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## **Abstract**

The fiscal incentives literature emphasizes how the design of transfer systems has a significant implication on the behavior of local governments within decentralized systems. The empirical findings on the relationship between intergovernmental transfers and the incentives they create for local revenue generation are inconclusive and differ from country to country. Given the lack of data on local public finances, this type of study rarely involves developing countries. Using a unique and rich socio-economic and public finance data covering a large set of Moroccan municipalities over the period 2005 to 2009, this paper contributes to the new generation of fiscal federalism literature by assessing the fiscal incentive effects of two types of transfers: general purpose transfers (unconditional) defined by a formula and specific purpose transfers (conditional) allocated on an ad-hoc basis. After correcting for the endogeneity problem, our findings support the existence of a significant incentive effect of unconditional transfers and a less robust effect of conditional transfers. Suggesting that transfers from the central government complement local own revenues by encouraging Moroccan municipalities to collect more revenues.

## **Keywords**

Decentralization; Local public finance; Fiscal incentives; Intergovernmental transfers; Morocco; Panel data.

## **JEL codes**

H30, H71, H77, O12

## INTRODUCTION

Decentralization is one approach adopted by both developed and developing countries in last decades to meet the challenges of development. It aims to endow local governments with more autonomy through significant revenue raising capacity. Fiscal decentralization is seen as a way to improve public sector performance by increasing local financial management efficiency and by making government more accountable. Moreover, heterogeneous preferences of citizens are more likely to be revealed, as well as addressed, by officials that are closer and more accountable to constituents than remotely located officials (Oates, 1972).

In a decentralized system, central government devolves expenditure tasks to subnational governments that sometimes exceed their capacity to raise own revenues, thus creating a problem of vertical imbalance. Local governments face different costs for providing public services and for raising own revenues. Moreover, most local governments lack the administrative ability to raise revenues. It results in horizontal imbalance between expenditure and revenue; governments at the same level cannot always face their assigned expenditures and responsibilities relying only on their own revenues.

The standard literature on fiscal federalism<sup>1</sup> (FGFF) emphasizes the importance of transfers for mitigating vertical and horizontal imbalances and discusses the optimal design of these transfers and their appropriate amount. It studies the performance of decentralized systems under the assumption that each level of government would seek to maximize the social welfare of its respective constituency. These vertical and horizontal gaps can be filled either by giving local governments more revenue raising responsibility or by adopting redistributive transfers. The first option is often difficult to implement, firstly because tax bases and the capacity to raise revenues are different among local jurisdictions, thus decentralization will inevitably worsen the horizontal imbalance. Second, the central government has a greater capacity to assess some tax bases and then collect these taxes than local governments. Consequently, these revenues are more costly and inefficiently collected at a local level. Equalizing transfers are another way to compensate for these imbalances by insuring<sup>1</sup> that the revenues and expenditures at each level are equal, with larger transfers to local governments having lower tax capacity (Dahlby, 1996). Therefore, a substantial share of local revenues often comes from these transfers. The ‘benefit principle’ of taxation according to which local governments should rely on local taxes to be more effective and accountable is weakened by these transfers. Thus, one cannot design an appropriate decentralized system without simultaneously designing an appropriate system of intergovernmental transfers.

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<sup>1</sup> The standard literature refers to the First Generation Fiscal Federalism (FGFF) which addressed the issues of equalizing transfers from the central government to local governments focusing on the normative public finance goals: allocation efficiency, equity in distribution, and stabilization (Bird, 2010)

Intergovernmental transfers can be classified into two categories: general-purpose (unconditional) and specific-purpose (conditional or earmarked) transfers<sup>2</sup>. The amount to be transferred can be defined in four ways: as a tax sharing transfer, according to which a predetermined share of central taxes is allocated to local governments; according to a formula based on some specific criteria; in an ad-hoc way where the amount to be transferred is discretionarily decided; through cost reimbursement meaning that the central government cover the expenditures faced by the local government in providing some services. In practice, most countries use a mix of these four ways, as in the case of Morocco, which is the focus of this paper.

Unconditional transfers are allocated without any conditionality on local expenditures. This kind of transfer is provided as budget support, increasing the financial resources of the local government. Unconditional transfers augment the local government's resources and thus relax its budget constraint, enabling the local government to extend its provision of public goods and services or to provide tax relief. By contrast, conditional transfers are funding specific projects; they intend to stimulate expenditures in specific areas. They can be matching or nonmatching, meaning that the central government match the funds to some degree (matching) or cover all the expenditures supported by the local government (non-matching). Conditional transfers increase the financial resources of the local government like unconditional transfers, but limits local public policies choices leading to "unwanted" public investments (Boadway and Shah 2007).

Choosing between conditional and unconditional transfers is a major public policy choice as each type of transfer gives the local government different incentives regarding public expenditures and revenue mobilization.

Second generation fiscal federalism (SGFF) complements the FGFF by studying how the prescriptions of FGFF should be adapted given fiscal and political incentives facing local officials (Weingast, 2014).

SGFF developed the "fiscal incentives approach" which highlights the importance of institutions for revenue generation by local governments and the incentives they generate for local public officials to be more accountable (Careaga and Weingast, 2003; Singh and Srinivasan, 2006). The design of the transfer systems has significant implications for the fiscal incentives within decentralized systems, as it may alter the fiscal decisions of recipient governments. One of the adverse effects of transfers which is widely recognized in the literature is "the Flypaper effect". It refers to the assumption that increases in equalizing transfers tend to stimulate more spending than do comparable increases in local tax revenues (Hines and Thaler, 1995; Inman, 2008; Turnbull, 1998). The second adverse effect is that transfers may be "gap-filling", meaning that central government bails out local governments in fiscal distress. Local governments with larger deficits receive larger transfers relaxing their budget constraint, giving them incentives to spend beyond their revenues. To avoid this gap filling issue, local governments need to face a 'hard

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<sup>2</sup> Following the classification methods proposed in the literature by Boadway and Shah (2007).

budget constraint<sup>3</sup>. Therefore, they should be able to increase or decrease expenditures only by increasing or decreasing their local own revenues in such a way that citizens can make them accountable for their decisions.

On the revenue side, transfers may create inefficiencies in tax administration and tax effort of recipient local governments (Dahlby, 2002; Tanzi, 1996). Several studies have tested the effect of central transfers on local revenue collection.

The SGFF literature argues that equalizing transfers that are negatively related or weakly positively related to local revenue collection give local governments poor fiscal incentives to foster local economic development. Dependence on central transfers compromises local government's autonomy in setting policies in accordance with local preferences. It also gives to the central government the capacity to threaten local jurisdictions that deviate from its desired policies by reducing transferred revenues. Local governments that rely heavily on transfers tend to be less accountable to citizens, to be less efficient in levying taxes and providing public goods (Moore, 2008; Bird, 2010; Weingast, 2009). In a context of informational asymmetries, equalizing transfers that are inversely related to the tax base or to some measure of tax capacity, will create an incentive for the recipient government to modify its tax and fiscal policies in ways that allow it to receive larger equalization transfers, or that prevent it from losing them. Similarly, Bordignon & *al.* (2001) argue that asymmetric information between central and local governments tends to drive local governments to under-tax or overspend to capture more equalizing transfers.

Furthermore, Caldeira & Rota-graziosi (2014) find a “crowding-in” effect of intergovernmental transfers on local own revenues, meaning that central transfers increase local tax revenues. They develop a “virtuous cycle” model, which explains how the central transfers can positively affect local revenue collection.<sup>3</sup> In fact, intergovernmental transfers alleviate the revenue constraints of local governments allowing them to improve their ability to provide public goods and services and to strengthen their institutional capacity to raise taxes. In turn, improving tax collections increases vertical accountability, tax compliance and citizens' willingness to pay taxes and fees. This crowding-in effect is conditional to the allocation of intergovernmental transfers to the effective provision of public goods and services instead of tax reliefs.

The impact of intergovernmental transfers on local tax effort has been empirically investigated in a developed country context, but given the lack of data on local public finances, this type of study rarely involves developing countries. The empirical findings about the relationship between central transfers and

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<sup>3</sup> “A virtuous circle may be at play where central grants increase local public spending, which improves private income and/or voluntary tax compliance, and consequently local own revenue” (see Caldeira and Rota-graziosi, 2014, page 7)

the incentives they create for revenue mobilization are inconclusive and differ from country to country. Different transfers programs may have different effects and the results depend on the institutional design in the country.

A seminal paper by Correa and Stelner (1999) addressed this issue for Latin American countries; they find the evidence of a disincentive effect of fiscal transfers on local tax effort. Liu and Zhao (2011) highlight the negative effect of formula-based transfers that aim to reduce regional fiscal disparities on provincial tax efforts in China using a panel data from 1995 to 2007. Zhuravskaya (2000) examines this question for Russian fiscal system and shows that any increase in local government's own revenue is almost entirely offset by lowering conditional shared revenues. Russian local governments are then unable to benefit from an increase in their local tax effort, and therefore have no incentives to expand it. For the Indian local governments, the incentive effect of unconditional fiscal transfers on their own tax revenue has been discussed by Rajaraman & Vasishtha 2000. They conclude that transfers from the center are significantly and negatively associated with states own-revenue. In the African context, Mogues and Benin (2012) investigate the way in which conditional transfers affect internally generated revenues and funds in Ghana. Their results show that the flow of all grants taken together discourages internally generated revenues and funds collection.

On the reverse, some recent empirical studies find that central transfers have crowding in effect rather than crowding out effect on local revenue generation. Dahlberg & *al.* (2008) have investigated econometrically the potential endogeneity of unconditional central transfers and found evidence of a positive effect of intergovernmental transfers on local taxes and local tax revenues in Swedish municipalities. Knight (2002) concludes that the endogeneity can explain the empirical findings of crowding-out effects. Similar findings of incentive effects are found by Caldeira and Rota-Graziosi (2014) for Benin. By analyzing the effect of unconditional central grants shared according to population criteria on local own revenue, they conclude that there is a positive impact.

This paper contributes to the Second Generation of Fiscal Federalism (SGFF)<sup>4</sup> literature. Using a unique database on Moroccan municipalities and controlling for the endogeneity problem; this paper is the first attempt in the literature to test empirically the incentive effects of the two types of transfers: unconditional transfer allocated (shared) according to a formula and conditional transfer allocated on an ad-hoc basis.

The remainder of the paper is organized as follows: Section 2 presents the tax structure of Moroccan municipalities and describes the intergovernmental transfers system. Section 3 describes the empirical model for determining the incentives effect that intergovernmental transfers have on local own revenue at municipal level. The results are discussed before concluding in Section 4.

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<sup>4</sup> Second generation fiscal federalism (SGFF) has begun to emerge in the last decade with Oates (2006) and Weingast, (2009) .



## 2. BACKGROUND AND TAX STRUCTURE OF MOROCCAN MUNICIPALITIES

Three administrative levels represent the Moroccan decentralized system; they have legal personality, financial autonomy and elected assemblies responsible for managing their affairs democratically. The municipalities named “communes” are the third and last administrative subdivision after prefectures and regions; they are 1503, including 221 urban municipalities and 1282 rural municipalities. The municipality is held by a municipal council elected for six years. The municipal council is responsible for resolving all issues related to economic and social development of the municipality in accordance with the guidelines and objectives set by the national program.

It decides to make or participate in urban restructuring programs, habitat programs ensuring the preservation and promotion of local architecture character. It is responsible for managing local public services, particularly in the electricity and water sectors, and urban transport supply. The municipal council also deals with the collection and treatment of household waste and contributes to the realization, maintenance and management of cultural and sports facilities. He initiates all actions necessary for the promotion of social, cultural and sports activities. He finally participates to the implementation of national, regional or local fight against illiteracy. The central government transfers other responsibilities to the municipal council like the maintenance of schools and health centers, conducting reforestation programs, implementation and maintenance of training centers and infrastructure equipment.

To deal with all of their responsibilities and expenditures needs, municipalities have resources coming from land and property taxes, local taxes and fees, borrowing resources, tax sharing resources and others specific to some municipalities with past surpluses or royalties from natural resources.

In respect to local taxes, there are on one hand taxes collected by the municipal council (Own local taxes); the rate and the base of these taxes are specific to each municipality and fixed by the municipal council. They include a large set of taxes concerning essentially public domain usage, public transport, building operations, beverage, tourism, etc. More specifically, the tax on undeveloped land levied on undeveloped urban lands situated within the perimeters of urban municipalities; The tax on construction operations applies to construction, reconstruction and expansion or any operation that requires a building permit; the tax on parceling operations applied to any action of property parceling payable by the beneficiary of the authorization to subdivide; The beverage tax due by the operators of cafes, bars and tea rooms and in general by any debiting drinks for consumption on site; the Tourist tax levied on tourist accommodation establishments and coming in addition to the price of the room; The tax on mineral and table water due by companies delivering mineral water or table water in the form of bottles; The tax on public passenger transport levied on public transports such as taxis and buses according to their territorial exploitation; and finally the tax on the extraction of quarry and mineral products applied on the quantities of products

extracted from quarries located within the jurisdiction of the municipality. This tax is due by the authorized operator.

**Table 1: Distribution of local own revenues in million dirhams**

		2005	2006	2007	2008	2009
<b>Total local own revenues</b>		<b>1930</b>	<b>2100,99</b>	<b>2372,05</b>	<b>2488,54</b>	<b>2717,67</b>
	mean	1,45	1,59	1,71	1,85	2,01
	s.d	(6,25)	(7,96)	(8,58)	(8,04)	(8,61)
	% Of total revenues	14.08%	13.90%	13.91%	15.12%	13.48%
<b>Local taxes</b>		<b>369</b>	<b>398,90</b>	<b>1 005,75</b>	<b>1 198,52</b>	<b>1 422,25</b>
	mean	0,28	0,30	0,73	0,89	1,05
	s.d	(1,85)	(2,31)	(5,24)	(5,03)	(5,33)
<b>Tax on municipal products</b>		<b>742</b>	<b>796,83</b>	<b>330,19</b>	<b>284,53</b>	<b>319,78</b>
	mean	0,56	0,61	0,24	0,21	0,24
	s.d	(3,1)	(3,7)	(1,68)	(1,35)	(1,58)
<b>Heritage tax</b>		<b>819</b>	<b>899,46</b>	<b>1 024,73</b>	<b>997,24</b>	<b>978,36</b>
	mean	0,62	0,68	0,74	0,74	0,73
	s.d	(2,07)	(2,54)	(2,19)	(2,38)	(2,27)

Source: General Treasury of the Kingdom. Authors calculations in million dirhams, 2005 constant currency.

On the other hand, three taxes are supported by the central tax administration for the municipality - “ceded revenues” hereafter - they include residential property tax collected only in urban municipalities, the tax on communal services, and the patent taxes. These taxes are closely linked to the territory of the municipality; they are raised on the rental value of buildings within the jurisdiction of the municipality. The central tax administration retains 10% at source to face expenses engaged for the collection of these taxes and allocates the remaining 90% of the revenues collected to the municipalities. The rate and the base for these taxes are defined annually by the finance act.

**Table 2: Distribution of ceded revenues in millions dirhams**

		2005	2006	2007	2008	2009
<b>Total ceded revenues</b>		<b>1580</b>	<b>1811</b>	<b>1888</b>	<b>1482</b>	<b>1966</b>
	mean	1,18	1,37	1,37	1,10	1,46
	s.d	(7,29)	(9,47)	(8,98)	(7,07)	(9,87)
	% Of total revenues	<b>11.53%</b>	<b>11.99%</b>	<b>11.06%</b>	<b>9.01%</b>	<b>9.77%</b>
<b>Patent tax</b>		<b>486,00</b>	<b>511,21</b>	<b>556,01</b>	<b>490,39</b>	<b>770,91</b>
	mean	0,38	0,40	0,42	0,38	0,58
	s.d	(2,40)	(0,25)	(2,58)	(2,32)	(3,95)
<b>Residential property tax</b>		<b>287</b>	<b>337,90</b>	<b>358,65</b>	<b>156,45</b>	<b>129,54</b>
	mean	0,20	0,24	0,25	0,11	0,09
	s.d	(1,41)	(2,02)	(1,89)	(1,25)	(0,77)
<b>Tax on municipal services</b>		<b>804,00</b>	<b>962,39</b>	<b>977,29</b>	<b>830,73</b>	<b>1068,95</b>
	mean	0,56	0,67	0,68	0,57	0,73
	s.d	(3,98)	(5,04)	(4,80)	(4,08)	(5,42)

Source: General Treasury of the Kingdom. Authors calculations in million dirhams, 2005 constant currency.

Finally, tax sharing resources are determined as a share of VAT collected at national level and are composed of two types. First, unconditional transfers<sup>5</sup> are allocated to all municipalities according to an explicit Formula using objective and quantitative criteria to allocate 18% of VAT collections. It gives weight to three criteria including a constant part for all municipalities, indicators of fiscal capacity mobilization, and tax effort (Table 4). The goal being to reduce horizontal imbalances and to offset the mismatch between local expenditures responsibilities and local revenues by rewarding municipalities that have made an effort to improve their own resources collection and to provide them with some positive incentives to increase the overall level of revenue mobilization.

**Table 3: Allocation criteria of Unconditional formula based VAT transfers**

		<i>Allocation criteria</i>		
		<b>Lump sum part</b>	<b>Capacity mobilization</b>	<b>Tax effort</b>
<b>AREA</b>	<b>URBAN</b>	<b>15,5%</b>	<b>69%</b>	<b>15,5%</b>
	<b>RURAL</b>	<b>30%</b>	<b>60%</b>	<b>10%</b>

Source: Information Bulletin of the Moroccan General Direction of Local Communities

Second, conditional transfers representing 5% of VAT collections are allocated to nearly 200 municipalities each year. These transfers are allocated for specific purposes such as assisting municipalities with significant investment needs. They allow supporting infrastructure construction, social and urban development; environmental protection; providing emergency funding for natural disasters or epidemics. During the time under study only 200 municipalities benefited from this transfer. Conditional transfers are completely discretionary and closely related to bargaining power of municipalities.

Our empirical model considers these two types of transfers and excludes ceded revenues. Conditional transfers are undoubtedly the most discretionary and the less predictable for Moroccan municipalities; therefore they are more likely to exhibit perverse fiscal incentives on local revenue generation. Unconditional transfers are on the other side a stable source of revenue for Moroccan municipalities and aims to encourage them to generate more local own revenue.

<sup>5</sup> Unconditional transfers aim to be a stable source of revenue for Moroccan municipalities. However, it has been demonstrated that this transfer is influenced by political consideration especially in the year of local election (El Khdari, 2015).

**Table 4: Distribution of intergovernmental transfers in millions dirhams**

	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>
<b>VAT</b>	<b>32607</b>	<b>37842,95</b>	<b>47151,67</b>	<b>56017,68</b>	<b>49893,75</b>
% GDP	6,18	6,99	8,50	9,72	8,30
<b>Total revenues</b>	<b>13700</b>	<b>15103,87</b>	<b>17078,78</b>	<b>16468,25</b>	<b>20110,78</b>
Mean	10,30	11,42	12,33	12,26	14,95
<b>Total conditional transfers</b>	326	352	484	574	924
mean	0,96	0,98	1,22	1,87	2,65
s.d	(1,82)	(1,87)	(2,88)	(4,85)	(8,87)
% total revenues	2,38	2,33	2,83	3,48	4,59
% VAT	1	0,93	1,03	1,02	1,85
<b>Total unconditional transfers</b>	<b>4 030</b>	<b>4 105</b>	<b>4 554</b>	<b>4 584</b>	<b>5 798</b>
mean	3,09	3,16	3,32	3,42	4,30
s.d	(7,04)	(6,75)	(7,46)	(6,89)	(9,42)
% total revenues	29,42	27,18	26,67	27,83	28,83
% VAT	12,36	10,85	9,66	8,18	11,62

Source: General Treasury of the Kingdom. Authors calculations in million dirhams, 2005 constant currency.

Additionally municipalities can borrow from the “Fonds d'Équipement Communal” (FEC), a bank under the supervision of the central government and the main lender to local communities. The FEC contributes to strengthening local expertise and promoting local development and investment.

On average over the 5 years, each municipality generated 13 million dirhams annually of total revenues including 14% of own local taxes, 11% of ceded revenues, 40% of tax sharing resources (unconditional and conditional transfers) and 7% of borrowing resources. Local resources represent a small and a lower part of total revenues compared to external funds coming from tax sharing transfers and borrowing resources. Moroccan municipalities are obviously heavily dependent on transfers from central government. However, the composition of these municipal revenues didn't change significantly over the period of study.

A quick look at the distribution of revenue shows an important difference between municipalities (Graph 1 in Appendix). In absolute term, the average total income is 14 times greater in urban municipalities than in rural ones and 23 times for own local revenues. It is not unusual to find such disparities between richest and poorest places especially in developing countries; more urbanized municipalities have greater taxable capacities and stronger administrative means. In relative term, the share of local own taxes and ceded revenues in total revenue for urban municipalities is 15.4% and 15.2% respectively while it represents 9.15% and 3% for rural municipalities. Moreover, an important component of rural revenue comes from

tax sharing resources, which represent slightly less than half of all revenues; urban municipalities are however less dependent on transfers with a share of 27% of total revenue.

### 3. ESTIMATION FRAMEWORK

#### a. Data

The database used for the analysis is unique and unexplored; it contains comprehensive information on Moroccan municipalities' public finances. The panel data obtained from three different organizations covers a period of 5 years (2005-2009) and over 90% of existent Moroccan municipalities at the time of the study. The data on the finances of municipalities were collected from the General Treasury of the Kingdom (TGR), one of the most important departments of the Ministry of Finance, which manages all financial and accounting flows of the State and local authorities. There is information on local revenues with disaggregated sources (own local revenues, loans, reassigned resources, etc.), data on local spending by economic classification (capital expenditures, personnel, recurrent, debt, etc.). The second data source is on the socio-economic and demographic variables at municipal level. It comes first from population census data (2004) performed every decade by the High Commission for Planning (HCP), secondly from database on living standards, poverty, vulnerability and inequality at municipal level for the years 2004 and 2007 also provided by HCP. The data includes annual observations from 2005 to 2009 for nearly 1330 Moroccan municipalities. Moroccan municipalities are predominantly rural; we have about 200 urban municipalities and 1130 rural municipalities.

The basic question this paper investigates is whether two different types of transfers from central government influence the local revenue generation. To do so the following model is applied to a panel of Moroccan municipalities over the period 2005-2009:

$$\ln(R_{it}) = \ln(\text{Tr}_{it})\alpha + \ln(\text{EXP}_{it-1})\beta + X_{it}\gamma + \theta_i + \delta_t + \varepsilon_{it} \quad (1)$$

Where  $R_{it}$  is the log of per capita local own-revenue of municipality  $i$  at year  $t$ , the explanatory variable of interest  $\text{Tr}_{it}$  is the log of conditional or/and unconditional transfers in per capita terms, received by municipality  $i$  at time  $t$  from central state<sup>6</sup>.  $\text{EXP}_{it-1}$  is a vector of two types of past expenditures of local government including the log of lag personnel and capital expenditures of the municipalities. The dynamic relationship between local government revenues and expenditures has been investigated by Dahlberg and Johansson (1998) in Sweden and recently by Mogues and Benin (2012) in Ghana. Their main findings were that expenditures are positively related to own-source revenues, suggesting that an increase in local

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<sup>6</sup> Table 3 describes the variables used for the empirical analysis.

expenditures in a given time period may exert pressure to expand revenues in subsequent time periods, especially when the local government has a hard budget constraint<sup>7</sup>.

$X_{it}$  is a vector of several explanatory variables commonly used in the literature on the determinants of local revenue. These include variables on financial characteristics: The log of lagged total debt in per capita terms is included to explore the relevance of the intertemporal budget constraint.

We also explore the relevance of economic and demographic variables to explain local own-revenue mobilization. The population size is included in the regression to control for municipality-size. The municipal poverty rate is used as proxy for income levels because information on income is unavailable at municipal level and the unemployment rate. The income base for taxation is likely to be lower in municipalities with a larger poverty and unemployed workforce therefore these variables are expected to have a negative effect on revenue mobilization (Mogues and Benin, 2012).

To take into account the sectorial composition of revenue we include the proportion of the municipal population working in the agriculture sector as a proxy for the composition of economic sectors. Typically agriculture activities are difficult to tax in developing countries where a large part of activities are on small scale basis or for subsistence consumption then it may be politically infeasible to tax the sector (Agbeyegbe et al., 2004). This sector is not taxable in Morocco then municipalities with large agriculture sector would have less tax revenues. Hence, a negative relationship is expected between the proxy of agriculture sector and revenue mobilization in Moroccan municipalities (Karagoz, 2013; Srivastava et al., 2012). Additionally, to account for unobserved specific characteristics and external shocks affecting the municipalities in the same way, regional-specific dummies  $\theta_i$  and time-specific dummies  $\delta_t$  are included. Finally  $\varepsilon_{it}$  is the error term.

We use the sample of municipalities receiving both conditional and unconditional transfers, and alternatively the sample of municipalities receiving unconditional transfers only. The test of mean differences shows that there isn't a significant difference between the two samples according to our main variables expect for capital expenditures and ceded revenues. The significant difference in capital expenditures between the two samples can be explained by the fact that municipalities which benefit from conditional transfers have more investment need the reason why they receive conditional transfers.

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<sup>7</sup> This result refers to the “spend-tax” hypothesis, the literature that tests this and other hypotheses related to the intertemporal dynamics between revenues and expenditures is reviewed by Payne (2003).

**Table 5: Comparison of means for unconditional sample and both conditional and unconditional sample**

	Both	Unconditional	Difference
<i>Sample size</i>	1133	5594	
Own local revenues (pc)	103.8	97.99	-5.8
Unconditional transfers (pc)	317.35	317.02	-0.33
Capital expenditures (pc)	210.06	147.13	-62.93***
Ceded revenues	44.42	29.57	-14.85**
Personnel expenditures (pc)	216.54	203.01	-13.53

Source: Authors calculations

**b. Empirical model**

The model is estimated using fixed effect (FE), random-effect (RE) and Hausman–Taylor (HT) estimators. The fixed effects estimator provides consistent estimations but the coefficients of time-invariant regressors are not identified because they are eliminated from the regression. Even if these variables are not of primary interest in the model it is important to include them to control for the determinants of revenue mobilization. The random-effects model on the other hand allows us to keep these variables but assumes that all regressors are uncorrelated with the unobserved effects, which is a strong assumption that can lead to inconsistent results.

The Hausman taylor approach is typically recommended for panel data with time-invariant variables and correlated unit effects. It is based upon an instrumental variable (IV) estimator that corrects for the correlation between regressors and the specific effects and additionally enables the coefficients of time-invariant regressors to be estimated (Hausman and Taylor, 1981; Wooldridge, 2002). Therefore it addresses limitations that would arise with both fixed-effects and random-effects estimators. It does so by distinguishing between uncorrelated regressors with the specific effects (exogenous) and those potentially correlated (endogenous). It additionally distinguishes between time-varying and time invariant variables. The Hausman–Taylor estimation uses both the between and within variations of the strictly exogenous variables as instruments for the endogenous variables. More specifically, exogenous regressors included in the model are used as instruments for the time-invariant regressors correlated with the individual effects. The method requires that the number of time-varying exogenous regressors be at least as large as the number of time invariant endogenous regressors, which is the case in our model. The choice of the strictly exogenous regressors is a testable hypothesis and an over identification test is generally applied, the choice between the FE and HT estimators being based upon the standard Hausman test (Hausman, 1978). The HT results will be compared to the FE and RE estimations in the next section to give an insight on how the results are affected by the estimator used.

An important issue, addressed in the literature by Dahlberg and al. (2008) and Knight (2002), is the risk of endogeneity of transfers relatively to local own revenues. Basically equalizing or formula based grants, which rely on tax effort or fiscal capacity in their criteria, are endogenous by nature. Unconditional transfers in Morocco are allocated according to formula that includes tax effort measured by local own taxes in its criteria; it is set to incentivize revenue mobilization by recipient municipalities. In fact, this variable is by nature endogenous. Therefore per capita local own revenue and per capita unconditional transfers are likely to be jointly determined, creating a simultaneity bias. While earmarked grants set on a discretionary basis are allocated according to specific needs rather than the level of collected revenue and independently from the revenue level of the municipality. The only channel through which one could suspect of endogeneity is that the higher the level of generated income in the municipality the less it will rely on transfers to finance its projects. Consequently, the level of local own-revenue could possibly affect the level of received transfers indicating that estimates from an OLS specification would very likely be biased. To mitigate this potential simultaneity bias we assess the effect of transfers (unconditional and conditional) on local own-revenues using fixed-effects two-stage least square (2SLS) estimation approach. This approach allows us to use external instruments to correct for the endogeneity. However, it requires the existence of instruments correlated with the endogenous variables (per capita unconditional /conditional transfers) but not directly with per capita local own revenues. Therefore, the variables that are most notably uncorrelated with local own revenue and correlated with unconditional transfers are political indicators. According to the literature on the political determinants of intergovernmental transfers, the instruments for unconditional transfers are a dummy for central elections, the number of elected officials in the municipality and the difference of percentage between the first and the second party in the last elections as proxy of swing municipalities. El Khdari (2015) shows that the formula doesn't eliminate political motivations and finds that there is a tactical distribution regarding the unconditional transfers in Morocco. The central government favors swing municipalities: the larger the difference in votes between the parties arriving first and second in the most recent elections, the lesser the unconditional transfers toward those municipalities. Moreover, Worthington & Dollery (1998) argues that the year of central election would have a negative effect on central transfers. Intergovernmental transfers are less productive in central election comparing to the local election to influence votes and purchase political capital. For the regression with conditional transfers, two instruments that we believe correlated with conditional transfers and indirectly correlated with local own revenues are used. While this kind of grant intends to help municipalities with high investment and expenditure needs, the instrumental variables are the per capita grants to local organizations and total expenditures net of debt, grants and capital expenditures.



### c. Estimation results

This section begins with a comparison between the fixed effect, random effect and Hausman Taylor estimates, followed by an examination of instrumental variables estimates. Table 6 presents the results of the fixed effect, random effect and Hausman Taylor estimators. While fixed effect estimator doesn't present results for time invariant regressors, a sequence of tests is conducted to find the appropriate model. Therefore we implement the Random effect estimator and use Hausman test to evaluate its relevance and test the presence of correlation between regressors and unobserved effects.

The Hausman test rejects the null hypothesis under which the Random effect estimator is efficient and consistent. The hausman test is also implemented to test the validity of the Hausman Taylor estimator and the quality of instruments used in the model. The test fails to reject the null hypothesis; the Hausman-Taylor estimator is then consistent and efficient compared to the fixed effect estimator.

The empirical findings don't support a significant effect of conditional transfers on revenue mobilization for Moroccan municipalities neither with FE nor HT estimations. Regression (2) tests the effect of unconditional transfers on local own revenue per capita. The results for HT estimation reveal that unconditional transfers have a significant incentive effect on revenue mobilization at 10% level. An increase of 10% in unconditional transfers to local governments is associated with an approximately 3,8% increase in local own-revenue. However, we cautiously conclude on the effect of unconditional transfers and conditional transfers on local own-revenue since we didn't correct for the endogeneity problem.

Overall, the coefficient estimates for control variables are in accordance with the literature and have the expected sign. Municipalities engaging large personnel and capital expenditures will not especially collect more own-revenue the subsequent year but municipalities with large debt will increase significantly their own revenues in the subsequent year. The results confirm convergence toward the intertemporal budget constraint; a higher debt shows a positive impact on local own revenue in the subsequent year.

**Table 6: Effect of conditional and unconditional transfers on per capita own revenue**

	(1)			(2)			(3)		
	FE	RE	HT	FE	RE	HT	FE	RE	HT
<b>Conditional transfer</b> $_{it}$	-0.018 (0.0110)	-0.0109 (0.0107)	-0.0152 (0.0107)				-0.018 (0.012)	-0.0122 (0.0105)	-0.0160 (0.0105)
<b>Unconditional transfer</b> $_{it}$				0.092 (0.352)	0.381*** (0.105)	0.389* (0.201)	0.074 (0.271)	0.384*** (0.105)	0.368* (0.198)
Capital EXP $_{it-1}$	0.022 (0.018)	0.0685*** (0.0190)	0.0276 (0.0188)	0.025 (0.017)	0.0653*** (0.0182)	0.0295 (0.0187)	0.0223 (0.0201)	0.0645*** (0.0182)	0.0271 (0.0186)
Personnel EXP $_{it-1}$	-0.069 (0.067)	0.229** (0.0941)	-0.0647 (0.0424)	-0.068 (0.067)	0.182** (0.0895)	-0.0656 (0.0422)	-0.069 (0.045)	0.182** (0.0895)	-0.0663 (0.0421)
Debt $_{it-1}$	0.044** (0.0217)	0.0559** (0.0180)	0.0703*** (0.0195)	0.039* (0.023)	0.0457** (0.0180)	0.0572** (0.0191)	0.0432* (0.0245)	0.0475** (0.0177)	0.0599** (0.0191)
Poverty rate $_{it}$	0.004 (0.005)	-0.0132*** (0.00371)	0.00301 (0.00508)	0.004 (0.005)	-0.0136*** (0.00368)	0.00299 (0.00506)	0.004 (0.005)	-0.0136*** (0.00368)	0.00308 (0.00504)
Population size $_{it}$		0.0829 (0.0591)	-0.0559 (0.107)		0.240*** (0.0586)	0.126 (0.161)		0.235*** (0.0586)	0.0993 (0.159)
Agriculture $_{it}$		-2.743*** (0.578)	-3.081*** (0.837)		-2.353*** (0.584)	-2.627** (0.885)		-2.357*** (0.584)	-2.713** (0.879)
Unemployment $_{it}$		-0.0106 (0.0259)	0.00753 (0.0382)		-0.00253 (0.0269)	0.0121 (0.0372)		-0.00155 (0.0267)	0.0115 (0.0371)
Area $_{it}$ (=1 if Urban)		0.505** (0.156)	0.890*** (0.176)		0.289** (0.143)	0.628** (0.233)		0.287** (0.144)	0.649** (0.231)
Constant	3.898*** (0.332)	2.243** (0.925)	4.937*** (1.211)	3.335* (1.928)	-1.250 (0.995)	0.894 (2.745)	3.500** (1.476)	-1.171 (0.994)	1.352 (2.708)
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipal effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hausman test		221.08	1.19		178.42	6.38		202.18	6.38
		0.0000	0.9912		0.0000	0.4960		0.0000	0.6044
No. Of Obs	1133	1133	1133	1133	1133	1133	1133	1133	1133
R squared	0.103	0.4247		0.099	0.4269		0.103	0.4270	

Notes: Robust standard errors are in parentheses

All local public finance variables are measured in log and per capita terms of local currency

\*Statistical significance at 10%, \*\*Statistical significance at 5%, \*\*\*Statistical significance at 1%

The control variables that emerge from our analysis as having a significant effect are the proxy of agriculture sector and the area dummy. The results suggest a strong negative and significant relationship between the share of agriculture and per capita local own revenue. This could be explained by the fact that this sector is not taxable in Morocco and that a large agricultural sector may also reduce spending on goods and services that generate own-revenue for municipalities. Finally, controlling for the area of the municipality shows that urban municipalities collect more local own revenues compared to rural municipalities. Our results are in accordance with the findings of Mogues and Benin (2012) in Ghana, Liu and Zhao (2011) in China, Zhuravskaya (2000) in India, Panda (2009), Rajaraman and Vasishtha (2000) in India among others who show that transfers from central government discourage local own revenue mobilization.

However, as mentioned by Dahlberg and al. (2008), Knight (2002) among others, traditional estimations may lead to biased interpretations because of the endogeneity of transfers' indicators. Therefore, table 7a and 7b present the results of the fixed effect two square least square estimator using instrumental variables.

After controlling for endogeneity (Table 7a, 7b), the analysis shows that conditional transfers have a positive and significant effect at a 5% level. This effect is not significant when controlling for conditional and unconditional transfers jointly. This result is not surprising as conditional transfers are exactly pointed in time and not recurrent, redistributed for specific investment needs. Therefore, local governments know they can't rely on this type of transfers to finance their long-term programs unless they match the central government plans.

Concerning unconditional transfers, the effect on local own revenues per capita is strongly significant in our different specifications, meaning that unconditional transfers encourage local revenue generation. Even if the municipality doesn't know the exact amount it will receive, as the central government doesn't follow the formula, this type of transfers remains predictable and represents a stable source of revenue. Moreover, the central government uses this type of transfers to give municipalities incentives to increase the overall level of revenue mobilization by including a proxy of tax effort and revenue mobilization in the formula and by announcing that the more the tax effort of the municipality the more the amount of unconditional transfers it will receive. In table 7b the robustness of this result is tested using three different samples. The effect of unconditional transfers remains robust and strongly positive in the different estimations.

**Table 7a: Effect of conditional and unconditional transfers on per capita own revenue**

	(1)		(2)		(3)		
	1st stage	Main	1st stage	Main	1st stage	Unconditional transfer <sub>it</sub>	Main
<b>Conditional transfer<sub>it</sub></b>		<b>0.123**</b> <b>(0.061)</b>					<b>0.046</b> <b>(0.065)</b>
<b>Unconditional transfer<sub>it</sub></b>				<b>1.175***</b> <b>(0.253)</b>			<b>0.928***</b> <b>(0.276)</b>
Capital EXP <sub>it-1</sub>	-0.071 (0.072)	0.065** (0.022)	0.016** (0.007)	0.0197 (0.019)	-0.093 (0.074)	0.015** (0.006)	0.0319 (0.022)
Personnel EXP <sub>it-1</sub>	-0.075 (0.194)	-0.0322 (0.076)	0.075*** (0.014)	-0.117* (0.0647)	-0.054 (0.190)	0.065*** (0.018)	-0.099 (0.068)
Debt <sub>it-1</sub>	0.199** (0.090)	-0.002 (0.026)	-0.021** (0.010)	0.046* (0.025)	0.205** (0.090)	-0.018** (0.010)	0.033 (0.027)
<i>Central election</i>			-0.055*** (0.012)		-0.107 (0.140)	-0.042*** (0.011)	
<i>Elected officials<sub>it</sub></i>			0.044*** (0.006)		0.066 (0.044)	0.040*** (0.005)	
<i>Swing<sub>it</sub></i>			-0.004*** (0.0006)		-0.003 (0.006)	-0.003*** (0.0006)	
<i>Grants to local organizations<sub>it</sub></i>	3.673*** (0.691)				3.552*** (0.686)	0.123* (0.067)	
<i>Other expenditures<sub>it</sub></i>	1.156*** (0.234)				1.127*** (0.232)	-0.173 (0.022)	
Municipal effect		Yes		Yes			Yes
Year effect		No		No			No
No. Of Obs		796		796			796
Underidentification test		27.637		111.965			19.768
<i>P-Value</i>		0.0000		0.0000			0.0006
Overidentification test		1.891		1.182			2.268
<i>P-Value</i>		0.1690		0.5537			0.5188

Notes: Robust standard errors are in parentheses

All local public finance variables are measured in log and per capita terms of local currency

\*Statistical significance at 10%, \*\*Statistical significance at 5%, \*\*\*Statistical significance at 1%

Table 7b: Effect of unconditional transfers on per capita own revenue (3 Samples)

	(1)		(2)		(3)	
	1st stage	Main	1st stage	Main	1st stage	Main
<b>Unconditional transfer</b> $_{it}$		<b>1.175***</b> <b>(0.253)</b>		<b>0.735***</b> <b>(0.116)</b>		<b>0.823***</b> <b>(0.0953)</b>
Capital EXP $_{it-1}$	0.016** (0.007)	0.0197 (0.0196)	0.002 (0.004)	0.0385** (0.0128)	0.002 (0.004)	0.0281** (0.00955)
Personnel EXP $_{it-1}$	0.075*** (0.014)	-0.117* (0.0647)	0.082*** (0.016)	-0.0643 (0.0478)	0.080*** (0.010)	-0.0610* (0.0356)
Debt $_{it-1}$	-0.021** (0.010)	0.0464* (0.0248)	-0.008 (0.005)	0.0146 (0.0149)	-0.006 (0.004)	0.0232** (0.0110)
<i>Central election</i> $_{it}$			-0.068*** (0.007)		-0.068*** (0.006)	
<i>Elected officials</i> $_{it}$			0.047*** (0.003)		0.043*** (0.002)	
<i>Swing</i> $_{it}$			-0.004*** (0.0003)		-0.004*** (0.0002)	
Municipal effect		Yes		Yes		Yes
Year effect		No		No		No
No. Of Obs		796		3058		4351
Underidentification test		111.965		423.854		687.140
<i>P-Value</i>		0.0000		0.0000		0.0000
Overidentification test		1.182		2.824		4.048
<i>P-Value</i>		0.5537		0.2437		0.1321

Notes: Robust standard errors are in parentheses

All local public finance variables are measured in log and per capita terms of local currency

\*Statistical significance at 10%, \*\*Statistical significance at 5%, \*\*\*Statistical significance at 1%

This effect is higher in the subsample of municipalities that received at least once both conditional and unconditional transfers during the period under study.

The variable ceded revenues is included in table 3a and 3b (appendix) to control for the other resources available for the municipalities. A municipal which expect an important amount of ceded revenues could be less motivated to collect local revenue while it covers its expenditures with other sources of revenues. As expected, the effect of this variable is negative and has a disincentive effect on revenue mobilization.

Adding this variable confirm the robustness of our previous results. Those results of incentive effects are close to those found by Caldeira and Rota-graziosi (2014) in the case of Benin and Buettner (2006) and Dahlberg et al. (2008) for Germany and Sweden.

Estimating the incentive effects of the two types of transfers on local own revenue generation by area is used to test the robustness of previous findings. Given that most Moroccan municipalities are located in rural area, we need to test the robustness of our findings and verify that rural municipalities do not significantly influence our results. Table 8 presents an estimation of the incentive effects of the two types of transfers on local own revenue mobilization for urban and rural area using fixed effects two square least square estimator. The results confirm that conditional transfers have a non-significant effect neither on urban municipalities nor on rural municipalities.

According to unconditional transfers, the effect on local own revenue remains significant and positive with different coefficients for urban and rural municipalities. An increase of 10% in unconditional transfers for urban municipalities is associated with an increase of 6,9% of local own revenue. The effect of this type of transfers is greater for rural municipalities where an increase of 10% increases local own revenue by 11,1%.

Rural municipalities are often staffed with low-skilled employees who do not have financial literacy and the expertise to manage public finances properly. Collecting local taxes and fees can be very costly because of the absence of monitoring and enforcement structures. Moreover, taxpayers cannot be identified and are not willing to pay taxes because of the poor quality of the service provided by local governments. Therefore, tax non-compliance is widespread due to the generally weak level of trust in local government institutions. Central transfers act as a leverage allowing local governments to increase their own revenues by improving their financial capacity to deliver public services and collect taxes.

**Table 8: Effect of conditional and unconditional transfers on per capita own revenue by area**

	URBAN			RURAL		
	1st stage		Main	1st stage		Main
	<i>Conditional transfer<sub>it</sub></i>	<i>Unconditional transfer<sub>it</sub></i>		<i>Conditional transfer<sub>it</sub></i>	<i>Unconditional transfer<sub>it</sub></i>	
<b>Conditional transfer<sub>it</sub></b>			<b>-0.004</b>			<b>0.083</b>
			<b>(0.031)</b>			<b>(0.088)</b>
<b>Unconditional transfer<sub>it</sub></b>			<b>0.699***</b>			<b>1.110**</b>
			<b>(0.182)</b>			<b>(0.359)</b>
Capital EXP <sub>it-1</sub>	-0.258	0.011	-0.015	-0.082	0.006	0.047*
	(0.175)	(0.017)	(0.025)	(0.081)	(0.007)	(0.028)
Personnel EXP <sub>it-1</sub>	0.431	0.481**	-0.117	-0.088	0.049***	-0.094
	(1.629)	(0.208)	(0.161)	(0.193)	(0.013)	(0.073)
Debt <sub>it-1</sub>	-0.170	0.028	-0.005	0.241**	-0.032***	0.044
	(0.177)	(0.029)	(0.042)	(0.099)	(0.008)	(0.039)
Poverty rate <sub>it</sub>	0.002	-0.017**	-0.005	-0.007	-0.013***	0.011*
	(0.079)	(0.005)	(0.007)	(0.017)	(0.002)	(0.006)
<i>Central election<sub>it</sub></i>	-0.652*	-0.088***		-0.088	-0.090***	
	(0.357)	(0.029)		(0.173)	(0.014)	
<i>Elected officials<sub>it</sub></i>	-0.096	0.026*		0.087*	0.026***	
	(0.127)	(0.015)		(0.0523)	(0.005)	
<i>Swing<sub>it</sub></i>	0.043*	-0.003		-0.008	-0.003***	
	(0.024)	(0.002)		(0.007)	(0.0006)	
<i>Grants to local organizations<sub>it</sub></i>	7.105***	-0.067		2.979***	0.00002	
	(1.897)	(0.212)		(0.727)	(0.061)	
<i>Other expenditures<sub>it</sub></i>	2.273***	-0.057		0.952***	-0.011	
	(0.654)	(0.072)		(0.245)	(0.020)	
Municipal effect			Yes			Yes
Year effect			No			No
No. Of Obs			165			632
Underidentification test			10.803			15.408
<i>P-Value</i>			0.0289			0.0039
Overidentification test			3.009			0.454
<i>P-Value</i>			0.3902			0.9288

Notes: Robust standard errors are in parentheses

All local public finance variables are measured in log and per capita terms of local currency

\*Statistical significance at 10%, \*\*Statistical significance at 5%, \*\*\*Statistical significance at 1%

#### 4. CONCLUSION

In most decentralized countries, intergovernmental transfers are an important element in the relationship between the central and lower levels of government. Hence, policymakers must bring a lot of attention to the design of the transfer system to take advantage of decentralization by giving enough autonomy to local governments in generating their own revenue, and therefore avoiding any negative and disincentive effects that may arise from a poorly defined system. Moroccan municipalities are relatively dependent on transfers from central government, as 29% of their revenues come from unconditional transfers and 10% from conditional transfers.

Using a unique and rich public finance dataset on Moroccan municipalities, this paper estimates empirically the effects of conditional ad-hoc transfers and unconditional formula based transfers on local revenue mobilization effort. Our findings support the existence of a significant incentive effect of unconditional transfers and less robust effect of conditional transfers, suggesting that per capita unconditional transfers from the central government have a positive impact on per capita local own-revenue mobilization. These results show some consistency with previous findings in the literature on incentive effects of intergovernmental transfers. Governments while designing transfers should take into account the fiscal incentives they may create for local officials especially when local governments can perceive transfers as a windfall resource. Conditional transfers that are program-based and allocated for specific purposes on an ad-hoc basis, are the less recommended in the literature. First they are more sensible to political manipulation and local bargaining. Second, if a municipality knows she can rely on transfers to finance its projects, it will be less motivated to collect revenue to meet its expenditure needs. The Moroccan intergovernmental transfers system includes a large part of unconditional transfers shared on a formula basis and to a lesser extent, but not negligible, conditional transfers set on an ad-hoc basis. The first recommendation to improve this transfers system effectively is to reduce the dependence on transfers, especially the earmarked ones, and to use these resources to increase local governments' capacity or at least the general-purpose transfers, to give local governments more autonomy in handling local issues.

The second recommendation concerns the design of formula used for unconditional transfers. The formula already includes a tax effort indicator, which is a good way to encourage revenue mobilization. However, the way it is defined points out the problem of inequalities between the municipalities. According to the formula, the more revenues the municipality collects the more unconditional transfers it gets, meaning that richer municipalities are getting richer widening the inequalities between endowed and less endowed municipalities. Therefore, the third recommendation to make this transfers system more efficient and more incentivizing is to give it two components: an incentivizing part and a



redistributive one. First, by giving more weight to the tax effort indicator in the formula. Second, by correlating negatively the proxy of fiscal capacity to the amount of transfers to be received.

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## APPENDIX

Table 1: Variables' definition and data source

Variable	Description	Data source
Local own-revenue	Sum of three taxes collected by the municipality in year t (2005 to 2009) in per capita terms and local currency.	General Treasury of the Kingdom (TGR)
Conditional transfers	Per capita conditional ad-hoc VAT transfers received by municipality in year t (2005 to 2009) in local currency.	General Treasury of the Kingdom (TGR)
Unconditional transfers	Per capita formula based VAT transfers received by municipality in year t (2005 to 2009) in local currency	General Treasury of the Kingdom (TGR)
Capital expenditures	Lag of capital expenditures net of acquisitions engaged by the municipality in year t (2005 to 2009) in per capita and local currency.	General Treasury of the Kingdom (TGR)
Personnel expenditures	Per capita salaries of employees in the municipality in year t (2005 to 2009) and local currency.	General Treasury of the Kingdom (TGR)
Debt	Per capita debt stock in the municipality in year t (2005 to 2009) and local currency.	General Treasury of the Kingdom (TGR)
Poverty rate	Poverty rate in the municipality in 2004 and 2007	Database on living standards, poverty, vulnerability and inequality, HCP
Population size	Number of people living in the municipality in 2004	Population census data of 2004, HCP
Unemployment	Unemployment rate in the municipality in 2004	Population census data of 2004, HCP
Agriculture	Share of the population working in the agriculture sector in 2004	Population census data of 2004, HCP

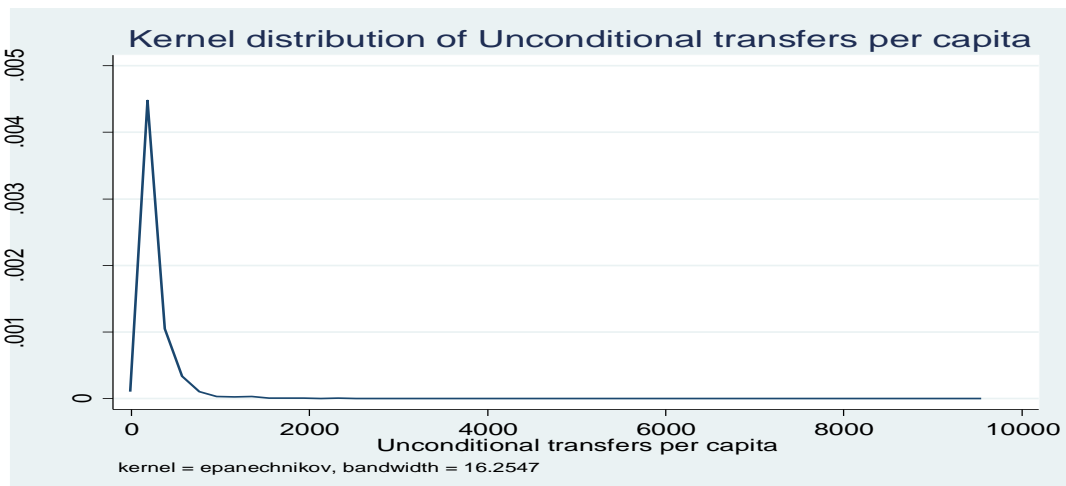
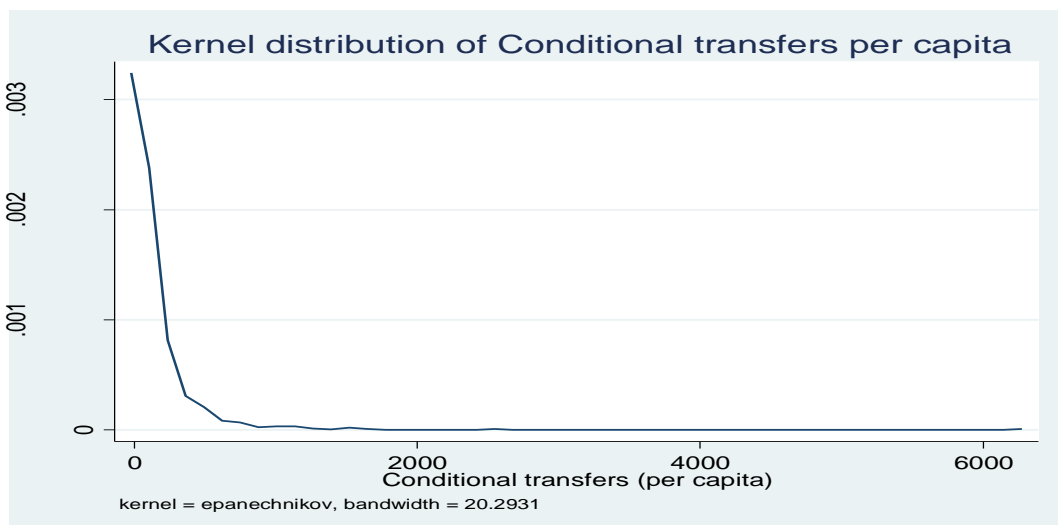
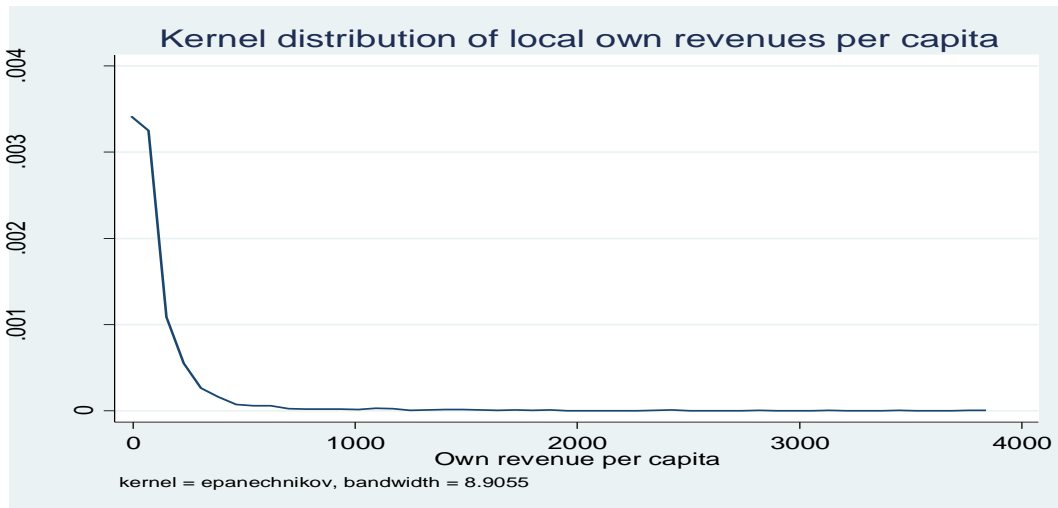
**Table 2: Descriptive Statistics of the main regressors (2005-2009)**

<b>Variable</b>	<b>Mean</b>	<b>Std dev.</b>	<b>Min</b>	<b>Max</b>
Total local revenues	13	45	0	1 200
Local own-revenue	1,8	8,5	0	207
Conditional Transfers	1,6	5,3	0	120
Unconditional Transfers	3,7	8,1	0	180
Capital Expenditures	2,4	11,8	0	480
Personnel Expenditures	2,8	8,6	0	160
Debt	0,7	2,9	0	90,8
Poverty rate	17.37	9.96	0.25	80.21
Population size	15726	29249	131	461677
Agriculture share	18.63	10.45	0	51.03
Unemployment	414	1311	16	20741

Source: Authors calculations.

All local public finance variables are measured in millions dirhams

**Graph 1: Distribution of our main variables**



**Table 3a: Effect of conditional and unconditional transfers on per capita own revenue**

	(1)		(2)		(3)		
	1st stage	Main	1st stage	Main	1st stage	Main	
					<i>Conditional transfer<sub>it</sub></i>	<i>Unconditional transfer<sub>it</sub></i>	
<b>Conditional transfer<sub>it</sub></b>		<b>0.121**</b>					<b>0.0346</b>
		<b>(0.0607)</b>					<b>(0.0647)</b>
<b>Unconditional transfer<sub>it</sub></b>				<b>1.143***</b>			<b>0.980***</b>
				<b>(0.234)</b>			<b>(0.274)</b>
Ceded revenues	-0.081	-0.0867	0.113***	-0.214**	-0.060	0.101***	-0.195**
	(0.189)	(0.0725)	(0.023)	(0.0809)	(0.191)	(0.021)	(0.0844)
Capital EXP <sub>it-1</sub>	-0.074	0.0628**	0.018**	0.0143	-0.095	0.018**	0.0234
	(0.073)	(0.0220)	(0.006)	(0.0202)	(0.075)	(0.006)	(0.0231)
Personnel EXP <sub>it-1</sub>	-0.074	-0.0328	0.076***	-0.115*	-0.053	0.066***	-0.104
	(0.194)	(0.0780)	(0.012)	(0.0692)	(0.189)	(0.016)	(0.0719)
Debt <sub>it-1</sub>	0.195**	-0.00811	-0.013	0.0312	0.202**	-0.011	0.0231
	(0.092)	(0.0264)	(0.010)	(0.0227)	(0.093)	(0.010)	(0.0254)
<i>Central election<sub>it</sub></i>			-0.061***		-0.095	-0.049***	
			(0.012)		(0.140)	(0.011)	
<i>Elected officials<sub>it</sub></i>			0.043***		0.070	0.040***	
			(0.006)		(0.044)	(0.005)	
<i>Swing<sub>it</sub></i>			-0.004***		-0.003	-0.004***	
			(0.0006)		(0.006)	(0.0006)	
<i>Grants to local organizations<sub>it</sub></i>	3.704***				3.584***	0.129**	
	(0.685)				(0.681)	(0.065)	
<i>Other expenditures<sub>it</sub></i>	1.165***				1.137***	0.021	
	(0.232)				(0.230)	(0.022)	
Municipal effect		Yes		Yes			Yes
Year effect		No		No			No
N. Of Obs		796		796			796
Underidentification test		28.302		114.353			20.195
<i>P-Value</i>		0.0000		0.0000			0.0005
Overidentification test		2.299		0.697			1.094
<i>P-Value</i>		0.1295		0.7059			0.7785

Notes: Robust standard errors are in parentheses

All local public finance variables are measured in log and per capita terms of local currency

\*Statistical significance at 10%, \*\*Statistical significance at 5%, \*\*\*Statistical significance at 1%

**Table 3b: Effect of unconditional transfers on per capita own revenue (3 Samples)**

	(1)		(2)		(3)	
	1st stage	Main	1st stage	Main	1st stage	Main
<b>Unconditional transfer</b> $_{it}$		<b>1.143***</b>		<b>0.744***</b>		<b>0.824***</b>
		<b>(0.234)</b>		<b>(0.113)</b>		<b>(0.0926)</b>
Ceded revenues $_{it}$	0.113***	-0.214**	0.901***	0.0226	0.901***	-0.000728
	(0.023)	(0.0809)	(0.013)	(0.0347)	(0.013)	(0.0276)
Capital EXP $_{it-1}$	0.018**	0.0143	0.001	0.0387**	0.002	0.0281**
	(0.006)	(0.0202)	(0.005)	(0.0128)	(0.003)	(0.00955)
Personnel EXP $_{it-1}$	0.076***	-0.115*	0.077***	-0.0663	0.077***	-0.0612*
	(0.012)	(0.0692)	(0.016)	(0.0475)	(0.010)	(0.0354)
Debt $_{it-1}$	-0.013	0.0312	-0.006	0.0154	-0.004	0.0231**
	(0.010)	(0.0227)	(0.005)	(0.0148)	(0.004)	(0.0110)
<i>Central election</i> $_{it}$	-0.061***		-0.073***		-0.074***	
	(0.012)		(0.007)		(0.006)	
<i>Elected officials</i> $_{it}$	0.043***		0.047***		0.043***	
	(0.006)		(0.003)		(0.002)	
<i>Swing</i> $_{it}$	-0.004***		-0.004***		-0.004***	
	(0.0006)		(0.0003)		(0.0002)	
Municipal effect		Yes		Yes		Yes
Year effect		No		No		No
N. Of Obs		796		3057		4349
Underidentification test		114.353		436.741		703.113
<i>P-Value</i>		0.0000		0.0000		0.0000
Overidentification test		0.697		2.827		4.014
<i>P-Value</i>		0.7059		0.2433		0.1344

Notes: Robust standard errors are in parentheses

All local public finance variables are measured in log and per capita terms of local currency

\*Statistical significance at 10%, \*\*Statistical significance at 5%, \*\*\*Statistical significance at 1%