also swing. Using Indian panel data, they validate their theoretical model.[130] In the context of an African country, Banful (2010) also finds evidence that per capita grants are higher in Ghanaian districts where vote margins in the previous presidential election were lower. Following the predictions of the well known model of opportunistic political budgetary cycles provided by Rogoff and Sibert (1988), the central government is also expected to transfer more resources in election years to increase its likelihood of re-election. According to Worthington and Dollery (1998), grants in local election years would be more productive due to a heightened awareness of policies but, in the case of central elections, the returns from purchasing political capital in

[128] We also have to note that transfers pursue a vertical fiscal balance objective, that is, ensure that the revenues and expenditures of each level of government are approximately equal (Weingast, 2009).

[129] Pereira (1996) also finds that intergovernmental grants in Portugal were designed to reward central governments' political support.

[130] Cole (2009) also finds that state governments in India supply greater subsidized agriculture loans to electoral districts where the ruling party had a narrow margin of victory (or loss) and Johansson (2003) provides theoretical and empirical evidence that swing Swedish municipalities receive larger grants than other groups.

this manner would be offset by direct political benefits of central direct expenditure so that transfers should decrease.

Third, beyond electoral considerations, political decision-making processes are likely to be captured by powerful interest groups. Assuming that local officials try to extract as much resources as possible from the center, those with higher bargaining power may receive larger grants. The fact that local jurisdictions with higher political representation benefit from greater transfers is one of the most robust empirical findings (Wright, 1974, Porto and Sanguinetti, 2001, Khemani, 2007).[131] Smaller jurisdictions are also expected to receive greater per capita transfers, which may be caused by scale economies or by their potentially higher lobbying power. In particular, this bias may be explained by an urge to secure broad political support.[132] In the context of a developing country, central governments may also use economic means to deal with social conflicts.[133] A common argument in favor of decentralization is that local governments are enabled to allocate public spending in line with the preferences of heterogeneous local communities. However, Tranchant (2010) shows that, while this hypothesis may be relevant for local majorities, it is not the case for local minorities, who are not in a position of strength. In this context, fiscal decentralization can increase local conflicts, marginalized ethnic minorities clashing against powerful local majorities. Hence, the central government may use transfers as an instrument to pacify potentially troubled areas like ethnically fractionalized jurisdictions (Treisman, 1996).[134]

5.3 The determinants of intergovernmental fiscal transfers in Senegal: Empirical evidence

In this section, we intend to determine whether the Senegalese allocation system conforms to the dictates of the normative theory and if this system eliminates politically motivated targeting of transfers. We first investigate the institutional background of intergovernmental transfers in Senegal, then we specify our econometric model and strategy. Lastly, we present our principal

[131] For instance, Atlas (1995) shows that the allocation of per capita federal net spending in the United States from 1972 to 1990 was affected by states' per capita congressional representation and highlights that the institutional basis of political representation affects spending allocations across states.

[132] Empirical work on lump-sum grants in Portugal (Pereira, 1996) supports the politico-economic hypothesis and rejects the hypothesis that economies of scale are the main explanatory cause for the observed regressivity of per capita transfers. Indeed, he shows that per capita grants decrease with the population size of communities even after controlling for the effect of economies of scale which might be captured by the density variable.

[133] In particular, Senegal has to deal with a violent separatist movement in the southern region of the Casamance.

[134] Note that Montalvo and Reynal-Querol (2005) suggested that ethnic polarization measures are more appropriate than fractionalization indices to capture social conflict.

findings resulting from the estimation of a panel data for 67 *communes* from 1997 to 2009.

5.3.1 Intergovernmental transfers in Senegal: Institutional background

Senegal has shown a remarkable political stability since its independence in 1960, which was strengthened by peaceful presidential transitions. Abdou Diouf served five terms as President. He was defeated in February 2000 by opposition leader Abdoulaye Wade, by direct popular vote in the majority (two-round) system. The regime of Abdoulaye Wade follows four decades of Socialist Party rule. He was re-elected in February 2007, at the end of the seven-year term.[135] Local governments are directly elected by local population from a list in one round. Local elections occurred, the same day for all *communes,* in March 2002 and 2009.[136] The fact that the voice of the opposition was loudly heard in the latest local elections, including the defeat of Wade's own son, Karim, in Dakar, could be a sign that Senegal's democracy remains relatively strong. Our dataset covers all national and local elections which occurred in the period 1997-2009.

Decentralization has been implemented since the beginning of the independence in 1960 to move government closer to citizens. However, 1990 marked a turning point in the process with the abolition of the tutelary power of the center within the *communes*' executive. The last step is constituted by the adoption in 1996 of the new laws of decentralization: law 96-06 carrying the Local Government Code, law 96-07 defining transferred competencies, and law 96-09 fixing the territorial administration. Senegal is divided into eleven regions (*régions*) which are subdivided into 67 *communes*, 43 *communes d'arrondisements* which are further divided into 320 *communautés rurales*.[137] Local governments are endowed with legal personality and benefit from the administration principle according to which local jurisdictions manage themselves freely by elected councils. The *commune* has to ensure the best living conditions for the whole population.[138] The competencies of Senegalese *communes* range from the maintenance of communal properties or the management of local public works to environmental protection with, for instance, the adoption of measures limiting pollution, and include the management of local employments and assistance to places of worship. Table 5.1 (Appendix 5.5) presents Senegalese *communes'* revenue sources and their evolution. Local own-revenue represents around 85% of local resources and are divided into tax and non-tax own-revenue. The first one is mainly

[135] Since 2007, the president is elected for a five-year term renewable once.

[136] Local officials are elected for a six-year mandate but local elections, initially planned for May 2008, were reported in March 2009 due to the modification of the regional administrative zoning.

[137] There is also an administrative level between regions and *communes*: the departments (*départements*) but they are managed by a representative of the central government.

[138] See law 96-06 with the Local Governments Code.

constituted by taxes on property, patent, advertisement, water, electricity and waste removal while the second one is related to the public domains' occupation (markets, car parks, tow pound...) and to some administrative services. Central transfers represent around 10% of the total local resources and have become more important in absolute terms. One of the main features of fiscal decentralization in Senegal is the increasing level of revenue at local level. However, local resources remain insufficient to provide local basic public services[139] and important inequalities appear between *communes*: the resources of the ten poorest *communes* represent 1 % of the resources of the five richest ones. There is also an important variability across jurisdictions, which stays relatively constant over time. In 2009, *communes* such as Ranerou, Oussouye and Foundiougne received more than four times the national average, while other jurisdictions like Pikine or Bargny received a transfer per capita ten times smaller than that amount.

State subsidies should mitigate the lack of resources and reduce horizontal fiscal imbalances. The design and implementation of transfers deserves serious concern, in particular, in developing countries (see Bird and Smart, 2002, for a survey of central transfers systems adopted in a number of developing countries). Senegal employs a formula-based resources allocation mechanism. Finances law fixes a minimum amount of transfers as an annual percentage of central tax revenue. This then amount depends on a percentage of the Value Added Tax collected for the benefit of central government. Transfers are distributed between local authorities according to criteria annually fixed by decree after consulting the National Council of Development of Local Authorities. This council, in charge of the follow-up of the decentralization process, is constituted by the Senegalese President, the members of the government and representatives of deconcentrated services of the central government and of local governments. The allocation's criteria are twofold. First, there is a compensation criterion: around 80% of the total transfer is distributed according to the cost of local public spending induced by the transfer of competences and responsibilities from the central government to the local authorities. In practice, the central government only considers spending made by the local government the previous year. Second, the rest of the amount is divided into two parts; a first part (70 %) is distributed in equal shares between jurisdictions and a second part (30 %) is distributed towards the demographic importance of each jurisdiction.

Our empirical work will help to determine if these criteria are sufficient to allow an efficient and equitable distribution of resources and to forbid the incentives of politicians to divert resources for personal gain.

[139] Tax own-revenue of all *communes* represents on average only 6 % of the central tax revenue

5.3.2 The basic empirical model

To test whether the allocation of transfers is influenced by economic considerations and the presence and the nature of any politically motivated targeting of resource, we use the general empirical framework followed in the literature (Boex and Martinez-Vazquez, 2005). Per capita amounts of transfers received by a local government are regressed upon sets of equity/efficiency and public choice variables that may impact center's fiscal decision.

To determine whether the Senegalese system conforms to the dictates of the normative theory we consider fiscal incapacity and expenditure needs. We first examine the impact of a local government's fiscal incapacity on the size of the transfers it receives by using a DHS poverty index (see the following section 5.3.3). If equity concerns are at play in the allocation of transfers, we should find a positive coefficient associated with fiscal incapacity. Second, we include local expenditure needs and costs in our econometric model (efficiency principle). The variables that are generally used to measure local expenditure needs are demographic variables such as the size of the school-aged population, the economically dependent population, or urbanization (Meyer and Naka, 1999, Wallis, 1998).[140] The population density is also commonly used to measure the per capita cost of providing local public goods.[141] We retain two variables; urbanization rate and population density. While we unambiguously expect a negative coefficient associated with population density, it is not possible to know *a priori* which of rural or urban sets of needs dominate.[142]

We then consider the influence of electoral concerns in the allocation of grants. We introduce a qualitative dummy variable that indicates if the central and local governments are of the same political party. This variable allows us to test the existence of patronage and Cox (1986) model, according to which the optimal strategy of political candidates is to favor their supporters. We also include a variable that measures the difference in vote shares expressed in absolute values between the central government party and its main opponent, in the last local election in each *commune* (see Case, 2001 and Dahlberg and Johansson, 2002).[143] With this variable, we test the

[140] Generally, instead of using physical infrastructure measures such as hospital beds or the number of schools, it is preferable to measure the number of citizens with a certain need, such as infant mortality or school-aged population, which are free from incentive problems.

[141] Presumably, the lower the population density in a jurisdiction, the higher the unit cost of delivering social services, since the provision of public services increases with a more dispersed population. It may also be more costly to deliver government services across a larger land area.

[142] Indeed, rural areas may suffer from inadequate transport or electrification while urban areas have special needs associated with congestion, pollution or urban blight (Treisman, 1996).

[143] Two main concepts are used in the literature. Swing voters are defined as those with weak party preferences, while swing jurisdictions are those where the distance of vote shares between the central government party and its main opponent is minimal. We focus on the second one.

prediction that swing *communes* are targeted by the incumbent party. Moreover, two dummy variables for elections, central and local, are included in order to account for time-periods when ability to purchase political capital may vary from the norm (Veiga and Pinho, 2007). Since elections are held at the beginning of the year, we consider the year before elections. Following the prediction of Worthington and Dollery (1998), local and national election years should exhibit a positive and negative coefficient, respectively.

Lastly, we introduce the number of deputies represented by departments, a local government with larger political representation per capita being expected to extract larger per capita transfer. We also consider the relative population size of the *commune* to test the existence of a bias in favor of smaller jurisdictions. In the particular context of a developing country, central decisions may also concern ethnic fractionalization, transfers being a potential instrument to avoid local conflicts.[144]

Finally, we define the following empirical model:

$$Transfers_{it} = \beta Normative_{it} + \varphi Electoral_{it} + \gamma Political_{it} + \varepsilon_{it}, \tag{48}$$

Indicators used for each category are summarized in Table 5.2 (Appendix 5.5).

5.3.3 Econometric framework

Before introducing our econometric strategy, we present our composite measure of local fiscal incapacity, based on a DHS poverty index.

An indicator of local incapacity

Following studies that rely on composite measures of local incapacity, we propose to estimate a poverty index using the 1997 and 2005 DHS with their geographic data.[145] Due to the abundance of household survey data on asset ownership and the considerable biases measurement error associated with reported income or consumption, a substantial body of literature has developed an asset-based measure of wealth. Filmer and Pritchett (2001) concluded that the DHS wealth index actually performed better than the traditional consumption or expenditure index in explaining differences in economic status. Hence, in the footsteps of Filmer and Pritchett (1999) and Sahn and Stifel (2003), we compute a composite poverty indicator from the DHS

[144] We also consider ethnic polarization (Montalvo and Reynal-Querol, 2005).
[145] It represents around 8000 representative households for each survey.

surveys.[146] However, since the DHS wealth index has been criticized as being too urban in its construction, we propose, as suggested by Rutstein (2008), to produce a single national-level composite index from wealth indexes that have been separately constructed for the urban and rural areas. Table 5.3 (Appendix 5.5) summarizes the assets included in the Principal Components Analysis (PCA)[147] for each index and their coefficients for the DHS 2005.[148] Conversion adjustments are made to map urban and rural indexes onto the national index.[149] Then, we divide the national index into quintiles of the national household population and determine the percentage of the poor in each department. Table 5.4 (Appendix 5.5) gives the "profile" of a household that belongs to the first quintile in 2005 and Figures 5.1 (Appendix 5.5) gives the percentage of poor households by region.

Econometric issues and strategy

Our econometric model is quite similar to those considered in the literature and suffers from several defects. We then present our econometric strategy.

Econometric issues First, we correct for all time-invariant community characteristics, observed or unobserved, and all year effects.[150] Local governments differ in ways that are captured only imperfectly by our economic and political variables and these persistent differences may produce significant differences in transfers. So, we include a *commune*-specific effect, α_i. Then, omitted variables that vary over time but are constant between *communes* can influence the amount of transfers available and received and, at the same time, the fiscal capacities of *communes*. By introducing time dummies (T_t) we correct this potential endogeneity bias due to

[146] The general methodology used to calculate the wealth index is given in Filmer and Pritchett (2001). The specific approach used in the DHS is described in Rutstein and Johnson (2004).

[147] It is a technique for extracting from a set of variables those few orthogonal linear combinations of the variables that capture the common information most successfully (for a detailed explanation, see Filmer and Pritchett, 2001).

[148] Based on descriptive statistics, we thought that possession of most livestock would be exclusively rural and some other items such as computer or internet access would be exclusively urban. The construction of the national index uses the set of indicator variables that the rural and urban areas have in common and is restricted to those that correlate with wealth in the same direction

[149] The level and distribution adjustment values are found by regressing the value of each household's area-specific index scores onto its national index score. For instance, with the DHS 2005, we have:

$$Urban \quad : \quad WIn = 0.24 + 0.41WIu \tag{.49}$$

$$Rural \quad : \quad WIn = -1.09 + 0.37WIr \tag{.50}$$

where WIn, WIu, and WIr are the national, urban-specific, and rural-specific wealth index scores, respectively. We also use a quadratic form of the regressions since it improves the fit a little.

[150] Fiscal transfers have an important characteristic to lead a relevant statistical analysis: their amount varies significantly over time, allowing the use of panel econometric methods.

omitted variables. We should limit the artificial positive correlation between the fiscal capacity and transfers, both increasing because of their common correlation with a third variable, for instance, the national economic conjuncture.[151] Second, we consider endogeneity bias due to reverse causality. This turns out to be important for a number of variables, especially for fiscal incapacity. Indeed, local spending, in part financed by central transfers, may reduce local poverty. Hence, if jurisdictions with higher transfers tend to have higher fiscal capacity, then, estimates will show that jurisdictions with higher fiscal capacity receive larger transfers. However, in our case, the fiscal incapacity index represents a more permanent status than does either income or consumption so that transfers at time t probably cannot affect the level of wealth at time t. If doubts remain, we propose to use the lagged value of fiscal incapacity indicator to test the robustness of our estimations. Concerning political variables, if we believe that politicians use public resources to buy support, we must also believe that transfers have an effect on electoral results. However, since we use values of electoral outcomes that are determined before the start of a fiscal year, transfers are unable to affect past results so that the coefficient of political affiliation variable should not be biased. We could also consider the possibility of a "vote with feet", where people are encouraged to migrate when they perceive situations to be better in another jurisdiction, such as a higher level of transfers. However, we think that this potential bias is limited since Tiebout's model rests on assumptions of perfect mobility and information, which are seldom found in developing countries (Bardhan, 2002). Finally, since we regress central transfers on explanatory variables of which some are observed on a more aggregate level, we introduce department cluster (Moulton, 1990).

Econometric strategy A panel data approach allows us to control for the potentially large number of unmeasured explanatory variables by estimating a "fixed-effects" (FE) model. However, the FE model does not allow the estimation of time-invariant variables and results from its inefficiency in estimating the effect of variables that have little within variance (Baltagi, 2001, Wooldridge, 2002, Hsiao, 2003).[152] In order to assess coefficients of time-constant or rarely changing variables, and to control for *commune* specific effects, we propose to use the FEVD estimator developed by Plümper and Troeger (2007).[153] This estimator, based on a three-step procedure, allows a decomposition of the unit fixed effect (α_i) into two parts; a part explained

[151] When we introduce dummy variables for election years we cannot introduce time dummies, so we will add T_t, a trend variable which accounts for the common trend in local governments' transfers.

[152] In our case, for instance, ethnic variables, which are time-invariant variables, are dropped in the fixed effect model so that it is impossible to determinate whether these variables affect the allocation of fiscal transfers.

[153] Rarely changing variables are defined as having a low within variance. Our variables of political and ethnic factors, fiscal capacity, urbanization rate and population are rarely changing variables with a little within variance.

by the time-invariant variables and an unexplained part, $\widehat{h_i}$.[154] Regression (48) becomes:

$$Transfers_{it} = \beta Normative_{it} + \varphi Electoral_{it} + \gamma Political_{it} + T_t + \widehat{h_i} + \varepsilon_{it}, \qquad (51)$$

Based on Monte Carlo simulations, Plümper and Troeger (2007) find that the vector decomposition model performs far better than pooled OLS, Random-Effect (RE), and the Hausman-Taylor procedure.[155]

To capture the potential persistency in central transfers, we also consider the dynamic version of our model by introducing the lagged dependent variable. This yields the inconsistency of fixed-effect estimators (see Nickell, 1981) so that we use the GMM-System estimator (Blundell and Bond, 1998).

5.3.4 Data and estimation results

Data for this study come from a variety of sources. Data on fiscal transfers are drawn from the *Municipal Development Partnership*, and local characteristics like population, area, urbanization rate and ethnic composition come from the *General Population and Housing Census* and from the *National Institute of Statistics and Demography* of the *Ministry of the Economy and Finance* of Senegal. The results of legislative elections come from the *National Assembly* and the results of local elections come from the *Independent National Electoral Committee*. We constructed a panel data for 67 *communes* from 1997 to 2009.[156]

Table 5.5 (Appendix 5.5) gives estimation results. First, we test the static model with the FEVD estimator. To test the robustness of our estimations, we introduce progressively a trend (2) and a department cluster (3), we use alternative indicators (4),[157] the lagged value of the fiscal incapacity indicator (5) and year dummies instead of the trend variable (6). Then, we estimate the dynamic model with one-step robust GMM-System estimator (7).[158]

[154] A formal explanation of this estimator is given in Plümper and Troeger (2007).

[155] An alternative answer to assess coefficients of time-constant variables and to control for *commune*-specific effects is to use a RE model. However, this estimator implies orthogonality between explanatory variables and the error term, a hypothesis that does not seems to be relevant in our case. The Hausman test actually confirms that we should use FE estimators.

[156] Note that, when we introduce the number of representatives in parliament, the panel data include data for 67 *communes* from 1998 to 2009 since we only have results of legislative elections since 1998. When we consider political affiliation variables, the panel data include data from 2002 to 2009 since we have local election results for 2002 and 2009.

[157] We consider PS_{it}, the score of the president in office at the previous local election instead of PA_{it} and ethnic polarization, EP_{it}, instead of EF_{it} (see Table 5.2).

[158] We assume the weak exogeneity of the lagged dependant variable and the strict exogeneity of other explanatory variables. The lagged levels of variables are instruments in regressions in level as well as in regressions in difference. Following Roodman (2009) we collapse instruments and limit their number to avoid non optimal

Does the central government assist jurisdictions with poor tax bases and greater socio-economic needs as it should according to normative guidance? Equity concerns seem not to be at play in determining the allocation of fiscal transfers. Indeed, we find a negative and significant coefficient associated with our indicator of fiscal incapacity indicating that poorer local governments receive smaller intergovernmental transfers. This result is consistent with most empirical studies (Kraemer, 1997, Alm and Boex, 2002, Wallis, 1998, Meyer and Naka, 1999). Estimation results support the hypothesis that expenditure needs have an effect on transfer allocation. Indeed, the urbanization rate is negatively correlated with fiscal transfers suggesting that transfers alleviate special rural problems. However, population density, used to measure the per capita cost of providing local public goods, seems to be positively correlated with fiscal transfers, probably capturing urban needs since a higher degree of urbanization is generally associated with higher population density.

Is the allocation of fiscal transfers also guided by political logic despite the formula-based system? Our results actually suggest that normative guidance is not the only motivation that determines the distribution of grants across *communes*. First, as regards electoral concerns, while supporter *communes* do not appear to receive more transfers, greater resources seem to be provided to local governments that are more swing. Indeed, coefficient associated with our proxy for swing *communes* is always negative and significant at 1% level. Contrary to the findings of Case (2001) and Miguel and Zaidi (2003), the center does not seem to target more resources to its supporters. Transfers are not targeted to areas in which political support is concentrated to maximize return in terms of votes, as predicted by Cox (1986). Our result is closer to Cole (2009), who finds that politicians, who care about winning election, target swing jurisdictions. It also reinforces the findings of Banful (2010) suggesting that swing districts can be targeted in an African context. We cannot clearly confirm the predictions of Worthington and Dollery (1998). Indeed, the year before national election is negatively but not always significantly correlated with grants and coefficient associated with the year before local elections is positive but rarely significant. Second, other political and ethnic considerations play important roles in the distribution of per capita transfers across *communes*. This last point is confirmed by the positive association between transfers and political economy determinants such as representatives in parliament, population and ethnic fractionalization. Indeed, greater representation per voter seems actually to result in greater per capita transfers, which is consistent with empirical findings in the literature (Wright, 1974, Porto and Sanguinetti, 2001, Khemani, 2007).

weight matrix, biased standard errors, and incorrect overidentification tests. With the Hansen test and AR(2) test, we conclude that orthogonality conditions are respected.

Population is generally negatively and significantly correlated with fiscal transfers, probably denoting a disproportionate lobbying power of smaller *communes*. Beyond the effect of political considerations, ethnic fractionalization is positively correlated with per capita fiscal transfers. It indicates that the central government may use transfers as a pacification instrument as Treisman (1996) suggested.

Our results are robust to the introduction of a trend variable, a cluster department and year dummies. Moreover, the impact of fiscal incapacity remains negative when we correct for potential simultaneity bias and our conclusions do not change when we use alternative indicators of political affiliation and ethnic fractionalization. Finally, our findings are similar when we consider the dynamic model even if the lagged dependant variable appears to be not significant, which is not surprising in a context of developing country where central transfers are instable.

5.4 Conclusion

This paper exploits an original public finance panel data allowing us to test political economy theories of fiscal transfers for a developing country, Senegal. The estimation of a panel data for 67 *communes* from 1997 to 2009 suggests that the allocation system in Senegal does not conform to the dictates of normative theory. In particular, equity concerns do not appear to affect the allocation of intergovernmental fiscal transfers. On the contrary, wealthier local governments seem to receive greater intergovernmental transfers. Moreover, our results tend to show that the allocation of transfers follows a tactical redistribution by targeting swing *communes* and to confirm that local governments with more political power receive larger transfers. The Senegalese case also emphasizes the importance of ethnic considerations and the fact that the central government may use transfers as a tactical instrument to pacify fractionalized areas.

Our findings are consistent with those observed in other countries. Indeed, intergovernmental transfers are generally allocated in a needs-equalizing way but are counter-equalizing when it comes to fiscal capacity, and political economy factors are consistently a driving force in determining the distribution of intergovernmental fiscal transfers.

Our work adds to empirical evidence from around the world that has shown several instances in which politicians in central government make fiscal decisions by optimizing their electoral objectives and being influenced by political factors beyond economic considerations. It shows that results found for developed countries can actually be observed for a developing country. This study also highlights that an allocation system based on a formula can be insufficient to eliminate politically motivated allocation of transfers. Eliminating discretion seems to require

more than a formula. Delegating responsibility for the distribution of resources across local governments to an independent agency could help to mitigate such distortions (Khemani, 2007).

5.5 Appendix

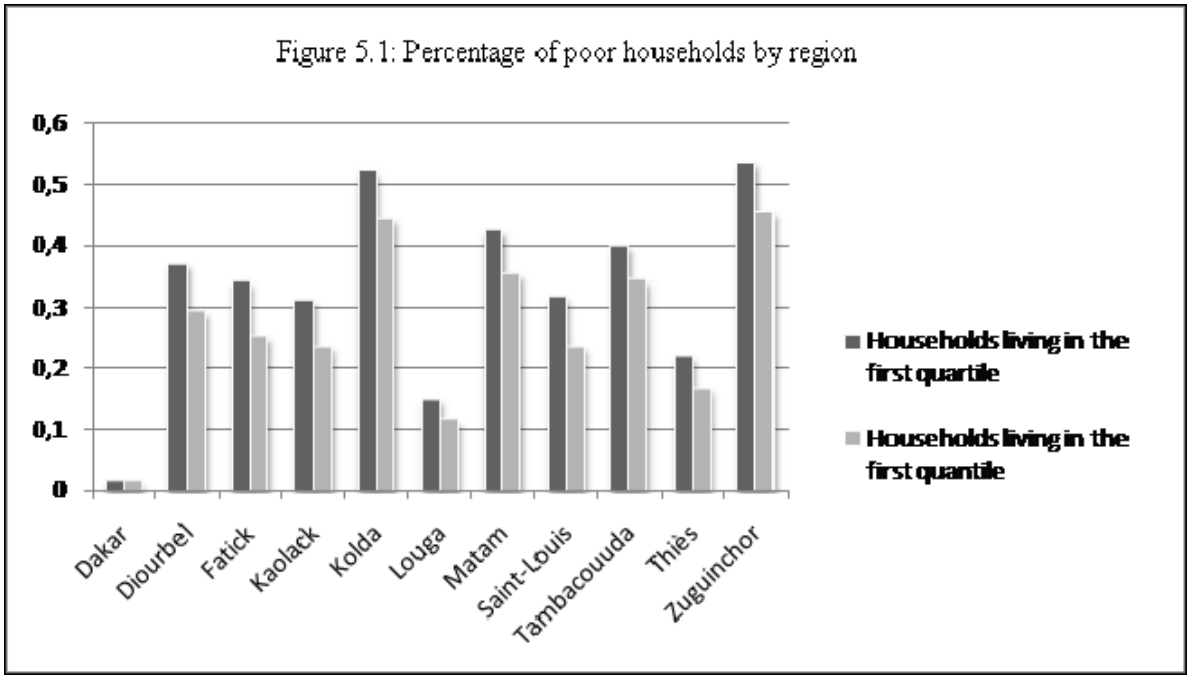

Figure 5.1: Percentage of poor households by region

Table 5.1: Local revenue of Senegalese *communes* (thousand FCFA)

Years	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Global local revenue	18,732	14,662	36,736	21,189	26,000	27,885	35,419	37,982	43,601	47,443	44,629,219	49,422,824
Non-tax own-revenue	3,758	4,791	6,361	3,018	4,223	4,919	7,690	5,899	6,429	6,551	4,532,498	4,632,061
% of global local revenue	0.20	0.33	0.17	0.14	0.16	0.18	0.22	0.16	0.15	0.14	0.10	0.09
Tax own-revenue	11,975	7,157	24,249	13,799	17,066	17,516	21,100	23,182	29,131	30,218	32,404,777	28,507,351
% of global local revenue	0.64	0.49	0.66	0.65	0.66	0.63	0.60	0.61	0.67	0.64	0.73	0.58
Total transfers	2,736	2,119	4,539	2,799	3,051	3,120	3,465	5,466	4,307	4,939	5,162,657	5,548,490
% of global local revenue	0.15	0.14	0.12	0.13	0.12	0.11	0.10	0.14	0.10	0.10	0.12	0.11
with central transfers	2,733	2,073	3,549	1,935	2,763	2,705	2,647	4,711	3,525	4,092	4,263,776	4,916,264
% of global local revenue	0.14	0.14	0.10	0.09	0.11	0.10	0.07	0.12	0.08	0.09	0.10	0.10
Other resources	263	594	1,585	1,571	1,658	2,329	3,163	3,433	3,732	5,733	2,529,285	10,734,921
% of global local revenue	0.01	0.04	0.05	0.08	0.06	0.08	0.08	0.09	0.08	0.12	0.05	0.21

Table 5.2: Determinants of the horizontal allocation of per capita local government transfers

Variables	Indicator used
Central transfers	T_{it} , per capita amount of transfers received by a *commune* i on year t.
Normative factors	
Fiscal incapacity	We evaluate the revenue incapacity, RI_{dt} , using the DHS Wealth Index (see section 5.3.3) in department d on year t.
Expenditure needs	U_{dt} , the urbanization rate in department d on year t, defined as the percentage of population living in urban area, D_{it} , the population density in *commune* i on year t.
Electoral concerns	
Patronage	PA_{it} , a dummy variable which takes the value one if *commune* i has the same political affiliation as the president. We consider alternately PS_{it}, the score of the president in office at the previous local election.
Tactical distribution	DV_{it} measures the difference in vote shares expressed in absolute values between the central government party and its main opponent, in the last local election in each *commune*.
Opportunistic cycles	EN_{t-1} and EL_{t-1} are dummy variables, which take the value one the year before of national and local election.
Other political factors	
Political representation	N_{it}, the number of representatives in parliament by department d on year t.
Population size	P_{it} , the population size of the jurisdiction i on year t.
Ethnical factors	EF_{it} , the ethnic fractionalization in *communes* i on year t defined as the probability that two individuals randomly drawn from a jurisdiction are from different ethnic group. We also consider alternative indicator by using ethnic polarization, EP_{it}.

Table 5.3: The DHS Wealth Index : rural (ru), urban (urb) and national (na) indexes

Only rural	ru	Only urban	urb	Both but different effects	ru	urb	Both and similar effects	ru	urb	na
Plough	+0.30	Refrigerator	+0.28	Sheep	+0.29	-0.09	Radio	+0.20	+0.11	+0.12
Horse	+0.33	Telephone	+0.25	Poultry	+0.15	-0.003	Television	+0.21	+0.09	+0.34
Cow	+0.25	Antenne 5 tv	+0.27	Bicycle	+0.04	-0.04	Cell phone	+0.21	+0.22	+0.28
Donkey	+0.27	Canal tv	+0.04				Cooker	+0.07	+0.14	+0.19
Hand cart	+0.40	Washing machine	+0.26				Motorcycle /scooter	+0.13	+0.04	+0.07
		Video	+0.12				Car /truck	+0.14	+0.18	+0.17
		Air-conditioner	+0.14				Commercial van/truck	+0.08	+0.05	+0.05
		Computer	+0.06				Boat	-0.04	-0.003	-0.01
		Internet access	+0.03				Source of drinking water	-0.03	-0.18	-0.26
							Time to get to drinking water	-0.001	-0.06	-0.07
							Type of toilet facility	-0.08	-0.20	-0.29
							Has electricity	+0.12	+0.29	+0.37
							Share toilet with others	-0.05	-0.07	-0.04
							Means of sewage disposal	-0.03	-0.22	-0.29
							Means of disposing of water	-0.005	-0.21	-0.24
							Frequency of water outages	+0.03	+0.10	+0.17
							Duration of water outages	+0.02	+0.07	+0.12
							Main material of the floor	+0.14	+0.17	+0.30
							Type of cooking fuel	-0.07	-0.10	-0.07
							Have bednet for sleeping	+0.02	+0.06	+0.03
							Place for hand washing	-0.04	-0.07	-0.10
							Items present : water tap	+0.10	+0.15	+0.19
							Items present : soap	+0.08	+0.14	+0.22
							Items present : basin	+0.08	+0.01	+0.04
							Number of rooms for sleeping	+0.32	+0.12	+0.04

Table 5.4: Profile of a household who belongs to the first quintile in 2005

	Mean		Mean
Plough	0.09	Motorcycle /scooter	0.01
Horse	0.07	Car /truck	0.001
Cow	0.11	Commercial van/truck	0.002
Donkey	0.13	Boat	0.04
Hand cart	0.04	Source of drinking water	20.39
Refrigerator	0.01	Time to get to drinking water	49.92
Telephone	0.01	Type of toilet facility	25.24
Antenne 5 tv	0.001	Has electricity	0.07
Canal tv	0.001	Share toilet with others	0.22
Washing machine	0.001	Means of sewage disposal	4.15
Video	0.003	Means of disposing of water	6.92
Air-conditioner	0.002	Frequency of water outages	0.84
Computer	0.003	Duration of water outages	0.41
Internet access	0	Main material of the floor	18.10
Sheep	0.41	Type of cooking fuel	9.27
Poultry	0.59	Have bednet for sleeping	0.41
Bicycle	0.15	Place for hand washing	1.31
Radio	0.71	Items present : water tap	0.50
Television	0.03	Items present : soap	0.28
Cell phone	0.06	Items present : basin	0.55
Cooker	0.11	Number of rooms for sleeping	2.61

Table 5.5: Estimation results - Fixed effects vector decomposition and GMM-System

Dep. var.: Per cap. transfers		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Lagged dependant variable							0.060
								(0.04)
Normative factors	Urbanization rate, U_{dt}	-0.025***	-0.017***	-0.017***	-0.010**	-0.015***	-0.016***	-0.014***
		(0.006)	(0.001)	(0.003)	(0.004)	(0.004)	(0.001)	(0.004)
	Population density, D_{it}	0.539**	0.177*	0.177**	0.180**	0.162**	0.045	0.194*
		(0.19)	(0.11)	(0.06)	(0.07)	(0.07)	(0.04)	(0.10)
	Revenue incapacity, RI_{dt}	-3.185***	-1.287***	-1.287**	-0.853*	-0.732*	-0.314*	-1.771**
		(0.81)	(0.46)	(0.52)	(0.46)	(0.24)	(0.21)	(0.89)
Electoral concerns	Political affiliation, PA_{it}	0.139	0.065	0.065	0.001	0.015	0.116	0.364
		(0.15)	(0.11)	(0.06)	(0.01)	(0.08)	(0.08)	(0.23)
	Difference in vote shares, DV_{it}	-1.526***	-1.390***	-1.390***	-1.531***	-1.522***	-1.134***	-1.721***
		(0.27)	(0.21)	(0.11)	(0.10)	(0.16)	(0.26)	(0.70)
	National elections, EN_{t-1}	-2.161	-3.166	-3.166***	-3.166***	-3.174***	-	-3.243***
		(3.46)	(2.23)	(0.45)	(0.45)	(0.50)		(0.13)
	Local elections, EL_{t-1}	1.540	0.268	0.268	0.268	0.377	-	0.459**
		(3.75)	(0.64)	(0.37)	(0.37)	(0.38)		(0.19)
Political factors	Representatives, N_{it}	2.234***	1.057**	1.057***	1.079***	0.971**	0.372***	1.406***
		(0.58)	(0.38)	(0.39)	(0.40)	(0.38)	(0.06)	(0.24)
	Population size, P_{it}	-0.283***	-0.172**	-0.172***	-0.177***	-0.160***	-0.046	-0.309***
		(0.07)	(0.05)	(0.04)	(0.03)	(0.04)	(0.04)	(0.08)
	Ethnic fract., EF_{it}	2.429***	1.913***	1.915***	2.420***	1.927***	1.818***	1.674*
		(0.37)	(0.44)	(0.34)	(0.72)	(0.32)	(0.31)	(1.07)
	Trend variable T_t	-	1.339***	1.339***	1.339***	1.385***	-	1.360***
			(0.49)	(0.12)	(0.12)	(0.13)		(0.04)
	Residual of the 2^{nd} stage	1.397**	1.000***	1.000***	1.00***	1.00***	1.00***	-
		(0.39)	(0.19)	(0.20)	(0.19)	(0.20)	(0.05)	
	Constant	-2.910	-11.14***	-11.14***	-12.61***	-11.72***	-	-11.316***
		(2.56)	(2.11)	(0.96)	(1..41)	(1.06)		(1.23)
	Number of observations	351	351	351	351	331	351	283
	Adjusted R^2 [AR(2) test for (7)]	0.70	0.80	0.80	0.80	0.80	0.96	0.430
	F-Statistic [Hansen test for (7)]	34.82	50.73	140.07	281.39	6473.35	968.43	0.890
	Cluster	no	no	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Partie IV

Décentralisation et bien-être

Décentralisation et bien-être

Si un certain nombre d'études se sont attachées à évaluer l'efficacité de la décentralisation à améliorer la fourniture des services publics et le bien-être des populations (Robalino, Picazo, et Voetberg, 2001, Faguet, 2004, Enikolopov et Zhuravskaya, 2007 et Azfar et Livingston, 2010), ces dernières n'ont, à notre connaissance, pas concerné les pays d'Afrique de l'Ouest qui ont pourtant largement participé à ce mouvement de décentralisation.

Cette dernière partie a pour objectif d'évaluer l'effet de la décentralisation sur des indicateurs de bien-être, essentiellement de santé et d'éducation, à partir d'enquêtes réalisées sur les conditions de vie des ménages au Bénin (chapitre 6).

Dans le chapitre 6, nous analysons l'effet moyen et distributionnel du transfert de compétences aux gouvernements locaux, les communes, sur l'accès des populations aux services de base : l'eau, les toilettes, le traitement des ordures ménagères et eaux usées, et l'éducation primaire. Pour cela, nous combinons différentes bases de données de panel au niveau microéconomique. En effet, en plus des données sur les finances publiques locales, nous utilisons les Enquêtes Modulaires Intégrées sur les Conditions de Vie des ménages 2006 et 2007 qui ont la particularité d'être représentatives au niveau communal permettant alors la mesure d'indicateurs agrégés et distributionnels à ce niveau. Ainsi, à partir de la construction d'un panel de 77 communes de 2006 à 2007, nous nous attachons à répondre aux trois questions suivantes : (1) Dans quelle mesure la décentralisation, mesurée comme la part des recettes locales propres dans le total des ressources budgétaires pour chaque commune, affecte-t-elle l'accès aux services de base ? Cet effet est-il monotone avec le degré de décentralisation ? (2) La décentralisation impacte-t-elle différemment les communes selon leur niveau de richesse ? (3) La décentralisation réduit-elle les inégalités d'accès aux services de base à l'intérieur des communes ? Prenant en compte la potentielle endogénéité du degré de décentralisation, l'hétérogénéité des gouvernements locaux et l'inefficience de l'estimation de l'effet des variables ayant peu de variance temporelle, notre analyse tend à montrer que la décentralisation facilite, en moyenne, l'accès aux services de base. Cependant, nos estimations mettent également en évidence un impact non-monotone du degré de décentralisation, qui suit la forme d'une courbe en cloche, révélant l'importance d'un niveau minimum de transferts. La décentralisation affecte également de manière hétérogène les communes : si elle bénéficie aux communes suffisamment riches, son effet devient négatif pour les plus pauvres d'entre elles. De plus, le transfert de compétences au niveau local semble avoir accru les inégalités d'accès aux services de base entre les ménages à l'intérieur des communes, et ce particulièrement dans les zones les plus pauvres. Ces résultats corroborent ceux de Galiani, Gertler, et Schargrodsky (2008) qui concluent que la décentralisation est bénéfique

pour les populations des zones les plus riches mais détériore la situation dans les juridictions déjà défavorisées, considérant que les populations des juridictions les plus pauvres n'ont pas les moyens de défendre leurs préférences. Ainsi, si la décentralisation apparaît comme étant une politique efficace pour réduire la pauvreté par l'amélioration de l'accès moyen aux services de base, elle semble aussi accroître les inégalités inter et intra-juridictionnelles.

La partie IV est constituée d'un seul chapitre (chapitre 6), fruit d'une collaboration avec Martial Foucault et Grégoire Rota-Graziosi dans le cadre du projet NBER "*African Successes*", qui s'intitule "*Does decentralization facilitate access to poverty-related services? Evidence from Benin*".

Chapitre 6

"Does decentralization facilitate access to poverty-related services? Evidence from Benin"*

Abstract

In this paper, we analyze the average and distributional effects of decentralization on the access to some poverty-related public services in Benin. Estimating a panel data of 77 local governments, called *communes*, for 2006 and 2007, our study suggests that decentralization has a positive overall effect on the access to basic services. However, this effect appears to be non-monotone following an inverted U-shaped curve. Moreover, it varies according to *communes*' wealth: it is positive for sufficiently wealthy *communes* and may be negative for the poorest ones. We also highlight that decentralization may increase intra-jurisdictional inequalities especially within the poorest areas. Decentralization in Benin contributes successfully to reduce poverty by improving the average access to poverty-related services. But, the devil is in the details and decentralization seems to increase inequality in terms of access within and between *communes*.

* This chapter is a version of a paper co-authored with Martial Foucault and Grégoire Rota-Graziosi for the NBER "African Successes".

6.1 Introduction

Over the past two decades, decentralization has been implemented by many developing countries, becoming a key element of the public-sector reform. In developing countries, decentralization is one of the main institutional reforms on international organizations and donors' agenda to enhance public governance and ultimately to reduce poverty. This strategy has been in place for a number of years and now seems an appropriate time to examine the extent to which this institutional transformation has been successful to fight poverty in sub-Saharan Africa.

With this objective in mind, this paper analyzes the effect of decentralization in Benin on access to some poverty-related services, namely water, sanitation, refuse and sewage disposal, and primary education. Poverty is a multidimensional issue and basic health and education services are fundamental human rights.[159] Decentralization is by definition a transfer of competencies to local governments, mostly in the education and health sectors. These services do not exactly correspond to the Samuelsonian definition of pure public good (non-excludability and non-rivalry). However, local and central governments share the responsibility for meeting fundamental rights in education and health. Whatever the means of producing such basic services and the nature of relationships with providers, local decision-makers remain, in the last resort, politically responsible (World-Bank, 2004) for achieving improvements in access to drinking water, sanitation, and primary education. In a sense, our argument rests on how decentralization facilitates access to high quality services rather than on an investigation of how well publicly provided local goods are delivered.

In regard to its democratization and decentralization processes, Benin is representative of the African French-speaking countries. An ethnically fragmented country that has been politically stable only since 2001, Benin began a transfer of competencies or authority to 77 local governments, called *communes*, in 1998. The decentralization process definitively took off with municipal elections in 2002. Our analysis focuses on the 2006-2007 period, which corresponds to a crucial time for democracy in Benin, with the 2006 national elections bringing Yayi Boni to power in place of Mathieu Kerekou, who had ruled the country for 29 years.

By analyzing panel data from 77 Beninese *communes* for 2006 and 2007, we aim to shed light on the three following issues: (1) To what extent does decentralization, measured as the share of local own revenue in total local revenue for each *commune*, affect access to basic public services? Is this effect monotone with the degree of decentralization? (2) Does the decentralization effect vary between *communes* according to their wealth? (3) How does decentralization affect

[159] Articles 25 and 26 of the Universal Declaration of Human Rights.

households' equality of access to poverty-related services within *communes*? To answer these questions, we use original micro-level public finance panel data from a sub-Saharan country. In addition to local public finance data, we use the 2006 and 2007 Integrated Modular Survey on Household Living Conditions (EMICoV), which covers a sample of 18,000 Beninese households throughout the entire national territory and is representative at the *commune* level, allowing us to measure aggregated and distributional indicators. Moreover, we employ a consistent econometric method taking into account potential endogeneity in the degree of decentralization, heterogeneity of local governments, and inefficiency in estimating the effect of variables having little within variance.

Our analysis suggests that, on average, decentralization positively affects access to basic public services. However, not only is this effect non-monotone, following an inverted U-shaped curve, but between and within effects reveal heterogeneous effects on *communes*. Decentralization's effect on access to poverty-related services is positive for sufficiently wealthy *communes* (measured by higher quintiles of an asset-based measure of wealth) and becomes negative for the poorest ones. We emphasize that decentralization may also increase households' inequalities (measured in terms of public services access), especially within the poorest jurisdictions. Therefore, although decentralization succeeds in reducing nonmonetary poverty in Benin by improving access to some basic services, the pitfall of higher inequalities between and within *communes* remains.

The paper is structured as follows: section 6.2 presents a review of the literature on the impact of decentralization on service delivery and human development indicators in developing countries; section 6.3 portrays the process of decentralization in Benin; section 6.4 describes our econometric framework; Section 6.5 presents the average and distributional impact results. Section 6.6 concludes.

6.2 The impact of decentralization on services delivery and human development indicators: A review of the literature

A huge literature in economics has focused on decentralization in developing countries. A brief review of this literature addresses the strengths and weaknesses of such a strategy to reduce poverty, or at least to increase the efficiency of public goods provision. Many benefits of decentralization are claimed in the fiscal federalism literature, most of them related to the fact that decentralization brings decisions closer to citizens, alleviating information asymmetries and improving local governments' accountability. The fiscal federalism literature has largely

stressed the economic efficiency of intergovernmental competition for providing local public goods. If such a normative prescription seems to fit well with developed countries, this issue remains more complex for developing countries where the "voting by feet" mechanism is not so relevant. Thus, the logic of decentralization raises some intriguing issues in developing countries that we can summarize around two perspectives: (a) Why does decentralization entail a better provision of local public goods? (b) What are the limits of decentralization in such countries given their institutional and geographical constraints? In addition to these issues, our paper emphasizes some benefits of decentralization related to the positive influence of institutions on poverty reduction in French-speaking African countries.[160]

A demand-side argument in favor of decentralization is derived from the existence of information asymmetries. Indeed, the seminal idea that decentralization may improve the provision of public services when local governments have an informational advantage goes back at least as far as Hayek (1948) and Oates (1972). Since local decision-makers have a better knowledge of local preferences, decentralization is expected to improve the level and quality of public services. This informational gain may induce a better targeting of the poorest populations in a country (see for instance Alderman (2002) in Albania, Bardhan and Mookherjee (2005) in West Bengal or Galasso and Ravallion (2005a) in Bangladesh).

On the supply side, decentralization should enhance the accountability of policymakers. Decentralization allows for a better provision of public goods and a better matching between public policies and local needs. Several authors established such a link: Bird and Rodriguez (1999) in the Philippines (health, primary education, housing, and infrastructure), Faguet (2004) in Bolivia (education and social services), Galiani, Gertler, and Schargrodsky (2008) in Argentina (education), Robalino, Picazo, and Voetberg (2001) on a panel of low and high income countries from 1970 to 1995 (mortality rate), Enikolopov and Zhuravskaya (2007) on 75 developing and transition countries for 25 years (DPT immunization[161], infant mortality, illiteracy rate, and pupil-to-teacher ratio). Other studies mitigated the impact of decentralization. For instance, Azfar and Livingston (2010) find little evidence of better provision of government services by local governments in Uganda; for Winkler and Rounds (1996), the transfer of education competencies in Chile reduced the scores of cognitive tests.

Beyond improving the matching of public policies with local preferences, decentralization is also considered as an essential support of democratization. Thus the governance of local

[160] An important literature has been devoted to analyzing the benefits of decentralization on human development indicators in the context of the Millennium Objectives. The final impact of decentralization on growth has been studied, for instance, by Zhang and fu Zou (1998), Wollera and Phillips (1998), Davoodi, Xie, and Zou (1999), Lin and Liu (2000), Akai and Sakata (2002), and Martinez-Vazquez and McNab (2003)...

[161] Diphtheria, Pertussis and Tetanus.

public goods is expected to strengthen accountability under the strong assumption of well-informed voters, mobility of citizens, and participation into the political market Seabright (1996) compares allocations of power to local and central governments as alternative means of motivating governments to act in the interests of citizens, and shows that although centralization entails benefits from policy coordination, it also induces some costs in terms of diminishing accountability. Conversely, interjurisdictional competition may enhance accountability: local citizens encourage incumbents to increase the efficiency of public spending through a "vote with feet" (Tiebout, 1956) or a "yardstick competition" (Salmon, 1987, Besley and Case, 1995).[162] Few studies have examined the relevance of this phenomenon in developing countries: Arze, Martinez-Vasquez, and Puwanti (2008) suggest the existence of yardstick competition between local governments in Indonesia; Caldeira, Foucault, and Rota-Graziosi (2008) establish the existence of strategic interactions between Beninese *communes* whose public spending appear as strategic complements.

By expanding the decision space of local governments, decentralization may increase corruption. Bardhan and Mookherjee (2000) point out the theoretical ambiguity of the importance of relative capture at the local and national levels. Huther and Shah (1998), Barenstein and de Mello (2001), and Fisman and Gatti (2002) find a negative relationship between fiscal decentralization and corruption for several panels of countries.[163] In contrast, Reinikka and Svensson (2004) highlight the capture of school grants by local officials in Uganda. At the macroeconomic level, Treisman (2000) and Fan, Lin, and Treisman (2009) conclude that federal states are more corrupt. Using data on 154 countries, Treisman (2000) also suggests that more tiers of government induce higher perceived corruption, less effective provision of public health services, and lower adult literacy, especially in developing countries. Prud'homme (1995) stresses several additional pitfalls of decentralization in developing countries, namely the increase in interjurisdictional disparities, the jeopardizing of macroeconomic stability, the ethnical bias of local elections, and low capacities of local bureaucracies.

Another supply-side argument against decentralization concerns the risk of diseconomies of scale or at least a loss of scale economies. However, many of the public goods in question are community- and site-specific, and it is often possible to exclude nonresidents. Rural

[162] Citizens can vote with their feet, that is, move to a nearby jurisdiction to obtain the public service-tax package they prefer so that local governments compete to attract people and increase their tax bases. Even in the absence of population mobility, in the context of informational asymmetries between voters and politicians, voters can use the performance cues of other governments as a benchmark to judge whether their representative wastes resources and deserves to remain in office. Thus, an action chosen by a politician in one jurisdiction affects the informational set of imperfectly informed voters in other jurisdictions forcing neighboring politicians to compete in order not to be signaled as bad incumbents and to remain in office.

[163] Fisman and Gatti (2002) use legal origin as an instrument for decentralization.

communities of poor countries, in particular, are often face-to-face, and social norms sharply distinguish "outsiders" from "insiders," especially with respect to entitlement to community services (Bardhan, 2002).

Finally, decentralization is generally viewed as a trade-off between autonomy and accountability, between costs of coordination and better provision of public goods, and between preference matching and externalities. Besley and Coate (2003) and Lockwood (2002) confirm Oates' insights by showing that the relative performance of centralized and decentralized provision of public goods depends upon spillovers and differences in tastes for public spending between jurisdictions.[164]

To our knowledge, no attention has been paid to the consequences of decentralization on well-being conditions in French-speaking African countries. Our paper fills this gap by focusing on Benin where micro-data (households) and macro-data (local public finance) have been combined for the first time.

6.3 An overview of Benin and its decentralization process

In January 1999, the Law 97-029 defined the transferred competencies from the central government to the 77 *communes*. Their scope is large from elementary school to economic development and includes transport infrastructure, environment, health, social goods, tourism, security, and cultural activities. We may distinguish four kinds of competencies: exclusive local competencies, shared competencies, delegated competencies, and specific competencies. For delegated competencies local jurisdictions act as a representative of the central state. Specific competencies concern some *communes* that have a particular status (Cotonou, Porto-Novo, and Parakou). Table 6.1 summarizes these competencies. The distinction between shared and exclusive local competencies is largely subjective linked to our interpretation of the relevant law and of observed practices in this country. First, the transfer of competencies is obviously progressive and may take some time. For instance, the effective role of *communes* in water and sanitation is limited. The SONEB (Société Nationale des Eaux du Bénin) is a public enterprise still in charge of drinking water supply and sewage disposal in urban areas. A deconcentrated service, the General Direction of Water, remains essential in rural areas. Secondly, some competencies as primary education require some technical and financial support from the central government.

[164] Competition among jurisdictions to attract mobile capital is a way to discipline governments, motivating them to invest more in infrastructure, reduce waste and corruption, and spend less on non-productive public goods. But, Cai and Treisman (2005) emphasize that the required assumptions (perfect mobility, perfect local autonomy...) are often unrealistic, and capital mobility may even weaken discipline of the poorly-endowed units.

Table 6.1: Beninese *communes*' competencies

Type of competencies
Exclusive local competencies
Transport infrastructure: maintenance of local roads, public lightings.
Shared competencies
Hygiene conditions: sewage and refuse disposal (latrines, septic tanks...), drinking water.
Education: construction and maintenance of public primary schools, adult literacy, cultural public infrastructures, sports, and leisure.
Delegated competencies
Public records office, security, publication and application of laws.
Specific competences
Secondary schools, security, communication.

Source: Law N°97-029 of Benin Republic, January 15$^{\text{th}}$, 1999.

Transfer of competencies needs some resources transfers. Table 6.2 presents Beninese *communes'* revenue distinguishing local own-revenue (tax and non-tax) and other local revenue (central conditional and unconditional grants, external transfers and, loans and advances) over the period 2006-2007. Beninese *communes* are characterized by a low average level of per capita revenue with about 2200 FCFA (US $4.7). Moreover important inequalities exist among *communes*: the revenue per capita of the twenty poorest *communes* represent only 50 per cent of the five richest ones. Local governments' revenues differ also by their composition. For instance, Parakou and Porto-Novo with similar per capita revenue (6500 FCFA) have 50 and 35 percent of local own-revenue, respectively.

Table 6.2: Average composition of Beninese *communes* per capita revenue (FCFA)

	Average level per capita	% of total resources
Total local revenue	2175	100%
Own-revenue	**1137**	**52%**
Local non-tax own-revenue	623	29%
Local tax own-revenue	514	23%
Other local revenue	**1038**	**48%**
Unconditional central grants	225	11%
Conditional central grants	571	26%
External transfers	225	10%
Loans and advances	17	1%

Source: Beninese Ministry of Finance and Economy.

6.4 Econometric framework

In this section, we present our empirical strategy. We first test the average effect of decentralization on access to poverty-related services. We then assess its distributional effect between and within jurisdictions by distinguishing *communes* according to their wealth and by considering Gini coefficients of services access in the *communes*.

6.4.1 Data and empirical models

We use several sources of information. The Beninese Ministry of Finances and Economy provided us with the *communes*' budget. The 2006 and 2007 Integrated Modular Surveys on Household Living Conditions (EMICoV) contain information concerning individual education level, household consumption and wealth, and access to several local public goods. They cover a sample of 18,000 Beninese households across the entire national territory. The sample includes 7,440 urban households and 10,560 rural households.[165] The main originality of these surveys lies in their representative character at the *commune* level, allowing us to measure aggregated and distributional indicators at the study level as described below. Data concerning population, urbanization rate, and ethnic fragmentation are drawn from *General Population and Housing Census* in Benin (1992 and 2002) and 77 *communes*' monographs provided by the European Union (*Programme d'Appui au Démarrage des Communes*).

Testing the average effect of decentralization on the access to basic services

Our empirical analysis focuses on universal basic needs, setting aside any normative considerations in terms of welfare. It appears more relevant to study actual access to public services than ultimate effects on individual well-being, which may depend on many factors outside local governments' control. We consider several basic services: toilet facilities, water access, refuse and sewage disposal, and primary education. Table 6.3 gives the detailed list of indicators, denoted by Y_{it}, for each kind of service.

[165] This sample is a stratified sample selected in two stages: stratification was achieved by separating every *commune* into urban and rural areas.

Table 6.3: Indicators of basic services access

Basic services, Y_{it}	Indicators
Toilet facilities	
	- Share of households having access to a toilet or latrine facility, $STOil_{it}$.
	- Type of toilet facility (no facility, bucket/pan, latrine with composting, suspension latrine, non-flagged pit latrine, non-ventilated pit latrine, ventilated pit latrine, own flush toilet, flush toilet), $TToil_{it}$.
Water access	
	- Share of households having access to drinking water, $SWat_{it}$.
	- Source of drinking water (rainwater, rainwater in tanker truck, river, pond, protected spring, non-protected well, protected well, borehole with manual pump, borehole with automatic pump, public tap, piped somewhere, piped into residence), $TWat_{it}$.
Refuse disposal	
	- Share of households having access to refuse disposal facilities, $SGarb_{it}$.
	-Type of refuse disposal (nature, courtyard, burning, burying, rubbish dump, collection truck (NGO), collection truck (public)), $TGarb_{it}$.
Sewage disposal	
	- Share of households having access to sewage disposal facilities, $SSew_{it}$.
	- Type of sewage disposal (nature, courtyard, well, grid/downstream, open pipe waste, covered pipe waste, draining), $TSew_{it}$.
Primary education	
	- Primary school enrollment for children aged 6 to 11, SE_{it}.

Source: EMICoV surveys, 2006 and 2007.

These indicators are all measured from the EMICoV surveys at the household level except for education indicators, which require individual data. To assess public services access we use two indicators: the first measures the share of households or individuals having access to the service (*quantity*); and the second reflects the qualitative scale of the provided service (*quality).* The last variable uses all available information, allowing us to better understand the effect of decentralization.

To better understand how quantitative and qualitative variables have been computed, let us describe the indicator of toilet facilities. The EMICoV survey provides the share of households having access to a toilet. On average, 23.7 percent of Beninese households have a toilet facility (Table 6.4, Appendix 6.7.2). The quality of the toilet measured by the scale takes the value 1 for no facility to 9 for flush toilet. Using responses from EMICoV respondents, we compute an average index at the *commune* level which indicates that households in only one *commune*

have no toilet facilities and ten percent of people have at least a non-flagged pit latrine. The same procedure applies for the four other indicators. Combining consolidated household data on services access to local public finance therefore offers a new avenue for evaluating the impact of decentralization, which we explore in the Beninese case.

The degree of decentralization, denoted by D_{it}, is the share of local own-revenue in *commune*'s total revenue. This measure is used in the literature as an indicator of financial autonomy and also allows us to approximate the accountability of local governments. Indeed, while central transfers are often opaque to the taxpayers, who are then unable to judge the efficiency of local policies, the link between local taxes and local public services provided is more immediate and may constitute an incentive for local officials to improve their efficiency.

We add several control variables. Time dummies, denoted by t_t, control for omitted explanatory variables that vary over time, but remain constant between *communes,* and can influence the share of local governments' own-revenue. We also control for explanatory variables that may be correlated with the degree of decentralization and that vary across both *communes* and time. Since we consider the effect of local revenues' composition and not the impact of local public spending itself, we introduce *communes'* per capita public spending, denoted by G_{it}. We then are able to see if a higher degree of decentralization affects the efficiency of local policies, given the level of local public spending. This control variable is essential because *communes*' public spending affect the level of received transfers, the measured degree of decentralization, and the access to basic services.[166] For similar reasons we introduce per capita consumption, denoted by C_{it} (measured by an index of about 1,200 commodities and services).[167] Jurisdiction population size (Po_{it}) and population density (De_{it}) allow us to capture, respectively, over-representation of smaller jurisdictions and some scale economy in the provision of studied public goods. We also consider urbanization rate, denoted by U_{it}, since urban areas generally offer better access to basic services and have higher fiscal capacities, especially in terms of property tax base. Finally, ethnic fragmentation, denoted by F_{it},[168] may be correlated with the degree of decentralization and affects the provision of public goods in quantity and quality (Alesina and Ferrara, 2005).

The following regression assesses the average impact of decentralization on access to basic

[166] Although the pursuit of an equitable allocation of resources would lead one to expect a pro-poor allocation of transfers across jurisdictions, most empirical studies (Wallis, 1998, Meyer and Naka, 1999 or Alm and Boex, 2002) find that wealthier local governments receive greater intergovernmental transfers, indicating that political considerations outweigh those of equity.

[167] Provided by the EMICOV surveys.

[168] Ethnic fragmentation in *commune* i on year t is defined as the probability that two individuals randomly drawn from the *commune* are from different ethnic groups.

services:[169]

$$Y_{it} = \beta D_{it} + \theta G_{it} + \gamma C_{it} + \rho Po_{it} + \tau De_{it} + \omega U_{it} + \psi F_{it} + t_t + \varepsilon_{it}, \tag{52}$$

We also consider a non-monotone effect of the degree of decentralization by introducing its quadratic term $\left(D_{it}^2\right)$:

$$Y_{it} = \beta_1 D_{it} + \beta_2 D_{it}^2 + \theta G_{it} + \gamma C_{it} + \rho Po_{it} + \tau De_{it} + \omega U_{it} + \psi F_{it} + t_t + \varepsilon_{it}. \tag{53}$$

A heterogeneous effect between and within *communes*

In addition to the average impact of decentralization on access to public services, we study its effect by distinguishing *communes* by their wealth. This analysis allows us to assess the overall impact of decentralization on inter-*commune* inequalities in terms of access to basic services. We obtain the following regression:

$$\begin{aligned} Y_{it} = \quad & \beta_1 (D_{it} * QP_{it}) + \beta_2 (D_{it} * (1 - QP_{it})) \\ & + \phi QP_{it} + \theta G_{it} + \gamma C_{it} + \rho Po_{it} + \tau De_{it} + \omega U_{it} + \psi F_{it} + t_t + \varepsilon_{it}, \end{aligned} \tag{54}$$

where QP_{it} is a dummy variable taking value 1 if the *commune* i belongs to the first quintile of poor *communes* and zero otherwise. Following Filmer and Pritchett (2001) we define an asset-based measure of wealth, denoted by W_{it}, for each *commune* using the EMICoV.[170] This measure is based on the Demographic and Health Survey (DHS) wealth index, which states each household's position on an index of asset wealth at national level using Principal Components Analysis (PCA) weights.[171] However, the DHS index underestimates the wealth of rural areas since urban populations own many valuable assets. Following Rutstein (2008), we compute a national-level composite index from wealth indexes that have been separately constructed for urban and rural areas. We then consider the average score by *communes* and we divide the latter into quintiles to distinguish the poor from the non-poor.

Lastly, we consider the distributional effect of decentralization on access to poverty-related

[169] Population, per capita public spending and per capita consumption are in logarithmic terms.

[170] Due to the abundance of household survey data on asset ownership and the considerable bias measurement error associated with reported income or consumption, a substantial body of literature has developed an asset-based measure of wealth. Filmer and Pritchett (2001) concluded that the DHS wealth index actually performed better than the traditional consumption or expenditure index in explaining differences in economic status.

[171] The general methodology used to calculate the wealth index is given in Filmer and Pritchett (2001). The specific approach used in the DHS is described in Rutstein and Johnson (2004).

services within *communes* using Gini coefficients. According to the argument of greater accountability and informational advantage of local officials, decentralization should lead to a reduction of intra-jurisdictional disparities in the access to basic services. To test this hypothesis, we consider the following model:

$$GY_{it} = \beta D_{it} + \theta G_{it} + \gamma C_{it} + \varphi GC_{it} + \rho Po_{it} + \tau De_{it} + \omega U_{it} + \psi F_{it} + t_t + \varepsilon_{it}, \qquad (55)$$

where GY_{it} is the Gini coefficient of basic services access in *commune* i on year t.[172] We also add GC_{it}, the Gini coefficient of per capita consumption in *commune* i on year t, to control for private inequalities. Note that we cannot compute Gini coefficients to assess inequalities in access to primary school enrollment. A possible indicator of inequality in individual access to primary education could rely on the gender issue, which is beyond the scope of this analysis.

As for the average effect analysis, we consider the effect of decentralization on inequalities within *communes* according to their wealth. Formally, we test:

$$\begin{aligned} GY_{it} = \quad & \beta_1(D_{it} * QP_{it}) + \beta_2(D_{it} * (1 - QP_{it})) \\ & + \phi QP_{it} + \theta G_{it} + \gamma C_{it} + \varphi GC_{it} + \rho Po_{it} + \tau De_{it} + \omega U_{it} + \psi F_{it} + t_t + \varepsilon_{it}. \end{aligned} \qquad (56)$$

6.4.2 Econometric issues and identification strategy

Given the small number of time-series with respect to cross-sectional observations and the fact that some variables have little within variance, we first estimate pooled OLS regressions with year dummies. This estimation method increases the degree of freedom and allows inquiring into variables that have low variability. However, it assumes that control variables capture all the relevant *communes'* characteristics.

This estimation may be biased by unobserved heterogeneity between *communes.* Our panel data allows controlling for a large number of unobserved explanatory variables by using the fixed-effects (FE) estimator. However, the traditional FE method results from its inefficiency in estimating the effect of variables that have little within variance, a risk worth considering when analyzing two successive years of observations. To assess coefficients of time-invariant variables and to control for *commune* specific effects, we use the Fixed Effects Vector Decomposition estimator (FEVD) developed by Plümper and Troeger (2007).[173] Through a three-step

[172] Gini coefficients are measured on the qualitative variables of public services.

[173] Based on Monte Carlo simulations, Plümper and Troeger (2007) compare the vector decomposition model with the FE model, the random effects (RE) model, pooled OLS, and the Hausman-Taylor procedure and find that, while the FE model does not compute coefficients for the time-invariant variables, the vector decomposition

procedure, this estimator allows a decomposition of the unit fixed effect into two parts: an explained part by time-invariant variables and an unexplained part.[174]

To correct for other potential endogeneity bias in the estimation of the causal effect of decentralization on access to basic services, we instrument the degree of decentralization through a dummy variable, denoted by PA_{it}, taking the value 1 if the *commune* i has the same political affiliation as the president in office. This dummy variable differs between 2006 and 2007 since Yayi Boni was elected in April 2006, succeeding Mathieu Kérékou. Partisan affiliation is a good instrument of decentralization in a regression involving access to public services. In the relevant literature a jurisdiction which has greater political support for the central government receives more transfers from the latter (see, Cox, 1986, for a theoretical argument, Case, 2001, for the Albanian case, Miguel and Zaidi, 2003, for the Ghanaian case).

6.5 Estimation results

This section presents our empirical results using a panel data of 77 Beninese *communes* for 2006 and 2007.

6.5.1 The average effect of decentralization on the access to basic services

As a first step in our statistical analysis, we present some descriptive statistics (Table 6.4, Appendix 6.7.2). Figures 6.1 to 6.5 (Appendix 6.7.1) confirm our expectation that a higher degree of decentralization is positively correlated to a better access to poverty-related services.[175] However, the most decentralized *communes* are the richest, the most populated, and the most urbanized (Table 6.5, Appendix 6.7.2). These variables are also associated with a higher access to basic public services (Table 6.6, Appendix 6.7.2). This confirms the important role of our control variables to avoid endogeneity bias.

To test the average effect of decentralization on access to basic services (Equation 52), we first run the pooled OLS regressions with year dummies, introducing our control variables progressively (columns 1 to 7). Considering potential unobserved heterogeneity between *communes*, we then use the FEVD estimator (column 8). Finally, we instrument for the degree of decen-

model performs far better than other procedures.

[174] First, the unit fixed effect is estimated by running a fixed effect estimate of the model. Second, the latter is split into its two parts by regressing it on the time-invariant variables of the model. The unexplained part corresponds to the residuals of this equation, $\widehat{h_i}$. Third, the estimation of the full model is implemented by including the time-invariant variables and the unexplained part of the fixed effect vector estimated in the second step.

[175] The relation is relatively weak for primary school enrollment (Figure 5).

tralization with the partisan affiliation (PA_{it}) in column 9. Table 6.7 (Appendix 6.7.2) reports the relevance of our instrument.[176] Moreover, the Sargan over-identifying restriction test[177] indicates that we cannot reject the hypothesis of no correlation between the instrument and the error term in the regression stating that the partisan affiliation variable is a valid instrument. In Tables 6.8 to 6.11 (Appendix 6.7.2) we highlight that a higher degree of decentralization is consistently associated with improved sanitation systems and water source access. Table 6.8 indicates that the effect of the degree of decentralization is significantly different from zero and could be interpreted as follows: the impact of a 10 percentage points increase in decentralization represents an extra 3.7 percent in people having access to a toilet or latrine facility. In other words, the standard deviation of the degree of decentralization (23.5 %) implies a 8.69 percentage points increase for one-standard-deviation change. When we turn on the quality of basic services, we observe for instance that once controlled for endogeneity bias a 10 percent point increase in the share of own resources entails an extra 0.236 point on the quality index of water access in *communes* (Table 6.11). However, while the effect of decentralization on access to refuse disposal facilities is less robust (Tables 6.12 and 6.13, Appendix 6.7.2), decentralization is not found to have a significant average effect on access to sewage disposal facilities and *communes*' primary school enrollment (Tables 6.14 to 6.16, Appendix 6.7.2).

In Table 6.17 (Appendix 6.7.2), we consider a non-monotone effect of the degree of decentralization by introducing its quadratic term (Equation 53). We find a positive coefficient associated to the degree of decentralization and a negative sign for its squared value. The impact of decentralization is then non-monotone: the relationship between decentralization and access to basic services may be described by an inverted U-shaped curve. Even if we cannot calculate the *average* optimal decentralization degree because of a combination of different scaled criteria for basic services, we are able to determine it individually. Defined as the ratio of local own-revenue over total revenue (given by $-\beta_1/2\beta_2$, Equation 53), the optimal degree of decentralization reaches a 55 percent value for the access to toilet facility, 65 percent for refuse disposal facilities (columns 1 to 3); and a lower value for sewage disposal facilities (49%) and primary school enrollment (52%) (columns 4 and 5). We observe that the effect of decentralization is monotone for drinking water access since the optimal level is above 1 (exactly 103 percent).

[176] As in most empirical studies, political considerations outweigh those of equity: wealthier, smaller or more ethnically fragmented jurisdictions receive more intergovernmental transfers and are less autonomous.

[177] We use the dummy variable indicating whether a *commune* has the same dominant ethnic affiliation as the president in office as another instrument to compute the Sargan test.

6.5.2 The non linear effect of decentralization between *communes*

We now consider heterogeneous effect of decentralization between *communes* according to their wealth (Equation 54). Table 6.18 (Appendix 6.7.2) reports that this effect is generally lower for 20 percent of poorest *communes*. Moreover, while decentralization has no impact on average on primary school enrollment, it actually has a positive effect on rich *communes* and a negative one on the poorest *communes*.[178] As a robustness check, we interact a continuous variable, the DHS wealth index scores (W_{it}), with the degree of decentralization (see Table 6.19, Appendix 6.7.2). Estimation results confirm that the positive effect of decentralization is contingent on a minimum wealth in *communes*. Only the effect of decentralization on access to drinking water seems not to depend on wealth. The coefficient associated with the degree of decentralization measures the impact of decentralization in the absence of any wealth. Its negative sign indicates that a *commune* with zero wealth would suffer from decentralization.

6.5.3 The distributional effect of decentralization within *communes*

Finally, we analyze the distributional effect of decentralization on access to poverty-related services within *communes* using Gini coefficients (Equation 55). Table 6.20 (Appendix 6.7.2) highlights that a higher degree of decentralization is associated with higher inequalities in the access to basic services within *communes*, with the exception of drinking water, for which decentralization seems to reduce inequalities even if this effect is limited.

Once again, to improve the quality of our results we distinguish the decentralization impact on intra-jurisdictional inequalities according to *communes*' wealth (Equation 56). Table 6.21 (Appendix 6.7.2) emphasizes that decentralization is actually associated with higher inequalities in the access to basic services, especially within the poorest *communes*. This negative effect is weaker in non-poor *communes*. Estimation results also indicate that the reduction of inequalities in the access to drinking water is mainly explained by the decentralization effect on inequalities in non-poor *communes*.[179] This result slightly contrasts with Bardhan and Mookherjee (2006), who establish a relatively equitable intra-village benefits distribution and simultaneously a regressive inter-village allocation in West Bengal.

The following table sums up our empirical results considering the effect of decentralization

[178] We complete our analysis with Wald tests to ascertain that coefficients for poor *communes* are significantly different from those in other *communes*.

[179] Note that we also use Wald tests to ascertain that coefficients for poor *communes* are significantly different from those in other *communes*.

of the qualitative indicators only:

Table 6.22: Main empirical results

	Average effect	Non monotone average effect		Between communes		Within communes	Overall distrisbutional effect	
		D_{it}	D_{it}^2	Poor	Non-Poor		Poor	Non-Poor
Toilet facility	0.692***	2.190***	-1.96***	0.562*	2.544***	0.317***	0.259***	0.045***
Water access	2.361***	3.234***	-1.56***	2.120***	2.355***	-0.023**	-0.023	-0.03***
Refuse disposal	1.345***	1.700***	-1.31***	0.416**	1.162***	0.564***	0.867***	0.595***
Sewage disposal	NR	4.332***	-4.44***	0.231	0.139	0.147***	0.236***	0.125**
Primary educ.	NR	6.866***	-6.60***	-0.24***	0.656**	-	-	-

***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level, NR: Non Robust.

6.6 Conclusion

Benin is a young democracy that has experienced a decentralization process since the end of the nineties. The main objective of this institutional reform was to improve public policy governance and finally to reduce poverty. Although heterogeneously affected by decentralization at the local level, Benin is one of those countries for which we can state that the recommendations of international organizations have clearly helped to institute a successful pattern of development.

In this paper, we study the average and distributional effects of decentralization on the access to poverty-related services. For the first time, we combine a dataset of well-being conditions of households and local public finance data to point out to what extent decentralization was successful. Our analysis suggests that decentralization has an unambiguous positive overall effect on the access to drinking water and sanitation systems.

Beyond this average pattern, decentralization however yields some distributional outcomes: its impact is non linear and heterogeneous. First, the effect of decentralization on the access to basic services follows an inverted U-shaped curve with an optimal degree of decentralization (at 67 percent on average) showing that a minimum level of central transfers is still beneficial. Second, decentralization affects service access differently according to the *communes*' wealth, namely a positive effect for any non-monetary poverty indicators, and conversely the negative effect for the poorest *communes*. These results are consistent with those of Galiani, Gertler, and Schargrodsky (2008), who conclude that decentralization improves public services in only

wealthier areas that have the ability to voice their preferences. Moreover, our study shows that decentralization can also generate intra-jurisdictional inequalities especially, within the poorest *communes*. Hence, if decentralization is a valid policy to improve overall access to basic services, it is essential to maintain a minimum level of central transfers, in particular for the poorest *communes,* to avoid an increase in intra- and inter-jurisdictional inequalities.

The decentralization process is a deep transformation of institutions and of the economic behavior of decision-makers that certainly results in well-being benefits, but at the expense of some inequalities due to historical, political, and governance practices.

6.7 Appendix

6.7.1 Figures

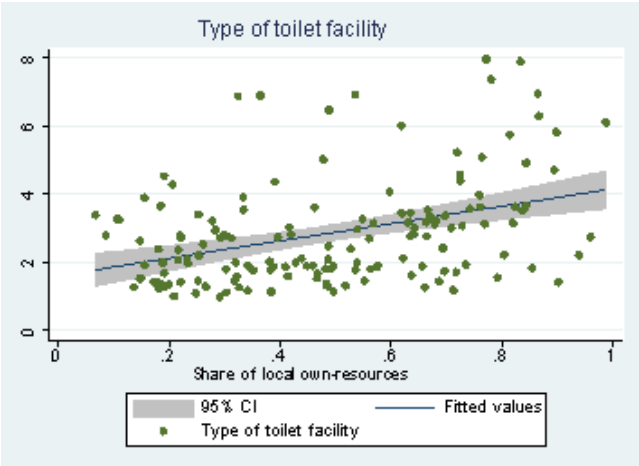

Figure 6.1: Share of local own-resources and access to toilet facility

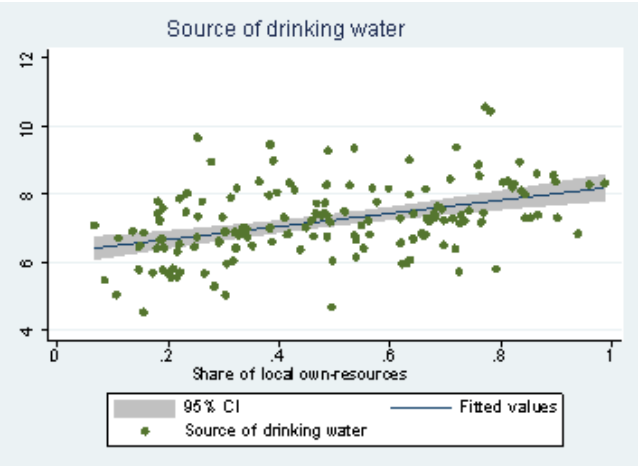

Figure 6.2: Share of local own-resources and access to water

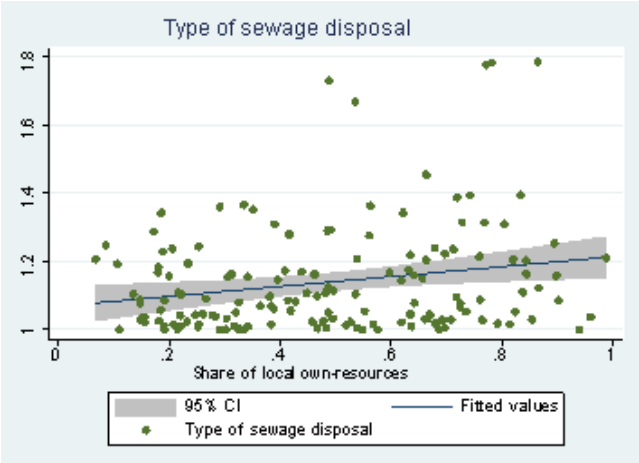

Figure 6.3: Share of local own-resources and access to sewage disposal.

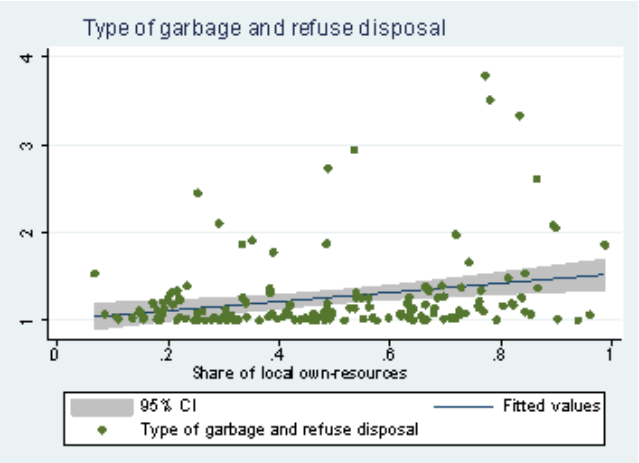

Figure 6.4: Share of local own-resources and access to refuse disposal.

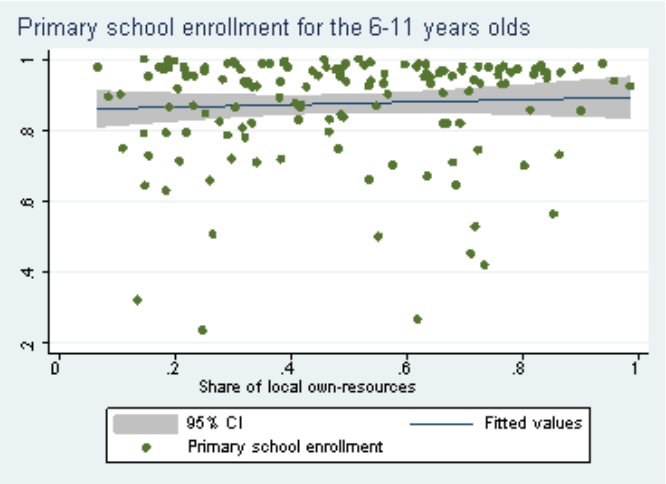

Figure 6.5: Share of local own-resources and access to primary school enrollment.

6.7.2 Tables

Table 6.4: Descriptive statistics

Basic services, Y_{it}	Mean	Std dev.	Min	Max
Degree of decentralization, D_{it}	0.484	0.235	0.066	0.986
Public spending per capita, G_{it}	7.218	0.778	4.521	9.436
Per capita consumption, C_{it}	11.754	0.464	10.513	12.970
Population size, Po_{it}	11.356	0.529	10.250	13.500
Population density, De_{it}	338.084	1050.57	7.382	9235.63
Urbanization rate, U_{it}	0.278	0.232	0	1
Ethnic fragmentation, F_{it}	0.357	0.232	0.013	0.822
Partisan affiliation, PA_{it}	0.305	0.461	0	1
Toilet facility				
$SToil_{it}$	0.237	0.208	0	0.969
$TToil_{it}$	2.836	1.541	1	7.958
Water access				
$SWat_{it}$	0.306	0.249	0	0.994
$TWat_{it}$	7.214	1.060	4.748	10.559
Refuse disposal				
$SGarb_{it}$	0.033	0.102	0	0.684
$TGarb_{it}$	1.255	0.466	1	3.785
Sewage disposal				
$SSew_{it}$	0.009	0.026	0	0.184
$TSew_{it}$	1.138	0.156	1	1.785
Primary education SE_{it}	0.876	0.149	0.236	1

Table 6.5: Correlations of our key variables

Variables	D_{it}	G_{it}	C_{it}	P_{it}	D_{it}	U_{it}	F_{it}
Degree of decentralization, D_{it}	1						
Public spending per capita, G_{it}	0.3294*	1					
Per capita consumption, C_{it}	0.3128*	0.5646*	1				
Population size, P_{it}	0.3095*	0.5025*	0.5801*	1			
Population density, D_{it}	0.2431*	0.4656*	0.7571*	0.8080*	1		
Urbanization rate, U_{it}	0.2513*	0.4117*	0.5505*	0.5379*	0.4089*	1	
Ethnic fractionalization, F_{it}	0.0258	0.2696*	0.0817	0.2895*	0.0153	0.3330*	1

*: Correlation coefficient significant at 10 % level.

Table 6.6: Correlations of our key variables

Variables	G_{it}	C_{it}	P_{it}	D_{it}	U_{it}	F_{it}
Type of toilet facility, $TToil_{it}$	0.5155*	0.2760*	0.4030*	0.4274*	0.4108*	0.0018
Source of drinking water, $TWat_{it}$	0.5221*	0.3493*	0.3555*	0.3902*	0.2823*	0.1693*
Type of sewage disposal, $TSew_{it}$	0.3826*	0.1831*	0.4420*	0.4618*	0.3018*	0.0911
Type of refuse disposal, $SGarb_{it}$	0.2321*	0.2987*	0.5511*	0.6045*	0.3771*	0.0533
Primary school enrollment, SE_{it}	0.2286*	-0.0638	0.0461	0.1058	0.0962	-0.1412*

*: Correlation coefficient significant at 10 % level.

Table 6.7: Validity of our instrumental variable

Dependent variable: D_{it}		
Partisan affiliation, PA_{it}	**-0.026*** **	(0.000)
Public spending per capita, G_{it}	-0.027***	(0.002)
Per capita consumption, C_{it}	-0.053***	(0.004)
Population size, P_{it}	0.130***	(0.029)
Population density, D_{it}	0.002***	(0.000)
Urbanization rate, U_{it}	0.155***	(0.017)
Ethnic fractionalization, F_{it}	-0.104***	(0.029)
Constant	-0.182	(0.31)
Number of observations	145	
Adjusted R^2	0.68	
F-Statistic	54680	
Fixed-effect	yes	
Year dummies	yes	
Sargan test (p-value)	0.519	

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.

***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.8: Estimation results - The average effect of decentralization on the access to toilet facility (quantity)

Dep. var.:$STOil_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**0.370*** **	**0.249*** **	**0.184*** **	**0.116** **	**0.129** **	**0.140** **	**0.092***	**0.171*** **	**0.715*** **
	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	(0.05)	(0.08)	(0.025)	(0.01)
Publicspending, G_{it}		0.126***	0.101***	0.109***	0.090***	0.066*	0.071**	0.030***	0.009
		(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.004)	(0.01)
Consumption, C_{it}			0.133**	0.094***	0.086**	0.086**	0.099***	-0.001	-0.314*
			(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.21)
Populationsize, P_{it}				0.102***	0.064*	0.021	0.049	0.021	-0.057***
				(0.02)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)
Populationdensity, D_{it}					0.003**	0.003**	0.002**	0.005***	0.004***
					(0.001)	(0.01)	(0.001)	(0.00)	(0.001)
Urbanizationrate, U_{it}						0.191***	0.234***	0.301***	0.242***
						(0.08)	(0.08)	(0.02)	(0.02)
Fractionalization, F_{it}							-0.188***	-0.131***	-0.052*
							(0.05)	(0.04)	(0.04)
Constant	0.049	-0.779***	-2.165***	-2.893***	-2.253***	-1.641***	-2.090***	-0.397*	-11.72***
	(0.03)	(0.22)	(0.46)	(0.52)	(0.71)	(0.58)	(0.65)	(0.20)	(1.06)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.17	0.35	0.41	0.46	0.49	0.96	0.54	0.92	0.96
F-Statistic	20.55	21.86	20.71	25.54	34.43	30.62	46.74	715.01	622.75
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.9: Estimation results - The average effect of decentralization on the access to toilet facility (quality)

Dep. var.:$TToil_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**2.531*** **	**1.905*** **	**1.871*** **	**1.537*** **	**1.660*** **	**1.734*** **	**1.553*** **	**1.471*** **	**0.692*** **
	(0.54)	(0.53)	(0.56)	(0.56)	(0.54)	(0.55)	(0.56)	(0.027)	(0.02)
Publicspending, G_{it}		0.718***	0.705***	0.749***	0.565***	0.402*	0.464**	0.273***	0.352***
		(0.19)	(0.20)	(0.20)	(0.21)	(0.22)	(0.21)	(0.019)	(0.02)
Consumption, C_{it}			0.071	-0.119	-0.197	0.199	-0.249	0.189***	0.189***
			(0.36)	(0.34)	(0.34)	(0.35)	(0.37)	(0.006)	(0.007)
Populationsize, P_{it}				0.498*	0.142	-0.150	-0.345	-0.411***	-0.260***
				(0.25)	(0.30)	(0.27)	(0.31)	(0.008)	(0.008)
Populationdensity, D_{it}					0.003***	0.003***	0.004***	0.004***	0.003***
					(0.001)	(0.001)	(0.001)	(0.00)	(0.00)
Urbanizationrate, U_{it}						1.284*	1.123*	1.298***	1.264***
						(0.68)	(0.73)	(0.01)	(0.01)
Fractionalization, F_{it}							-0.031	-0.229	-0.342
							(0.51)	(0.39)	(0.41)
Constant	1.542***	-3.202**	-3.940	-7.483	-1.405	-2.706	-5.178	-0.397*	0.043
	(0.25)	(1.27)	(3.94)	(4.97)	(5.54)	(5.28)	(5.92)	(0.20)	(0.11)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.15	0.26	0.26	0.46	0.32	0.35	0.34	0.89	0.87
F-Statistic	11.88	12.61	29.43	25.54	57.82	49.10	64.70	10608.02	992.44
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.10: Estimation results - The average effect of decentralization on water access (quantity)

Dep. var.:$SWat_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**0.365*** **	**0.260*** **	**0.220*** **	**0.192*** **	**0.212*** **	**0.207** **	**0.173** **	**0.230*** **	**0.654*** **
	(0.07)	(0.07)	(0.08)	(0.07)	(0.07)	(0.08)	(0.08)	(0.028)	(0.01)
Publicspending, G_{it}		0.116***	0.101***	0.105***	0.076***	0.085***	0.087***	0.047***	0.047***
		(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.003)	(0.003)
Consumption, C_{it}			0.081**	0.065	0.053	0.053	0.072	0.021	0.021
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.014)	(0.15)
Populationsize, P_{it}				0.041	-0.148	0.002	0.022	-0.032	-0.064**
				(0.04)	(0.04)	(0.04)	(0.05)	(0.019)	(0.018)
Populationdensity, D_{it}					0.005***	0.005***	0.004***	0.006***	0.006***
					(0.001)	(0.001)	(0.001)	(0.00)	(0.00)
Urbanizationrate, U_{it}						-0.076	0.058	0.002	1.264***
						(0.10)	(0.11)	(0.003)	(0.01)
Fractionalization, F_{it}							-0.145*	-0.115***	-0.053***
							(0.08)	(0.01)	(0.012)
Constant	0.110***	-0.660**	-1.505***	-1.801***	-0.836	-1.080*	-1.480 **	-0.378*	0.110
	(0.04)	(0.19)	(0.47)	(0.51)	(0.62)	(0.65)	(0.71)	(0.21)	(0.20)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.12	0.24	0.25	0.26	0.29	0.30	0.34	0.88	0.87
F-Statistic	13.51	15.49	13.44	12.62	30.13	25.31	64.70	1537.87	992.44
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.11: Estimation results - The average effect of decentralization on water access (quality)

Dep. var.:$TWat_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**1.935*** **	**1.685*** **	**1.490*** **	**1.360*** **	**1.441*** **	**1.454*** **	**1.591*** **	**1.714*** **	**2.361*** **
	(0.32)	(0.34)	(0.35)	(0.37)	(035)	(0.36)	(0.37)	(0.22)	(0.27)
Publicspending, G_{it}		0.327***	0.250**	0.268**	0.147	0.117	0.133	-0.028	-0.028
		(0.12)	(0.12)	(0.12)	(0.12)	(0.14)	(0.13)	(0.034)	(0.037)
Consumption, C_{it}			0.402*	0.327	0.276	0.275	0.143	0.185*	0.185*
			(0.21)	(0.22)	(0.22)	(0.23)	(0.24)	(0.11)	(0.10)
Populationsize, P_{it}				0.194	-0.040	-0.092	-0.340	-0.434***	-0.528***
				(0.20)	(0.21)	(0.21)	(0.24)	(0.10)	(0.10)
Populationdensity, D_{it}					0.002***	0.002***	0.003***	0.003***	0.003***
					(0.001)	(0.001)	(0.001)	(0.00)	(0.00)
Urbanizationrate, U_{it}						0.228	0.001	0.216*	0.147
						(0.44)	(0.44)	(0.13)	(0.14)
Fractionalization, F_{it}							-0.934***	-0.933***	1.028***
							(0.34)	(0.02)	(0.03)
Constant	6.364***	4.186***	0.021	-1.363	2.649	3.382	7.297*	8.872***	9.616***
	(0.18)	(0.83)	(0.60)	(3.09)	(3.29)	(3.40)	(3.84)	(1.29)	(1.33)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.18	0.24	0.26	0.27	0.30	0.30	0.32	0.86	0.84
F-Statistic	17.44	14.71	11.33	10.42	51.08	45.16	82.58	142.652	188.52
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.12: Estimation results - The average effect of decentralization on the access to refuse disposal facility (quantity)

Dep. var.:$SGarb_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**0.137*** **	**0.092*** **	**0.081** **	**0.018**	**0.035**	**0.040**	**0.048**	**0.038*** **	**0.077*** **
	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.007)	(0.01)
Publicspending, G_{it}		0.049**	0.044**	0.053***	0.027**	0.017*	0.019*	0.013***	-0.024***
		(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.001)	(0.001)
Consumption, C_{it}			0.022	-0.012	-0.023	-0.023	-0.036	-0.006*	-0.006
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.003)	(0.004)
Populationsize, P_{it}				0.019***	0.044**	0.025**	0.002	0.001	-0.012**
				(0.02)	(0.01)	(0.01)	(0.01)	(0.003)	(0.005)
Populationdensity, D_{it}					0.005***	0.005***	0.005***	0.005***	0.005***
					(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Urbanizationrate, U_{it}						0.084**	0.065*	0.069***	0.089***
						(0.03)	(0.03)	(0.06)	(0.009)
Fractionalization, F_{it}							0.074***	0.060***	0.065***
							(0.02)	(0.006)	(0.001)
Constant	-0.033**	-0.357**	-0.595*	-1.258***	-0.424	-0.424	0.205	-0.081**	0.161***
	(0.01)	(0.14)	(0.37)	(0.007)	(0.36)	(0.36)	(0.29)	(0.03)	(0.05)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.10	0.21	0.22	0.40	0.55	0.57	0.58	0.96	0.95
F-Statistic	4.26	4.26	3.30	4.50	67.65	56.65	79.65	89.10	79.30
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.13: Estimation results - The average effect of decentralization on the access to refuse disposal facility (quality)

Dep. var.:$TGarb_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**0.510*** **	**0.313** **	**0.260**	**0.098**	**0.176**	**0.189**	**0.176**	**0.225*** **	**1.345*** **
	(0.18)	(0.15)	(0.17)	(0.19)	(0.17)	(0.17)	(0.17)	(0.05)	(0.12)
Publicspending, G_{it}		0.218***	0.198***	0.219***	0.104*	0.074*	0.089*	0.044**	-0.078***
		(0.08)	(0.01)	(0.07)	(0.06)	(0.05)	(0.05)	(0.02)	(0.008)
Consumption, C_{it}			0.108*	0.016	-0.032	-0.033	-0.067	-0.122***	-0.122**
			(0.09)	(0.11)	(0.11)	(0.11)	(0.11)	(0.03)	(0.05)
Populationsize, P_{it}				0.241*	0.018	-0.034	-0.122	-0.144*	-0.365***
				(0.12)	(0.10)	(0.08)	(0.08)	(0.08)	(0.11)
Populationdensity, D_{it}					0.002***	0.002***	0.002***	0.002***	0.003***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urbanizationrate, U_{it}						0.023**	0.154	0.213***	0.276***
						(0.21)	(0.21)	(0.03)	(0.02)
Fractionalization, F_{it}							0.163	0.196***	0.359***
							(0.11)	(0.01)	(0.01)
Constant	0.973***	-0.466	-1.590	-3.308*	0.509	1.249	2.499*	3.568***	6.354***
	(0.07)	(0.56)	(1.58)	(2.05)	(1.72)	(1..30)	(1.37)	(0.92)	(1.30)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.07	0.18	0.19	0.25	0.41	0.41	0.42	0.83	0.81
F-Statistic	4.83	4.41	3.40	3.90	68.32	56.66	58.22	119.60	1317.32
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.14: Estimation results - The average effect of decentralization on the access to sewage disposal (quantity)

Dep. var.:$SSew_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**0.258*** **	**0.143** **	**0.105**	**-0.061**	**-0.018**	**-0.005**	**0.037**	**0.013**	**0.024*** **
	(0.09)	(0.06)	(0.07)	(0.10)	(0.09)	(0.09)	(0.08)	(0.009)	(0.002)
Publicspending, G_{it}		0.125**	0.110**	0.132***	0.068*	0.038*	0.034	0.020***	0.009***
		(0.05)	(0.04)	(0.04)	(0.04)	(0.002)	(0.02)	(0.002)	(0.001)
Consumption, C_{it}			0.078	-0.016	-0.043	-0.044	-0.061	0.006	-0.001
			(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.008)	(0.001)
Populationsize, P_{it}				0.248***	0.125**	0.072*	0.054	0.051***	0.004***
				(0.07)	(0.05)	(0.03)	(0.04)	(0.01)	(0.000)
Populationdensity, D_{it}					0.001***	0.001***	0.001***	0.001***	0.001***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urbanizationrate, U_{it}						0.235*	0.218*	0.226***	0.034***
						(0.13)	(0.13)	(0.05)	(0.01)
Fractionalization, F_{it}							0.157**	0.124**	0.012
							(0.07)	(0.05)	(0.008)
Constant	-0.038	-0.852**	-1.675*	-3.444***	-1.34	-0.587	-0.221	-0.897***	-0.069***
	(0.03)	(0.38)	(0.001)	(1.29)	(1.21)	(0.85)	(0.98)	(0.17)	(0.003)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.05	0.17	0.18	0.37	0.52	0.55	0.57	0.91	0.91
F-Statistic	4.00	3.17	3.38	3.25	21.06	18.75	19.07	235.90	350.65
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.15: Estimation results - The average effect of decentralization on the access to sewage disposal (quality)

Dep. var.:$TSew_{it}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**1.412****	**1.101****	**1.008***	**0.390**	**0.578**	**0.613**	**0.680**	**0.142**	**-2.81*****
	(0.57)	(0.51)	(0.61)	(0.69)	(0.66)	(0.65)	(0.67)	(0.35)	(0.306)
Publicspending, G_{it}		0.388	0.352	0.433*	0.152	0.074	0.079	0.049**	0.049***
		(0.26)	(0.25)	(0.24)	(0.25)	(0.22)	(0.22)	(0.02)	(0.01)
Consumption, C_{it}			0.190	-0.163	-0.282	-0.283	-0.357	0.595**	0.595***
			(0.41)	(0.38)	(0.38)	(0.39)	(0.40)	(0.06)	(0.06)
Populationsize, P_{it}				0.924**	0.378	0.238	0.254	0.348	0.778**
				(0.36)	(0.34)	(0.30)	(0.34)	(0.36)	(0.38)
Populationdensity, D_{it}					0.005***	0.005***	0.005***	0.004***	0.004***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urbanizationrate, U_{it}						0.312*	0.656	0.503*	0.819***
						(0.79)	(0.79)	(0.29)	(0.30)
Fractionalization, F_{it}							0.274	-0.204	-0.637*
							(0.55)	(0.33)	(0.37)
Constant	-1.48***	7.909***	5.93	-0.634	8.682	10.643**	11.138*	-1.089	-4.494
	(0.23)	(1.83)	(5.07)	(6.16)	(6.19)	(4.92	(5.66)	(4.13)	(0.003)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.06	0.10	0.10	0.18	0.26	0.26	0.28	0.64	0.84
F-Statistic	6.22	4.61	3.47	3.68	47.77	40.32	49.20	35.87	140.55
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.16: Estimation results - The average effect of decentralization on the access to primary education

Dep. var.:SE_{it}	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Decentralization, D_{it}	**0.019**	**-0.010**	**-0.016**	**-0.015**	**-0.011**	**-0.009**	**-0.039**	**0.003**	**0.242****
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.11)
Publicspending, G_{it}		0.031**	0.028*	0.028*	0.022	0.017	0.020	0.063**	0.031*
		(0.01)	(0.09)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Consumption, C_{it}			0.122	0.013	0.010	0.010	0.023	0.134***	0.072**
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.02)
Populationsize, P_{it}				-0.002	-0.013	-0.022	0.001	0.013	-0.036***
				(0.01)	(0.02)	(0.02)	(0.03)	(0.01)	(0.007)
Populationdensity, D_{it}					0.001***	0.001***	0.002***	0.001***	0.001***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urbanizationrate, U_{it}						0.038*	0.063	0.030***	0.040***
						(0.04)	(0.05)	(0.009)	(0.01)
Fractionalization, F_{it}							-0.131**	-0.056	-0.049
							(0.06)	(0.08)	(0.08)
Constant	0.777***	0.573***	0.446*	0.464**	0.652**	0.776*	0.3898*	1.809***	1.765***
	(0.02)	(0.11)	(0.22)	(0.25)	(0.35)	(0.40)	(0.45)	(0.26)	(0.32)
Number of observations	150	149	149	149	149	149	145	145	145
Adjusted R^2	0.35	0.37	0.10	0.37	0.38	0.38	0.41	0.58	0.52
F-Statistic	43.21	30.10	3.47	20.60	16.95	14.45	12.77	17.26	14.19
Fixed-effect	no	no	no	no	no	no	no	yes	yes
Yeardummies	yes	yes	yes	yes	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.17: Estimation results - A non monotonic effect of decentralization on the access to basic services

Dep. var.:	(1) $TToil_{it}$	(2) $TWat_{it}$	(3) $TGarb_{it}$	(4) $TSew_{it}$	(5) SE_{it}
Degree of decentralization, D_{it}	**2.190*** **	**3.234*** **	**1.700*** **	**4.332*** **	**6.866*** **
	(0.05)	(0.34)	(0.26)	(0.24)	(2.21)
D^2_{it}	**-1.96*** **	**-1.56*** **	**-1.31*** **	**-4.44*** **	**-6.60*** **
	(0.07)	(0.47)	(0.23)	(0.24)	(2.11)
Public spending per capita, G_{it}	0.030***	-0.026	-0.079***	0.003*	-0.009
	(0.004)	(0.03)	(0.01)	(0.001)	(0.01)
Per capita consumption, C_{it}	-0.008	0.182*	-0.121**	0.062***	0.138***
	(0.01)	(0.12)	(0.05)	(0.006)	(0.04)
Population size, P_{it}	-0.002	-0.440***	-0.237**	0.088**	-0.112***
	(0.01)	(0.11)	(0.09)	(0.03)	(0.02)
Population density, D_{it}	0.005***	0.003***	0.003***	0.003***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urbanization rate, U_{it}	0.359***	0.270*	0.422***	-0.077**	0.329***
	(0.02)	(0.16)	(0.01)	(0.03)	(0.10)
Ethnic fractionalization, F_{it}	-0.132**	0.921***	0.2131***	-0.021	-0.047
	(0.05)	(0.03)	(0.007)	(0.03)	(0.09)
Constant	-0.552**	8.667***	5.106***	0.212	2.302***
	(0.22)	(1.32)	(1.15)	(0.43)	(0.13)
Number of observations	145	145	145	145	145
Adjusted R^2	0.91	0.84	0.80	0.59	0.53
F-Statistic	577.64	96.49	87.06	149.11	19.60
Fixed-effect	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes
Instrumental variable	yes	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.

***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.18: Estimation results - A differentiated effect of decentralization between *communes* (quintiles)

Dep. var.:	(1) $TToil_{it}$	(2) $TWat_{it}$	(3) $TGarb_{it}$	(4) $TSew_{it}$	(5) SE_{it}
D_{it}*QP_{it}	**0.562***	**2.120*****	**0.416****	**0.231**	**-0.24*****
	(0.28)	(0.29)	(0.19)	(1.24)	(0.03)
D_{it}*(1-QP_{it})	**2.544*****	**2.355*****	**1.162*****	**0.139**	**0.656****
	(0.03)	(0.27)	(0.08)	(0.41)	(0.21)
Public spending per capita, G_{it}	-0.006	-0.063	0.088***	0.013	-0.010
	(0.005)	(0.03)	(0.01)	(0.14)	(0.01)
Per capita consumption, C_{it}	0.190***	0.189*	-0.121**	0.598**	-0.13***
	(0.02)	(0.10)	(0.05)	(0.24)	(0.04)
Belong to the first quintile, QP_{it}	-0.233**	-0.278***	-0.126***	-0.124	0.133***
	(0.10)	(0.08)	(0.01)	(0.53)	(0.10)
Population size, P_{it}	-0.755***	-0.587***	-0.369***	0.313	-0.106***
	(0.01)	(0.10)	(0.12)	(0.25)	(0.03)
Population density, D_{it}	0.004***	0.003***	0.003***	0.004***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urbanization rate, U_{it}	1.400***	0.147	0.231***	0.551*	0.009**
	(0.01)	(0.13)	(0.03)	(0.46)	(0.004)
Ethnic fractionalization, F_{it}	-0.602	0.843***	0.115**	-0.247	-0.088
	(0.48)	(0.04)	(0.04)	(0.44)	(0.11)
Constant	7.575***	10.64***	6.719***	-0.434	3.465***
	(0.35)	(1.23)	(1.39)	(4.03)	(0.31)
Number of observations	145	145	145	145	145
Adjusted R^2	0.88	0.84	0.80	0.63	0.50
Fixed-effect	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes
Instrumental variable	yes	yes	yes	yes	yes
Wald test: p-value	0.000	0.494	0.011	-	0.000

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.

***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.19: Estimation results - A differentiated effect of decentralization between *communes* (wealth)

Dep. var.:	(1) $TToil_{it}$	(2) $TWat_{it}$	(3) $TGarb_{it}$	(4) $TSew_{it}$	(5) SE_{it}
D_{it}	**-1.70*** **	**1.365*** **	**-0.94*** **	**-3.99*** **	**-0.64*** **
	(0.07)	(0.24)	(0.16)	(0.73)	(0.18)
D_{it}*W_{it}	**1.597*** **	**-0.01**	**0.762*** **	**2.312*** **	**0.399*** **
	(0.04)	(0.06)	(0.05)	(0.25)	(0.11)
Public spending per capita, G_{it}	0.017**	-0.065*	-0.084***	0.096***	-0.010*
	(0.008)	(0.03)	(0.01)	(0.02)	(0.005)
Per capita consumption, C_{it}	0.407***	0.052	-0.187***	0.652***	-0.148***
	(0.02)	(0.12)	(0.05)	(0.06)	(0.04)
DHS wealth index scores, W_{it}	0.274***	0.247***	0.114**	0.722***	0.064***
	(0.03)	(0.06)	(0.02)	(0.16)	(0.02)
Population size, P_{it}	-0.482***	-0.451***	-0.177**	0.621	-0.001
	(0.04)	(0.13)	(0.08)	(0.39)	(0.006)
Population density, D_{it}	0.001***	0.003***	0.001***	0.004	0.006**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Urbanization rate, U_{it}	-0.048	-0.069	0.034	-0.158	-0.066
	(0.03)	(0.15)	(0.04)	(0.12)	(0.04)
Ethnic fractionalization, F_{it}	-1.265***	0.780***	-0.013	-0.784***	-0.176
	(0.29)	(0.06)	(0.05)	(0.28)	(0.14)
Constant	2.889***	10.93***	6.024***	-3.350	2.898***
	(0.64)	(1.58)	(1.05)	(4.38)	(0.07)
Number of observations	145	145	145	145	145
Adjusted R^2	0.88	0.85	0.81	0.57	0.50
Fixed-effect	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes
Instrumental variable	yes	yes	yes	yes	yes
Wald test: p-value	0.000	-	0.000	0.000	0.000

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.

***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.20: Estimation results - The differentiated effect of decentralization on the access to basic services within *communes*

Dep. var.:	(1) $GToil_{it}$	(2) $GWat_{it}$	(3) $GGarb_{it}$	(4) $GSew_{it}$
Degree of decentralization, D_{it}	**0.317*** **	**-0.023** **	**0.564*** **	**0.147*** **
	(0.02)	(0.01)	(0.05)	(0.05)
Public spending per capita, G_{it}	-0.026***	-0.003***	-0.043***	-0.032***
	(0.001)	(0.000)	(0.002)	(0.000)
Per capita consumption, C_{it}	0.005	-0.016***	-0.093***	0.026***
	(0.008)	(0.002)	(0.01)	(0.003)
Gini coefficient of C_{it}, GC_{it}.	0.159***	0.118***	0.090***	0.072***
	(0.01)	(0.01)	(0.02)	(0.02)
Population size, P_{it}	-0.029	-0.003	-0.114***	-0.020
	(0.02)	(0.002)	(0.01)	(0.01)
Population density, D_{it}	-0.002***	-0.001***	0.001*	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Urbanization rate, U_{it}	-0.055***	0.028*	-0.005	-0.044
	(0.01)	(0.01)	(0.03)	(0.03)
Ethnic fractionalization, F_{it}	0.056***	0.105***	0.015	0.024***
	(0.05)	(0.01)	(0.04)	(0.005)
Constant	0.646**	0.397***	2.520***	0.161
	(0.25)	(0.02)	(0.08)	(0.16)
Number of observations	145	145	145	145
Adjusted R^2	0.71	0.82	0.57	0.61
Fixed-effect	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
Instrumental variable	yes	yes	yes	yes

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.

***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Table 6.21: Estimation results - The differentiated effect of decentralization on the access to basic services between and within *communes*

Dep. var.:	(1) $GToil_{it}$	(2) $GWat_{it}$	(3) $GGarb_{it}$	(4) $GSew_{it}$
D_{it}*QP_{it}	**0.259*** **	**-0.023**	**0.867*** **	**0.236*** **
	(0.02)	(0.01)	(0.08)	(0.05)
D_{it}*(1-QP_{it})	**0.045*** **	**-0.03*** **	**0.595*** **	**0.125** **
	(0.01)	(0.01)	(0.05)	(0.05)
Public spending per capita, G_{it}	-0.024***	-0.004**	-0.044***	-0.034***
	(0.001)	(0.001)	(0.002)	(0.001)
Per capita consumption, C_{it}	0.006	-0.015***	-0.093***	0.026***
	(0.008)	(0.002)	(0.01)	(0.004)
Gini coefficient of C_{it}, GC_{it}	0.154***	0.108***	0.089***	-0.071***
	(0.01)	(0.01)	(0.02)	(0.01)
Belong to the first quintile, QP_{it}	0.005	0.007	-0.052***	-0.064***
	(0.002)	(0.03)	(0.005)	(0.004)
Population size, P_{it}	-0.022	-0.006	-0.124***	-0.026*
	(0.02)	(0.002)	(0.01)	(0.01)
Population density, D_{it}	-0.002***	-0.001***	0.001*	0.003**
	(0.001)	(0.000)	(0.000)	(0.001)
Urbanization rate, U_{it}	-0.070***	0.026*	0.021	0.002
	(0.02)	(0.07)	(0.51)	(0.03)
Ethnic fractionalization, F_{it}	0.003	0.103***	0.052	0.035***
	(0.01)	(0.01)	(0.19)	(0.004)
Constant	0.614**	0.328***	2.591***	0.257
	(0.26)	(0.02)	(0.18)	(0.17)
Number of observations	145	145	145	145
Adjusted R^2	0.69	0.81	0.57	0.61
Fixed-effect	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
Instrumental variable	yes	yes	yes	yes
Wald test: p-value	0.000	-	0.000	0.000

Controls for serial correlation of the error term, ar1 Coccrane-Orcutt transformation. Robust standard errors are in brackets.

***: coefficient significant at 1 % level, .**: at 5 % level, *: at 10 % level

Conclusion générale

Conclusion générale

Cette thèse contribue, tant par ses analyses théoriques qu'économétriques, à une meilleure compréhension de différents aspects de la décentralisation dans les pays en développement. Les études qui la composent révèlent les bienfaits mais aussi les limites de cette stratégie de développement employée par un grand nombre de pays et nous poussent à un certain nombre de recommandations de politique économique.

Après avoir fait état de la littérature existante et de ses limites (partie I), nous avons reconsidéré un argument standard de la théorie du fédéralisme budgétaire en faveur de la décentralisation, le principe de compétition, délaissé dans les études consacrées aux pays en développement (partie II). Prenant en compte les spécificités propres aux pays en développement, le travail théorique et économétrique réalisé sur l'étude des interactions stratégiques entre les communes béninoises a mis en exergue l'existence de comportements stratégiques des décideurs locaux, similaires à ceux observés dans les pays développés, à condition d'un minimum de capacités fiscales des juridictions (chapitre 2). Ce travail a également permis de déterminer la nature de ces interactions : la complémentarité stratégique. Cette dernière a des conséquences importantes. En effet, le fait qu'un accroissement des dépenses publiques dans une juridiction induise des variations similaires dans les juridictions voisines contribue à montrer que les problèmes liés aux phénomènes de passager clandestin dans la fourniture des biens publics entre les gouvernements locaux - associés généralement à la substituabilité stratégique - ne sont pas prédominants. Au contraire, nos conclusions révèlent qu'une augmentation soudaine des dépenses publiques dans une juridiction stimulerait indirectement les autres juridictions. L'existence d'un tel multiplicateur, comparable à celui de Glaeser, Sacerdote, et Scheinkman (2003), tend notamment à renforcer l'appel à la décentralisation de l'aide au développement. De même, notre travail a offert une explication théorique ainsi que des preuves empiriques de l'existence d'une compétition entre les provinces chinoises en dépit de l'absence de redevabilité électorale des gouverneurs et d'une mobilité limitée de la population, comblant ainsi un manque au sein de la littérature (chapitre 3). Nous avons mis en exergue que le contrôle vertical est capable d'assurer la redevabilité des gouvernements locaux en créant une compétition inter-juridictionnelle, de la même manière que les électeurs le font dans les pays où les décideurs locaux sont démocratiquement élus. Nos résultats conduisent à la conclusion qu'un système politique centralisé associé à un système budgétaire décentralisé peut faire preuve d'efficacité. Loin de conclure à la supériorité du contrôle par l'État central sur celui des citoyens, cette étude soulève néanmoins la question de la plus grande efficacité de la dévolution.

Cette thèse s'est également intéressée à un élément déterminant de l'efficacité de la décentralisation : les transferts intergouvernementaux (partie III). Alors que les réflexions consacrées à la forme et à l'allocation entre les juridictions locales de telles ressources constituent une part importante de la littérature, nos travaux ont mis en relief une qualité largement ignorée des transferts inconditionnels (chapitre 4). Considérés *a priori* comme peu incitatifs, ces derniers semblent en réalité pouvoir stimuler la mobilisation des ressources locales propres et alléger ainsi de manière efficace les contraintes budgétaires qui pèsent sur les gouvernements locaux des pays en développement et, par là même, sur l'efficacité de la décentralisation. Les transferts conditionnels réduisent l'autonomie des décideurs et sont souvent difficiles à mettre en place, nécessitant un grand nombre d'informations souvent peu disponibles dans les pays en développement et laissant souvent place à l'arbitraire. A l'inverse, le potentiel incitatif démontré des transferts inconditionnels s'ajoute à la facilité de leur mise en place. Moins surprenant, nous avons aussi montré que les résultats obtenus dans les pays développés concluant à la prédominance des facteurs politiques dans l'allocation horizontale des transferts, peuvent également être observés dans un pays en développement (chapitre 5). L'existence d'une utilisation tactique des transferts au Sénégal en dépit de la formule d'allocation qui y est employée, nous permet de conclure à l'insuffisance d'un tel système à éliminer le pouvoir discrétionnaire des décideurs politiques. Ce résultat pose la question de savoir quel système de distribution des transferts permettrait de limiter les distorsions créées par l'allocation discrétionnaire des ressources. L'étude de Khemani (2007) nous laisse penser que la délégation de cette responsabilité à une agence indépendante pourrait être une solution.

Nous nous sommes finalement attachés à évaluer l'effet de la décentralisation sur l'accès aux services de base par les ménages, visant ainsi à déterminer l'efficacité de cette stratégie à combattre la pauvreté (partie IV). Combinant différentes bases de données de panel sur le Bénin, nous avons, pour la première fois, mis en exergue les bénéfices et les risques associés au transfert de compétences aux juridictions locales en Afrique sub-saharienne (chapitre 6). Élément en faveur de la décentralisation, cette dernière semble effectivement améliorer l'accès moyen aux services publics de base par les populations locales. Néanmoins, le risque associé à une telle réforme semble résider dans un accroissement des inégalités inter et intra-juridictionnelles. En effet, la décentralisation apparaît être plus bénéfique aux juridictions qui sont déjà les plus avantagées et peut parfois dégrader la situation dans les zones les plus pauvres, où les habitants ont sans doute peu de moyen de faire entendre leurs préférences (Galiani, Gertler, et Schargrodsky, 2008). De plus, elle apparaît comme source d'aggravation des inégalités à l'intérieur même des juridictions locales, en particulier dans les plus pauvres d'entre elles. Ainsi, si la décentralisation constitue un moyen efficace de réduire la pauvreté, il semble essentiel de maintenir

un montant minimum de transferts, en particulier pour les communes les plus pauvres, afin d'éviter un accroissement des inégalités. Ceci est d'ailleurs confirmé par la présence d'un effet non-monotone du degré de décentralisation, défini comme la part des recettes locales propres dans les recettes totales de la commune.

L'existence d'interactions stratégiques démontrée dans nos études prouve que le processus de décentralisation est effectif dans bon nombre de pays en développement malgré des capacités fiscales demeurant souvent limitées. Néanmoins, la décentralisation, encouragée par les organisations internationales, n'est pas une panacée. La compréhension de ses limites sera améliorée par une analyse systématique de ses effets qui nécessite un effort permanent de collecte de données sur les finances publiques locales. Les conséquences de la décentralisation sont aussi fortement dépendantes du contexte dans lequel elle est mise en place. Nous pouvons d'ores et déjà noter que le type de transferts choisi et la manière dont ils sont alloués constituent de réels défis dont dépend, en partie, la réussite de la décentralisation. De plus, un processus de décentralisation uniforme ne paraît pas adéquat face à l'hétérogénéité des juridictions locales, en termes de niveau de richesse notamment, au sein d'un même pays. Un bon dosage du degré de décentralisation voire une progressivité de la mise en place de cette réforme (Weingast, 2009) peut, sans doute, constituer un moyen efficace d'empêcher une aggravation des inégalités consécutive au transfert de compétences à des juridictions dont les ressources sont trop faibles pour faire face aux responsabilités qui leur incombent.

References

Akai, N., and M. Sakata (2002): "Fiscal decentralization contributes to economic growth: Evidence from state-level cross-section data for the United States," *Journal of Urban Economics*, 52(1), 93–108.

Akin, J., P. Hutchinson, and K. Strumpf (2005): "Decentralisation and government provision of public goods: The public health sector in Uganda," *The Journal of Development Studies*, 41(8), 1417–1443.

Albouy, D. (2010): "Evaluating the efficiency and equity of federal fiscal equalization," NBER Working Papers 16144, National Bureau of Economic Research, Inc.

Alderman, H. (2002): "Do local officials know something we don't? Decentralization of targeted transfers in Albania," *Journal of Public Economics*, 83(3), 375–404.

Alesina, A., and E. L. Ferrara (2005): "Ethnic diversity and economic performance," *Journal of Economic Literature*, 43(3), 762–800.

Alm, J., and J. Boex (2002): "An overview of intergovernmental fiscal relations and subnational public finance in Nigeria," Working Paper Series, at AYSPS, GSU 0201, International Studies Program, Andrew Young School of Policy Studies, Georgia State University.

Alperovich, G. (1984): "The economics of choice in the allocation of intergovernmental grants to local authorities," *Public Choice*, 44(2), 285–296.

Anderson, G. M., and R. D. Tollison (1991): "Congressional influence and patterns of New Deal spending, 1933-1939," *Journal of Law and Economics*, 34(1), 161–75.

Anselin, L., A. K. Bera, R. Florax, and M. J. Yoon (1996): "Simple diagnostic tests for spatial dependence," *Regional Science and Urban Economics*, 26(1), 77–104.

Anselin, L., J. Le Gallo, and H. Jayet (2006): "Spatial econometrics and panel data models," in *Handbook of Econometrics*, ed. by L. M. . P. Sevestre. Elsevier.

Aragon, F. (2009): "The flypaper effect revisited," Economic organisation and public policy discussion papers series, Suntory and Toyota International Centres for Economics and Related Disciplines, LSE.

Arellano, M., and S. Bond (1991): "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations," *Review of Economic Studies*, 58(2), 277–97.

Arikan, G. G. (2004): "Fiscal decentralization: A remedy for corruption?," *International Tax and Public Finance*, 11(2), 175–195.

Arulampalam, W., S. Dasgupta, A. Dhillon, and B. Dutta (2009): "Electoral goals and center-state transfers: A theoretical model and empirical evidence from India," *Journal of Development Economics*, 88(1), 103–119.

Arze, J., J. Martinez-Vasquez, and R. Puwanti (2008): "Local government fiscal competition in developing countries: The case of Indonesia," *Urban Public Economics Review*, pp. 13–45.

Ashworth, J., and B. Heyndels (1997): "Politicians' preferences on local tax rates: An empirical analysis," *European Journal of Political Economy*, 13(3), 479–502.

Atlas, Cary M, e. a. (1995): "Slicing the federal government net spending pie: Who wins, who loses, and why," *American Economic Review*, 85(3), 624–29.

Azfar, O., and J. A. Livingston (2010): "Federalist disciplines or local capture? An empirical analysis of decentralization in Uganda," Working Papers 12, I.R.I.S., University of Maryand.

Baer, K. (2002): "Improving large taxpayer compliance: A review of country experience," Occasional Paper 215, International Monetary Fund.

Bahl, R. (1999): *Fiscal decentralization and intergovernmental transfers in less developed countries*. The 1990 Institute.

Banful, A. B. (2010): "Do formula-based intergovernmental transfer mechanisms eliminate politically motivated targeting? Evidence from Ghana," *Journal of Development Economics*, 94(1), 11.

Bardhan, P. (2002): "Decentralization of governance and development," *Journal of Economic Perspectives*, 16(4), 185–205.

Bardhan, P., and D. Mookherjee (2005): "Decentralizing antipoverty program delivery in developing countries," *Journal of Public Economics*, 89(4), 675–704.

——— (2006): "Pro-poor targeting and accountability of local governments in West Bengal," *Journal of Development Economics*, 79(2), 303–327.

Bardhan, P. K., and D. Mookherjee (2000): "Capture and governance at local and national levels," *American Economic Review*, 90(2), 135–139.

Barenstein, M., and L. de Mello (2001): "Fiscal decentralization and governance: A cross-country analysis," IMF Working Papers 01/71, International Monetary Fund.

Bassetto, M., and C. Phelan (2008): "Tax riots," *Review of Economic Studies*, 75(3), 649–669.

Baunsgaard, T., and M. Keen (2010): "Tax revenue and (or?) trade liberalization," *Journal of Public Economics*, 94(9-10), 563–577.

Besley, T., and A. Case (1995): "Incumbent behavior: Vote-seeking, tax-setting, and yardstick competition," *American Economic Review*, 85(1), 25–45.

Besley, T., and S. Coate (2003): "Centralized versus decentralized provision of local public goods: A political economy approach," *Journal of Public Economics*, 87(12), 2611–2637.

Besley, T. J., and M. Smart (2002): "Does tax competition raise voter welfare?," Discussion Papers 3131, C.E.P.R.

Bird, R. M. (2011): "Subnational taxation in developing countries: A review of the literature," *Journal of International Commerce, Economics and Policy*, 2(01), 139–161.

Bird, R. M., and E. Rodriguez (1999): "Decentralization and poverty alleviation. International experience and the case of the Philippines," *Public Administration and Development*, 19, 299–319.

Bird, R. M., and M. Smart (2002): "Intergovernmental fiscal transfers: International lessons for developing countries," *World Development*, 30(6), 899–912.

Bird, R. M., and F. Vaillancourt (1998): *Fiscal decentralization in developing countries*. Cambridge University Press.

Blair, H. (2000): "Participation and accountability at the periphery: Democratic local governance in six countries," *World Development*, 28(1), 21–39.

Blanchard, O., and A. Shleifer (2001): "Federalism with and without political centralization: China versus Russia," *IMF Staff Papers*, 48(4), 8.

Bloch, F., and U. Zenginobuz (2007): "The effect of spillovers on the provision of local public goods," *Review of Economic Design*, 11(3), 199–216.

Blundell, R., and S. Bond (1998): "Initial conditions and moment restrictions in dynamic panel data models," *Journal of Econometrics*, 87(1), 115–143.

Boadway, R., and A. Shah (2007): *Intergovernmental fiscal transfers: principles and practices*, Public Sector Governance and Accountability Series. Washington, D.C.: The World Bank.

Boex, J. (2003): "The incidence of local government allocations in Tanzania," *Public Administration and Development*, 23(5).

Boex, J., and J. Martinez-Vazquez (2005): "The determinants of the incidence of intergovernmental grants: A survey of the international experience," Working Paper Series, at AYSPS, GSU 0509, International Studies Program, Andrew Young School of Policy Studies, Georgia State University.

Bordignon, M., F. Cerniglia, and F. Revelli (2003): "In search of yardstick competition: A spatial analysis of Italian municipality property tax setting," *Journal of Urban Economics*, 54(2), 199–217.

Brennan, G., and J. M. Buchanan (1977): "Towards a tax constitution for Leviathan," *Journal of Public Economics*, 8(3), 255–273.

Brett, C., and J. Pinkse (2000): "The determinants of municipal tax rates in British Columbia," *Canadian Journal of Economics*, 33(3), 695–714.

Brülhart, M., and M. Jametti (2007): "Does tax competition tame the Leviathan?," Discussion Papers 6512, C.E.P.R.

Brueckner, J. K. (1998): "Testing for strategic interaction among local governments: The case of growth controls," *Journal of Urban Economics*, 44(3), 438–467.

——— (2003): "Strategic interaction among governments: An overview of empirical studies," *International Regional Science Review*, 26(2), 175–188.

Brueckner, J. K., and L. A. Saavedra (2000): "Do local governments engage in strategic property-tax competition?," *National Tax Journal*, 54(3), 231–253.

Buchanan, J. (1950): "Federalism and fiscal equity," *The American Economic Review*, 40(4), 583–599.

Buettner, T. (2001): "Local business taxation and competition for capital: The choice of the tax rate," *Regional Science and Urban Economics*, 31(2-3), 215–245.

——— (2006): "The incentive effect of fiscal equalization transfers on tax policy," *Journal of Public Economics*, 90(3), 477–497.

Bulow, J. I., J. D. Geanakoplos, and P. D. Klemperer (1985): "Multimarket oligopoly: Strategic substitutes and complements," *Journal of Political Economy*, 93(3), 488–511.

Bungey, M., P. Grossman, and P. Kenyon (1991): "Explaining intergovernmental grants: Australian evidence," *Applied Economics*, 23(4A), 659–68.

Cai, H., and D. Treisman (2005): "Does competition for capital discipline governments? Decentralization, globalization, and public policy," *American Economic Review*, 95(3), 817–830.

Caldeira, E., M. Foucault, and G. Rota-Graziosi (2008): "Decentralization in Africa and the nature of local governments' competition: Evidence from Benin," Working Paper 1018, CERDI.

Canegrati, E. (2006): "Political bad reputation," MPRA Paper 1018, University Library of Munich, Germany.

Caputo, M. R. (1996): "The envelope theorem and comparative statics of Nash Equilibria," *Games and Economic Behavior*, 13(2), 201–224.

Case, A. (2001): "Election goals and income redistribution: Recent evidence from Albania," *European Economic Review*, 45(3), 405–423.

Case, A. C., H. S. Rosen, and J. J. Hines (1993): "Budget spillovers and fiscal policy interdependence : Evidence from the states," *Journal of Public Economics*, 52(3), 285–307.

Chambas, G. (2010): *Mobiliser des ressources locales en Afrique subsaharienne*. Economica, Paris.

Chavis, L. (2009): "Decentralizing development: Allocating public goods via competition," *Journal of Development Economics*, 12(4).

Cole, S. (2009): "Fixing market failures or fixing elections? Agricultural credit in India," *American Economic Journal: Applied Economics*, 1(1), 219–50.

Cox, G., M. M. (1986): "Electoral politics as a redistributive game," *Journal of Politics*, 48(2), 370–389.

Dahlberg, M., and E. Johansson (2002): "On the vote purchasing behavior of incumbent governments," *The American Political Science Review*, 96(1), 27–40.

Dahlberg, M., E. Mörk, J. Rattso, and H. Agren (2008): "Using a discontinuous grant rule to identify the effect of grants on local taxes and spending," *Journal of Public Economics*, 92(12), 2320–2335.

Dahlby, B. (2011): "The marginal cost of public funds and the flypaper effect," *International Tax and Public Finance*, 18(3), 304–321.

Davoodi, H., D. Xie, and H.-f. Zou (1999): "Fiscal decentralization and economic growth in the United States," *Journal of Urban Economics*, 45(2), 228–239.

De Mello, L. J. (2000): "Fiscal decentralization and intergovernmental fiscal relations: A cross-country analysis," *World Development*, 28(2), 365–380.

Deneckere, R., and M.-Y. Liang (2010): "The congestion effect in tax compliance and enforcement," Discussion paper, Department of Economics, University of Wisconsin.

Devereux, M. P., B. Lockwood, and M. Redoano (2008): "Do countries compete over corporate tax rates?," *Journal of Public Economics*, 92(5-6), 1210–1235.

Dixit, A. K. (1986): "Comparative statics for oligopoly," *International Economic Review*, 27(1), 107–22.

Egger, P., M. Koethenbuerger, and M. Smart (2010): "Do fiscal transfers alleviate business tax competition? Evidence from Germany," *Journal of Public Economics*, 94(3-4), 235–246.

Enikolopov, R., and E. Zhuravskaya (2007): "Decentralization and political institutions," *Journal of Public Economics*, 91(11-12), 2261–2290.

Estache, A., and S. Sinha (1995): "Does decentralization increase spending on public infrastructure?," Policy Research Working Paper Series 1457, The World Bank.

Faguet, J.-P. (2004): "Does decentralization increase government responsiveness to local needs? Evidence from Bolivia," *Journal of Public Economics*, 88(3-4), 867–893.

Faguet, J.-P., and F. Sánchez (2008): "Decentralization's effects on educational outcomes in Bolivia and Colombia," *World Development*, 36(7), 1294–1316.

Fan, C. S., C. Lin, and D. Treisman (2009): "Political decentralization and corruption: Evidence from around the world," *Journal of Public Economics*, 93(1-2), 14–34.

Figlio, D. N., V. W. Kolpin, and W. E. Reid (1999): "Do states play welfare games?," *Journal of Urban Economics*, 46(3), 437–454.

Filmer, D., and L. Pritchett (1999): "The effect of household wealth on educational attainment: Evidence from 35 countries," *Population and Development Review*, 25(1), 85–120.

Filmer, D., and L. H. Pritchett (2001): "Estimating wealth effects without expenditure data or tears: An application to educational enrollments in states of India," *Demography*, 38(1), 115–132.

Fisman, R., and R. Gatti (2002): "Decentralization and corruption: Evidence across countries," *Journal of Public Economics*, 83(3), 325–345.

Foucault, M., T. Madies, and S. Paty (2008): "Public spending interactions and local politics. Empirical evidence from French municipalities," *Public Choice*, 137(1), 57–80.

Galasso, E., and M. Ravallion (2005a): "Decentralized targeting of an antipoverty program," *Journal of Public Economics*, 89(4), 705–727.

——— (2005b): "Decentralized targeting of an antipoverty program," *Journal of Public Economics*, 89(4), 705–727.

Galiani, S., P. Gertler, and E. Schargrodsky (2008): "School decentralization: Helping the good get better, but leaving the poor behind," *Journal of Public Economics*, 92(10-11), 2106–2120.

Glaeser, E. L., B. I. Sacerdote, and J. A. Scheinkman (2003): "The social multiplier," *Journal of the European Economic Association*, 1(2-3), 345–353.

Gordon, N. (2004): "Do federal grants boost school spending? Evidence from Title I," *Journal of Public Economics*, 88(9-10), 1771–1792.

Graetz, M. J., J. F. Reinganum, and L. L. Wilde (1986): "The tax compliance game: Toward an interactive theory of law enforcement," *Journal of Law, Economics and Organization*, 2(1), 1–32.

Gramlich, E. M. (1977): "Intergovernmental grants: A review of the empirical literature," *The political Economy of Fiscal Federalism*, ed. W.E. Oates, Lexington MA : Health Publishers.

——— (1987): "Federalism and federal deficit reduction," *National Tax Journal*, (40), 299–313.

Grossman, G. M., and E. Helpman (1996): "Electoral competition and special interest politics," *Review of Economic Studies*, 63(2), 265–86.

Grossman, P. J. (1994): "A political theory of intergovernmental grants," *Public Choice*, 78(3-4), 295–303.

Guillaumont Jeanneney, S., and P. Hua (2001): "How does real exchange rate influence income inequality between urban and rural areas in China?," *Journal of Development Economics*, 64(2), 529–545.

Hamilton, J. H. (1986): "The flypaper effect and the deadweight loss from taxation," *Journal of Urban Economics*, 19(2), 148–155.

Hankla, C. R. (2009): "When is fiscal decentralization good for governance?," *Publius: The Journal of Federalism*, 39(4), 632–650.

Hartmann, B., and J. Boyce (1983): *A quiet violence: Voices from a Bangladesh village*. Zed Press, London.

Hayek, F. A. v. (1948): *Individualism and economic order*. Chicago: Chicago University Press.

Herschler, S. B. (1995): "The 1994 tax reforms: The center strikes back," *China Economic Review*, 6(2), 239–245.

Heyndels, B., and J. Vuchelen (1998): "Tax mimicking among Belgian municipalities," *National Tax Journal*, 51(2), 89–101.

Hines, J. R., and R. H. Thaler (1995): "Anomalies: The flypaper effect," *The Journal of Economic Perspectives*, 9(4), 217–226.

Huther, J., and A. Shah (1998): "Applying a simple measure of good governance to the debate on fiscal decentralization," Policy Research Working Paper Series 1894, The World Bank.

Jiang, Y. (2011): "Understanding openness and productivity growth in China: An empirical study of the Chinese provinces," *China Economic Review*, 5(2), 115–141.

Jin, H., Y. Qian, and B. R. Weingast (2005): "Regional decentralization and fiscal incentives: Federalism, Chinese style," *Journal of Public Economics*, 89(9-10), 1719–1742.

Johansson, E. (2003): "Intergovernmental grants as a tactical instrument: Empirical evidence from Swedish municipalities," *Journal of Public Economics*, 87(5-6), 883–915.

Keen, M., and M. Mansour (2010): "Revenue mobilisation in sub-saharan Africa: Challenges from globalisation I - trade reform," *Development Policy Review*, 28(5), 553–571.

Kelejian, H. H., and I. R. Prucha (1998): "A generalized spatial two-stage least squares procedure for estimating a spatial autoregressive model with autoregressive disturbances," *The Journal of Real Estate Finance and Economics*, 17(1), 99–121.

Khaleghian, P. (2003): "Decentralization and public services : The case of immunization," Policy Research Working Paper Series 2989, The World Bank.

Khemani, S. (2007): "Does delegation of fiscal policy to an independent agency make a difference? Evidence from intergovernmental transfers in India," *Journal of Development Economics*, 82(2), 464–484.

King, D., and Y. Ma (2001): "Fiscal decentralization, central bank independence, and inflation," *Economics Letters*, 72(1), 95–98.

Knight, B. (2002): "Endogenous federal grants and crowd-out of state government spending: Theory and evidence from the federal highway aid program," *The American Economic Review*, 92(1), 71–92.

Kolstad, C. D., and L. Mathiesen (1987): "Necessary and sufficient conditions for uniqueness of a Cournot equilibrium," *Review of Economic Studies*, 54(4), 681–90.

Kornai, J. (1979): "Resource-constrained versus demand-constrained systems," *Econometrica*, 47(4), 801–19.

Kornai, J., E. Maskin, and G. Roland (2003): "Understanding the soft budget constraint," *Journal of Economic Literature*, 41(4), 1095–1136.

Kraemer, M. (1997): "Intergovernmental transfers and political representation: Empirical evidence from Argentina, Brazil and Mexico," RES Working Papers 4068, Inter-American Development Bank, Research Department.

Leyden, D. (1992): "Donor-determined intergovernmental grants structure," *Public Finance Quarterly*, 20(3), 321–337.

Li, H., and L.-A. Zhou (2005): "Political turnover and economic performance: The incentive role of personnel control in China," *Journal of Public Economics*, 89(9-10), 1743–1762.

Lijphart, A. (ed.) (1977): *Democracy in plural societies: A comparative explanation*. New Haven: Yale University Press.

Lin, J. Y., and Z. Liu (2000): "Fiscal decentralization and economic growth in China," *Economic Development and Cultural Change*, 49(1), 1–21.

Lockwood, B. (2002): "Distributive politics and the costs of centralization," *Review of Economic Studies*, 69(2), 313–37.

Lockwood, B., and G. Migali (2009): "Did the single market cause competition in excise taxes? Evidence from EU countries," *Economic Journal*, 119(536), 406–429.

Ma, J. (1995): "Modelling central-local fiscal relations in China," *China Economic Review*, 6(1), 105–136.

Manor, J. (ed.) (1999): *The political economy of democratic decentralization*. Washington, D.C.: The World Bank.

Manski, C. F. (1993): "Identification of endogenous social effects: The reflection problem," *Review of Economic Studies*, 60(3), 531–42.

Martinez-Vazquez, J., and R. M. McNab (2003): "Fiscal decentralization and economic growth," *World Development*, 31(9), 1597–1616.

Martinez-Vazquez, J., and B. Searle (eds.) (2007): *Fiscal equalization: Challenges in the design of intergovernmental transfers*. Springer.

Maskin, E., Y. Qian, and C. Xu (2000): "Incentives, scale economies, and organization form," *Review of Economic Studies*, 67, 359–378.

Meng, X., and L. Zhang (2011): "Democratic participation, fiscal reform and local governance: Empirical evidence on Chinese villages," *China Economic Review*, 22(1), 88–97.

Meyer, S. A., and S. Naka (1999): "The determinants of Japanese local-benefit seeking," *Contemporary Economic Policy*, 17(1), 87–96.

Miguel, E., and F. Zaidi (2003): "Do politicians reward their supporters? Regression discontinuity evidence from Ghana," Discussion paper, Mimeo, University of California, Berkeley.

Mogues, T., S. Benin, and G. Cudjoe (2009): "Do external grants to district governments discourage own-revenue generation?: A look at local public finance dynamics in Ghana," IFPRI discussion papers 934, International Food Policy Research Institute (IFPRI).

Montalvo, J. G., and M. Reynal-Querol (2005): "Ethnic polarization, potential conflict and civil war," *American Economic Review*, 95(3), 796–816.

Moulton, B. R. (1990): "An illustration of a pitfall in estimating the effects of aggregate variables on micro unit," *The Review of Economics and Statistics*, 72(2), 334–38.

Murphy, K. M., A. Shleifer, and R. W. Vishny (1991): "The allocation of talent: Implications for growth," *The Quarterly Journal of Economics*, 106(2), 503–30.

Musgrave, R. A. (1959): *The theory of public finance*. Mc Graw-Hill, New York.

Nickell, S. J. (1981): "Biases in dynamic models with fixed effects," *Econometrica*, 49(6), 1417–26.

Oates, W. (2005): "Toward a second-generation theory of fiscal federalism," *International Tax and Public Finance*, 12(4), 349–373.

Oates, W. E. (1972): *Fiscal federalism*. New York: Harcourt Brace Jovanovich.

Panda, P. K. (2009): "Central fiscal transfers and states' own-revenue efforts in India: Panel data models," *The Journal of Applied Economic Research*, 3, 223.

Pereira, P. T. C. (1996): "A politico-economic approach to intergovernmental lump-sum grants," *Public Choice*, 88(1-2), 185–201.

Pisauro, G. (2001): "Intergovernmental relations and fiscal discipline: Between commons and soft budget constraints," Working Paper 01/65, International Monetary Fund.

Plümper, T., and V. E. Troeger (2007): "Efficient estimation of time-invariant and rarely changing variables in finite sample panel analyses with unit fixed effects," *Political Analysis*, 15(2), 124–139.

Porto, A., and P. Sanguinetti (2001): "Political determinants of intergovernmental grants: Evidence from Argentina," *Economics and Politics*, 13(3), 237–256.

Prud'homme, R. (1995): "The dangers of decentralization," *World Bank Research Observer*, 10(2), 201–20.

Qian, Y., and G. Roland (1998): "Federalism and the soft budget constraint," *American Economic Review*, 88(5), 1143–62.

Rajaraman, I., and G. Vasishtha (2000): "Impact of grants on tax effort of local government," *Economic and Political Weekly*, 35(33), 2943–2948.

Ravallion, M. (1999): "Is More Targeting Consistent with Less Spending?," *International Tax and Public Finance*, 6(3), 411–419.

Redoano, M. (2007): "Fiscal interactions among European countries. Does the EU matter?," CESifo Working Paper Series 1952, CESifo Group Munich.

Reinikka, R., and J. Svensson (2004): "Local capture: Evidence from a central government transfer program in Uganda," *The Quarterly Journal of Economics*, 119(2), 678–704.

Revelli, F. (2006): "Performance rating and yardstick competition in social service provision," *Journal of Public Economics*, 90(3), 459–475.

Robalino, D. A., O. F. Picazo, and A. Voetberg (2001): "Does fiscal decentralization improve health outcomes? Evidence from a cross-country analysis," Policy Research Working Paper Series 2565, The World Bank.

Rodden, J. (2002): "The dilemma of fiscal federalism: Grants and fiscal performance around the world," *American Journal of Political Science*, 46(3), 670–687.

Rodríguez-Pose, A., and A. Krøijer (2009): "Fiscal decentralization and economic growth in Central and Eastern Europe," *Growth and Change*, 40(3), 387–417.

Rodrik, D. (1998): "Why do more open economies have bigger governments?," *Journal of Political Economy*, 106(5), 997–1032.

Rogoff, K., and A. Sibert (1988): "Elections and macroeconomic policy cycles," *Review of Economic Studies*, 55(1), 1–16.

Roodman, D. (2009): "A note on the theme of too many instruments," *Oxford Bulletin of Economics and Statistics*, 71(1), 135–158.

Rutstein, S. O. (2008): "The DHS wealth index: Approaches for rural and urban areas," Discussion paper, The DHS Working Paper N.60.

Rutstein, S. O., and K. Johnson (2004): "The DHS wealth index," Discussion paper, DHS Comparative Reports No.6. Calverton, Maryland: ORC Macro.

Saavedra, L. A. (2000): "A model of welfare competition with evidence from AFDC," *Journal of Urban Economics*, 47(2), 248–279.

Sahn, D. E., and D. Stifel (2003): "Exploring alternative measures of welfare in the absence of expenditure data," *Review of Income and Wealth*, 49(4), 463–489.

Salmon, P. (1987): "Decentralisation as an incentive scheme," *Oxford Review of Economic Policy*, 3(2), 24–43.

Schaltegger, C. A., and D. Kuttel (2002): "Exit, voice, and mimicking behavior: Evidence from Swiss cantons," *Public Choice*, 113(1-2), 1–23.

Seabright, P. (1996): "Accountability and decentralisation in government: An incomplete contracts model," *European Economic Review*, 40(1), 61–89.

Sepulveda, C. F., and J. Martinez-Vazquez (2011): "The consequences of fiscal decentralization on poverty and income equality," *Environment and Planning C: Government and Policy*, 29(2), 321–343.

Shah, A. (1990): "The new fiscal federalism in Brazil," Policy Research Working Paper Series 557, The World Bank.

——— (1998): "Fiscal federalism and macroeconomic governance : For better or for worse?," Policy Research Working Paper Series 2005, The World Bank.

Skidmore, M. (1999): "Tax and expenditure limitations and the fiscal relationships between state and local governments," *Public Choice*, 99(1-2), 77–102.

Smart, M. (2007): "Raising taxes through equalization," *Canadian Journal of Economics*, 40(4), 1188–1212.

Smoke, P. (2001): "Fiscal decentralization in developing countries: A review of current concepts and practice," Democracy, Governance and Human Rights Papers 2, United Nations Research Institute for Social Development.

Sole-Olle, A. (2006): "Expenditure spillovers and fiscal interactions: Empirical evidence from local governments in Spain," *Journal of Urban Economics*, 59(1), 32–53.

Tanzi, V. (1994): "Corruption, government activities, and market," IMF Working Paper 94/99, International Monetary Fund, Washington, D.C.

——— (1996): "Fiscal federalism and decentralization: A review of some efficiency and macroeconomic aspects," Annual World Bank Conference on Development Economics pp.295-316, The World Bank, Washington, D.C.

Tiebout, C. M. (1956): "A pure theory of local expenditures," *Journal of Political Economy*, 64, 416.

Tranchant, J.-P. (2010): "Does fiscal decentralization dampen all ethnic conflicts? The heterogeneous impact of fiscal decentralization on local minorities and local majorities," MPRA Paper 22776, University Library of Munich, Germany.

Treisman, D. (1996): "The politics of intergovernmental transfers in post-soviet Russia," *Journal of Political Science*, 26(3), 299–335.

——— (1999): "Political decentralization and economic reform: A game theoretical analysis," *American Journal of Political Science*, 43(2), 488–517.

——— (2000): "The causes of corruption: A cross-national study," *Journal of Public Economics*, 76(3), 399–457.

——— (2007): *The architecture of government: Rethinking political decentralization*. New York: Cambridge University Press.

Tsui, K., and Y. Wang (2004): "Between separate stoves and a single menu: Fiscal decentralization in China," *The China Quarterly*, 33, 71–90.

Tsui, K.-y. (2005): "Local tax system, intergovernmental transfers and China's local fiscal disparities," *Journal of Comparative Economics*, 33(1), 173–196.

Tsui, K.-Y., and Y. Wang (2008): "Decentralization with political trump: Vertical control, local accountability and regional disparities in China," *China Economic Review*, 19(1), 18–31.

Veiga, L., and M. Pinho (2007): "The political economy of intergovernmental grants: Evidence from a maturing democracy," *Public Choice*, 133(3), 457–477.

Veiga, L., and F. Veiga (2007): "Political business cycles at the municipal level," *Public Choice*, 131(1), 45–64.

Vives, X. (1999): *Olipoly pricing. Old ideas and new tools*. The MIT Press, Cambridge, Massachusetts.

Vo, D. H. (2010): "The economics of fiscal decentralization," *Journal of Economic Surveys*, 24(4), 657–679.

Volden, C. (1999): "Asymmetric effects of intergovernmental grants: Analysis and implications for U.S. welfare policy," *Publius*, 29(3), 51–73.

Wallis, J. J. (1998): "The political economy of New Deal spending revisited, again: With and without Nevada," *Explorations in Economic History*, 35(2), 140–170.

Weingast, B. R. (1995): "The economic role of political institutions: Market-preserving federalism and economic development," *Journal of Law, Economics and Organization*, 11(1), 1–31.

Weingast, B. R. (2009): "Second generation fiscal federalism: The implications of fiscal incentives," *Journal of Urban Economics*, 65(3), 279–293.

West, L. A., and C. P. W. Wong (1995): "Fiscal decentralization and growing regional disparities in rural China: Some evidence in the provision of social services," *Oxford Review of Economic Policy*, 11(4), 70–84.

Wibbels, E. (2000): "Federalism and the politics of macroeconomic policy and performance," *American Journal of Political Science*, 44(4), 687–702.

Wildasin, D. E. (1988): "Nash equilibria in models of fiscal competition," *Journal of Public Economics*, 35(2), 229–240.

Wilson, J. D. (1999): "Theories of tax competition," *National Tax Journal*, 52, 269–304.

Winkler, D. R., and T. Rounds (1996): "Municipal and private sector response to decentralization and school choice," *Economics of Education Review*, 15(4), 365–376.

Wollera, G. M., and K. Phillips (1998): "Fiscal decentralisation and IDC economic growth: An empirical investigation," *Journal of Development Studies*, 34(4), 139–148.

World-Bank (1999): *Beyond the center: Decentralizing the state*. Washington D.C.

——— (2000): *Entering the 21st century*. Washington D.C.

——— (2004): *World development report 2004: Making services work for poor people*. New York: Oxford University Press.

Worthington, A., and B. Dollery (1998): "The political determination of intergovernmental grants in Australia," *Public Choice*, 94(3), 299–315.

Wright, G. (1974): "The political economy of New Deal spending: An econometric analysis," *The Review of Economics and Statistics*, 56(1), 30–38.

Zhang, L. (1999): "Chinese central-provincial fiscal relationships, budgetary decline and the impact of the 1994 fiscal reform : An evaluation," *The China Quarterly*, 5(2), 115–141.

Zhang, T., and H. fu Zou (1998): "Fiscal decentralization, public spending, and economic growth in China," *Journal of Public Economics*, 67, 221–240.

Zhang, X. (2006): "Fiscal decentralization and political centralization in China: Implications for growth and inequality," *Journal of Comparative Economics*, 34(4), 713–726.

Zhuravskaya, E. V. (2000): "Incentives to provide local public goods: Fiscal federalism, Russian style," *Journal of Public Economics*, 76(3), 337–368.

Zodrow, G. R., and P. Mieszkowski (1986): "Pigou, Tiebout, property taxation, and the underprovision of local public goods," *Journal of Urban Economics*, 19(3), 356–370.