ARE ARGENTINE INTERJURISDICTIONAL TAX AND SPENDING ARRANGEMENTS AND SUBNATIONAL FINANCES PRO-GROWTH?

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1. INTRODUCTION

The structure of inter jurisdictional fiscal relations prevailing in Argentina includes the so called revenue sharing system whereby main taxes (as for instance taxes on value added, excise, personal and corporate income and current account credits and debits) are collected by the central government and the net yield[4] is later subject to a double rule distribution: the so called primary distribution between the national government and the provincial level (41.64% and 57.36% respectively[5]), and a secondary distribution which takes place only among the 23 provinces and the autonomous city of Buenos Aires on the basis of already set and fixed coefficients[6]. There is also a second set of taxes that is also shared with the provinces, the most representative one being the tax on petrol and natural gas whose yield is allocated as follows: 21% to the National Pension System, 22.91% to the central government, 22.91% to the provinces and 33.18% also to the subnational level as a transfer to provincial housing funds[7]; conversely to the so called 'Coparticipación' Regime whose transfers can be used by provinces without any legal string or limitation, transfers in the latter case are earmarked and accrue to provincial Energy, Roads and Housing Funds. Royalties compensating provinces for the extraction of natural resources (oil, gas and minerals) and current and capital transfers from the central government to provinces complete the scheme of fiscal relations linking national and subnational government levels[8].

A worth emphasizing feature is, in this regard, the marked switch from rule-based transfers to discretionary transfers experienced by the subnational level's fiscal finance in the course of the last two decades; according to statistical information supplied by official sources revenue shared transfers, that averaged 50.6% of all provincial incomes in the years 1993-2001, fell to 47.2% in the period 2002-2014. Conversely, discretionary current and capital transfers, whose participation was relatively minor in the first period (3.2% and 0.7% respectively), abruptly climbed to an average of 7% and 4.1% during the second one. The increase of discretionary transfers, both in absolute and relative terms, seemed also to accompany the deterioration of the relative participation of provinces' own fiscal resources as their original average participation of 34% dwindled lately to 31.7%.

The situation depicted in the preceding paragraph calls for policymakers to carefully analyse not only its negative consequences upon the strength of the federal finances scheme constitutionally framing fiscal relations between

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[4] Net yield (or *masa coparticipable neta*) results from taxes' gross yield from which a number of predetermined transfers (mainly directed to the PAYG Pension System and to the Treasury's Contribution Fund) are detracted.

[5] The remaining 1% feeds the so called Treasure Advances (ATN) whose allocation among provinces is completely discretionary.

[6] The system is now undergoing revision as the constitutional amendment of 1994 mandated that a new revenue sharing regime should be enacted by the Congress and sent to provinces for approval by means of a so called Covenant Law requiring all the 24 sub national jurisdictions to sign it.

[7] There are also other earmarked transfers, mainly out of taxes on wholesale and retail energy markets operations, directed to national and provincial energy funds.

[8] There is also subnational revenue sharing schemes enacted and managed by provinces whereby the latter make transfers to municipalities in their jurisdiction.

different government levels but also the impact on provincial policies aimed at enhancing subnational growth. The worth highlighting feature is the above mentioned switch from rule-based national transfers, towards discretionary transfers. The absolute and relative increase of discretionary transfers may at least suggest that provinces are now more dependent and subject to revenue inflows from the central government responding to factors other than their actual fiscal, socioeconomic or growth convenience, which will be the case if string attached transfers force the political alignment of provincial governments with the upper level's interest or policies.

Figures also show that the setback experienced by rule-based transfers was accompanied by that of provinces' own tax yields; with regards to this, the 7 percentage points fall in average participation of provincial taxes in overall provincial revenues may be seen as the result of crowding-out effects[9] exerted by discretionary transfers upon provincial tax revenues, as provinces might have found less costly –in political terms- to strive for additional national transfers instead of deepening their own tax sources.

Let it be emphasized that if provincial tax revenues are actually being crowded-out by discretionary transfers the consequences will be far from being negligible: the more own tax resources accrue to provincial budgets the higher financial autonomy will be and this will assumedly make provincial governments more accountable towards their taxpayer. This will occur as, on accounts of a higher tax pressure, taxpayers will demand not only more but also better public expenditures, particularly those with higher impact on growth promotion and poverty checking.

Nevertheless, in the same way as a higher financial autonomy may be conducive to better public goods, a higher dependence on discretionary fiscal transfers may reduce accountability and induce excessive spending in certain items (as for instance public employment) that will not necessarily favour subnational economic growth and social development[10].

The recent literature has empirically showed the likelihood of crowding-out among revenues from different government levels; in this regard E. Zhuravskaya (2000) concluded that, referring to the cases of Russia and China, fiscal federalism arrangements in the former country were conducive neither to growth and business expansion nor to efficiency in the provision of public goods, contrariwise to what the Chinese performance so far showed. In looking for reasons, Zhuravskaya found that Russian federal-regional/regional-local revenue sharing arrangements were not stable but frequently renegotiated for what subnational governments' access to intergovernmental transfers heavily

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[9] Specialists in Fiscal Federalism may reasonably argue that larger amount of per capita transfers to subnational governments with lower per capita tax potential may be regarded as a natural response of normative approaches of fiscal federalism seeking to fill the gap and promote equalization. Nevertheless, the hypothesis of crowding-out resorted to in this paper stems from important contributions in the literature and is also subject to proof in the econometric section.

[10] A curious feature to be stressed in the econometric section is the positive relationship between capital transfers and provincial economic and social expenditures. This makes one wonder whether actual provincial expenditures (i.e., infrastructure provision, hospitals, schools, housing, etc.) are not falling short of required ones.

depended on the distribution of bargaining power; a damaging consequence of that was that the magnitude of overall budget funds –at the local level- was independent of their efforts to raise additional own revenues as the upper level exactly crowded-out (by diminishing the amount of transfers) marginal increases of local governments' own tax yields. The opposite situation was the one reflected by the Chinese experience since long-term rule-based revenue sharing stood as the generalized practice, as most of transfers to local levels responded to a fixed formula and the decentralized feature of a substantial part of local governments' revenues were subject to revenue sharing that secured them from predatory taxation (crowding-out of resources) on the part of the upper level of government.

In pursuing and expanding the preceding thread of arguments, the main purpose of this paper is in the first place to ascertain, on the basis of the available statistical information and using panel data, whether negative crowding out effects of national fiscal transfers upon Argentine provinces' own fiscal revenues actually verified, either for the hypotheses held for the Russian case or as a response to Argentine provincial authorities' different motivations. Should the latter been proven true, a second objective would consist in analysing if the subnational government level's loss of financial autonomy caused an impact on provinces' pattern of public spending allocation; this should also permit to assess whether the loss of provinces' financial autonomy was also conducive to less growth-prone provincial public policies. The panel data model resorted to fiscal data for the period 2003-2014, corresponding to all 24 Argentine sub national jurisdictions, and was expected to shed light on the impact of central government's rule-based and discretionary transfers upon the collection of provinces' own tax revenues and also on business promotion.

2. THE UNDERLYING ´CROWDING-OUT´ MODELS

2.1. A BRIEF SURVEY OF THE RELATED LITERATURE

As mentioned in the Introduction, the possibility of a negative impact upon subnational governments' own revenues and public spending allocation, stemming from unsuitable inter jurisdictional fiscal arrangements, has been studied empirically by various specialists in fiscal federalism. In this connection, the paper by Qian and Weingast (1997) was one of the first in dealing with this matter by pointing it out that, somehow similarly to explanations found by new theories of the firm, the second generation economic theory of federalism shed light on why political officials would commit to efficiently providing public goods and preserving market incentives: in parallel to arguments of the theory of the firm, Qian and Weingast suggested that features of federalism such as decentralization of information and authority and inter jurisdictional competition (particularly induced competition among local jurisdictions) would provide more credible governments' commitment to secure citizens' economic rights and preserve markets. With regards to the first feature, appropriate decentralization of information and authority might be conducive not only to establishing positive

economic incentives and to limiting the 'state predation problem'[11] but also to reducing the possibility of occurrence of the soft budget constraint problem whereby governments may be also tempted to bail out failed projects or to go ahead with costly and inefficient public spending programs[12]. Qian and Weingast also argued that competition among jurisdictions had incentive effects by favouring the endogenous emergence of harder budget constraints for lower government levels; in authors' words "in federal systems, the mobility of resources across regions raised the opportunity costs to local governments engaged in wasteful public expenditures for what a jurisdiction consistently making inefficient expenditures would find harder to attract mobile resources"[13].

The paper by Zhuravskaya (2000), whose analytical foundations are modified for this paper, focused on the Russian and Chinese experiences as respectively representatives of 'market-preserving federalism'[14] and 'market-hampering federalism'[15]. Based on the contributions by Knight and Li (1999), Montinola et al (1995), Lavrov (1996), Qian and Weingast (1996, 1997), Shleifer (1997) Treisman (1996a, 1996b, 1997) and Wong (1997), Zhuravskaya made a thorough institutional and econometric analysis of inter jurisdictional fiscal arrangements in both the mentioned countries and concluded that the form these were drawn explained why the performance of Russian local governments fell short of that of the Chinese ones, in terms of incentives to business growth and better public goods provision. In order to illustrate the situation, the author quoted Treiman's assertion (Treisman, 1996a,b and 1997) that the distribution of federal transfers in the Russian federal scenario was based on political bargaining with no consideration of local levels' economic objectives; in the same line, Lavrov (1996) argued that Russian regional governments' disproportionate high control of resources caused vertical unbalances to come about due to the uneven distribution of resources vis-à-vis local governments' spending responsibilities. In sum, and as mentioned in the Introduction, Zhuravskaya suggested that frequent negotiations of shared revenues and local governments' availability of resources depending on their bargaining power, and not in fixed formulae, fatally drove lower government levels to have weak fiscal incentives.

In order to explain how the strength of government fiscal incentives affected public goods provision, or promoted business growth, the ensuing model drawn by Zhuravskaya, under the framework of a predatory state in

[11] North (1990) pointed out that the 'state predation' model arose if individuals had no incentives to take risks and to make efforts today because they felt that governments would be tempted to take away from them too much income and wealth generated by their future success.

[12] As E. Zhuravskaya, Qian and Weingast also referred to modern China as a worth mentioning example of the economic benefits of federalism, particularly by encouraging devolution of authority from the central to local governments which counted with 'extra budget' and 'off budget' revenues together with the responsibility of supplying local public goods. At the same time, upper government levels found not advisable to prey on local fiscal resources as they expect these to be used for the provision of local public goods.

[13] Qian and Weingast (1997, pp. 88-89).

[14] The paper by Quian and Weingast (1997) referred to the concept and also supplied an extensive literature on this theory.

[15] Term coined by E. Zhuravskaya (2000).

terms of fiscal resources, assumed that sub national and local authorities had to face the maximization problem shown in equation 1:

$$(1) \; \underset{P, B, S}{Max} \; c \, P + B + S \; \text{subject to} \; P + S \leq SHARED \; REV + OWN \; REV$$

where P and B respectively stood for the levels of public goods provision and regulation of private business chosen by subnational levels and S was the amount of public revenues diverted by local authorities for personal ends (corruption).

As by assumption the political benefit to subnational authorities of providing public goods (c) lied between 0 and 1, the model shows that there exist incentives to raise regulations (B) in so far as these were conducive to enhancing their likely private benefits (bribes). While the maximization problem in (1) includes the constraint that total budgetary revenues limits the amount sub national authorities could use for public goods provision or privately divert, the following expressions (2) and (3) respectively denotes the components of own and shared budgetary revenues:

$$(2) \; OWN \; REV = W + g(P)y(B) \; \text{for} \; g' > 0 \; \text{and} \; y' < 0.$$

$$(3) \; SHARED \; REV = T + \alpha \, [g(P)y(B)] \; \text{for} \; -1 \leq \alpha \leq 0$$

As indicated by the expression (2), local levels' own revenues included, apart from the fixed component W, a second term indicating that while the provision of public goods favour business growth and enhanced local revenues, the increased level of regulation causes the opposite effect. The distinctive feature introduced by Zhuravskaya's model, and shown in equation (3), was that shared revenues related to own local revenues through the parameter α accounting for the strength of fiscal incentives; that is, if α equalled -1 the latter were very weak and any increase in local revenues would be completely offset (crowded-out) by a negative change in shared revenues, contrariwise to when $\alpha = 0$ in which case increases in local own tax collection turned into an equivalent change in local total revenues. By making the corresponding substitutions, the maximization problem stated in (1) results in the following expression (4):

$$(4) \; Max \; c \, P + B + S \; \text{subject to} \; P + S \leq T + W + (1 + \alpha) \, [g(P)y(B)]$$

The solutions to the model in (1) through (4), P*, B* and S*, were used to show the impact of fiscal incentives upon local authorities' decisions[16].

Zhuravskaya went on in econometrically assessing whether local fiscal incentives were weak or strong in Russia: that is, if any marginal improvement in cities' tax collections was maintained or subject to an immediate crowding out by the upper level (the case of market preserving federalism is one in which the

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[16] The solution for the maximization problem can be seen in Zhuravskaya (2000, Appendix C, pp. 367-368).

degree of crowding out is minor and fiscal incentives high). This was done by regressing the first difference in shared revenues against population and the first difference in own revenues and taking also into account specific city effects and year dummy variables, as shown by the ensuing equation (5)[17]:

(5) Δ *[shared revenues]$_{it}$* = α Δ *[own revenues]$_{it}$* + η *[population]$_{it}$* + *[city effect]$_t$* + ζ *[year dummy]$_t$* + ε_{it}

H_0*: α = -1; H_a: α close to 0.*

'Shared revenues', in equation (5)[18], embodied not only cities' actual revenues from federal and regional shared taxes but also other actual regional transfers accruing to local governments. While the inclusion of population was meant to control whether the relation between shared and own revenues depended on the city size, city specific effects in the regression equation served the purpose of ascertaining if unobservable city-specific, time-invariant differences across local governments affected the dependent variable. Next, year dummies were included in the equation in order to verify whether systematic changes in all cities' shared revenues took place in a particular year. Finally, given that equation (5) did not include an intercept and that the sum of city effects was constrained to 0, the coefficient α represented the crowding out of own revenues by shared revenues.

Equation (6) was in turn introduced in order to prove the hypothesis that stronger fiscal incentives, represented by a positive δ, also led to more efficient provisions of public goods by local governments[19]. As declared above, strong fiscal incentives in this context meant that the structure of inter-governmental relations permitted cities to foster business and economic growth and to enhance the quality of provided public goods[20]. In building the dependent variable 'outcome of public goods provision', the author resorted to the following two rates: infant mortality and the share of Russian children forced to attend school in the evening due to overcrowded scholar buildings[21]:

(6) *[outcome of public goods provision]$_{it}$* = δ *[incentives proxy]$_{it}$* + κ *[population]$_{it}$* + ω *[ln(total pc spending)]$_{it}$* + *[city effect]$_t$* + ζ *[year dummy]$_t$* + ε_{it}

H_0*: δ > 0; H_a: δ $\leq$ 0.*

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[17] Null and alternative hypotheses respectively assume values of -1 and almost 0 for the coefficient of the variable standing for increases in local governments' own tax collection.

[18] In Equation (5) Δ indicated variable's annual changes, i and t respectively stood for the city and the year subscripts and ε was the error term.

[19] Obviously, the alternative hypothesis $\delta \leq 0$ would mean that local governments faced scenarios of weak fiscal incentives.

[20] As E. Zhuravskaya also pointed out, strong fiscal incentives existed when local governments had the possibility of benefiting from increases in their own taxes.

[21] Health care and education are the two most important items for Russian local governments, for what higher values for both the mentioned rates would be taken as the consequence of negative δ or smaller values for ω.

Apart from population, city effect and the year dummy, already defined in equations (5) and (6), two other exogenous variables were introduced in the last one: the 'incentives proxy', to which E. Zhuravskaya assigned a value of 0 if shared and own revenues held opposite signs and 1 otherwise[22], and the natural logarithm of total local per capita budgetary expenditures on Education and Health Care, which the author instrumented with the regional ratio of industrial and agricultural output in order to rule out the possibility of correlation with components of the error term.

Finally, and in line with the original interest of proving whether intergovernmental fiscal arrangements were more prone to result in 'market-hampering federalism', or in 'market-preserving federalism', equation (7) was introduced in which the endogenous variable 'Δ number of business' was made highly and particularly dependent on the strength of fiscal incentives, represented by the exogenous variable 'incentives proxy' already defined:

$$(7) \; \Delta \; [number \; of \; business]_{it} \; = \; \theta \; [incentives \; proxy]_{it} + \lambda \; [population]_{it} + \chi \; [ln(total \; pc \; spending)]_{it} + [city \; effect]_t + \zeta \; [year \; dummy]_t + \varepsilon_{it}$$

$H_0: \theta > 0; \; H_a: \theta \leq 0.$

2.2. AN ALTERNATIVE HYPOTHESIS FOR EXPLAINING THE OCCURRENCE OF CROWDING-OUT IN ARGENTINA[23]

As pointed out above, the model stated in Section 2.1 rested not only on the idea that –due to the instability and frequent renegotiations of revenue sharing arrangements- local governments' marginal increases in tax revenue could easily be offset by reductions in the amounts transferred by upper government levels, but also on the assumption of a predatory state in which part of the resources was diverted to uses other than the provision of public goods (that is, corruption).

There are at least three reasons for asserting that -even though the model so far developed served the purpose of verifying the occurrence of crowding-out of revenues between different government levels- a paradigm change would be needed in order to analyze the Argentine case. First, the most important transfer from the central government to provinces is channelled through the rule-based revenue sharing system, which is in general a very stable fiscal arrangement; second, for reasons to be explained below, crowding-out takes place between provincial tax revenues and discretionary national transfers and third, the predatory state is not the best form of viewing provincial governments as, in general, preferences for national transfers in place of

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[22] An incentives proxy equal to 0 or to 1 would respectively mean weaker or stronger fiscal incentives. As tax bases for shared and local revenues were highly positively correlated and also functions of the local level of economic development, a value of 0 for the incentives proxy meant that shared and local revenues shifted in different directions and that there was full crowding-out (Zhuravskaya, p. 351).

[23] We are very grateful to Maximilian Freier (European Central Bank) who commented a preliminary version of this paper and suggested us the convenience of resorting to alternative assumptions [as for instance those upheld by Downs (1957)] for explaining the crowding-out between fiscal resources of different government levels in Argentina.

furthering own tax sources, may be explained by provincial rulers seeking not to incur in the political cost of raising additional local taxes. In connection to this, a Downsian vote-seeking model[24,25] in which governors pursuing re-election[26] would be reluctant to raising or creating new provincial taxes would better depict the behaviour of many a provincial ruler in Argentina. In that case the maximization problem to solve would be that represented by (8) instead of the one in expression (1) above:

$$(8) \quad \underset{P,\ SPE}{Max}\ c\,P + REELECT(SPE)\ \ subject\ to\ P + SPE \leq OWN\,(P,\ SPE)$$
$$+ SHARED\,(NTAX) + DTRANSF\,(SPE)$$

The expression (8) states now that provincial governors face the problem of choosing the amounts of budgetary resources respectively devoted to the provision of public goods[27] (P) and to spending on provincial public employment[28] (SPE). Thus, the rationale of the vote-seeking model underlying the above maximization problem is obvious: provincial rulers benefit (in terms of re-election possibilities) both by the provision of public goods, indicated by (c P) and by increasing the number and/or the salaries of civil servants, the latter explaining in turn why REELECT is made a function of SPE.

The expression (8) places the constraint that resources needed to finance productive and unproductive[29] public goods and services must be equal to the jurisdiction's availability of own and shared tax revenues and of transfers received from the central government. In this connection, the inclusion of discretionary transfers (DTRANSF) and their dependence on (SPE) amounts to asserting that governors, in line with the underlying vote-seeking model[30], will prefer and strive for more discretionary national transfers in order to defray the expansion of public employment and to get also around likely political costs derived from an enhanced local tax pressure[31].

It is worth mentioning feature, shared both by the predatory state maximization model shown in (1) and the vote-seeking one represented by (8)

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[24] Downs (1957, p. 55) gives a good idea of the vote-seeking model by asserting that "the government, in our model, aspires to maximize political support for what it carries out those spending actions yielding the greater number of votes resorting in turn to financing operations taking away the lesser number of votes. In other words, the government increases public spending until the vote gain obtained from the marginal dollar equals the vote loss caused by the financing of the same marginal dollar".

[25] See also Kaare Stromp´s criticisms (1990) to the model of parties seeking the vote.

[26] Or aiming at ensuring the election of the party's candidate.

[27] Categories included in P are Law and Order, Social and Economic Services.

[28] Although Administrative Services include items other than civil servants´ wages, salaries is the most important category´s component for what Administrative Services are here taken to be a proxy for provincial public employment.

[29] Not all administrative expenditures can be considered unproductive spending; nevertheless, a significant share of the category embodies provincial public employment, whose disproportionate magnitude in some provinces precisely raises suspicions of a political use of this spending category.

[30] The Downsian vote-seeking model is here resorted to in accordance with Rodrick´s stance (2016, chapter 2, pp. 75 and 83; chapter 3, p. 93) that no economic model is absolutely superior to the rest, for what it does not need to be applicable to all situations. A model contains information over circumstances in which it can be relevant or applicable, for what it results possible to discriminate, for any specific environment, between useful an non useful models .

[31] It goes without saying that raising provincial tax pressure is always a very sensitive issue given the taxes involved: car, property and turnover taxes and stamp duties.

is that, similarly to the previous case, governors will receive a political benefit from public goods provision equal to c P, being c a parameter whose value ranges between 0 and 1; nevertheless, the governor (or his party) will allegedly receive higher benefits (in terms of votes) from expanding public employment as in this case the coefficient of REELECT (SPE) equals 1[32].

$(9) \quad OWN \; = \; \overline{PT} \; + \; PT \, (P, \, SPE)$

OWN represents in turn provinces´ own tax resources which, according to (9) include a fixed and a variable term, the latter accounting for the impact of P and SPE over the local tax yield.

$(10) \quad PT \, (P, \, SPE) \; = \; \alpha \, [g \, (P), \, e \, (SPE)], \; for \; g´ > 0, \; e' < 0 \; and \; -1 \leq \alpha \leq 0$

As shown by (10), P and SPE respectively depict the impact of public good provision and of spending on public employment upon own tax revenues, the latter being an increasing function of provincial tax bases that will in turn react positively to higher and better provisions of public goods and negatively when taxpayers perceive an over dimensioned amount of civil servants.

$(11) \quad OWN = \; \overline{PT} \; + \alpha \, [g \, (P), \, e \, (SPE)], \; for \; g´ > 0, \; e' < 0 \; and \; -1 \leq \alpha \leq 0$
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The *equations* (10) and (11) imply that provinces' own revenues and national transfers (which are assumed to be a function of SPE) are related through the parameter α that accounts for the strength of fiscal incentives; that is, if α equalled – 1 the latter would be very weak, this implying that possible increases in local tax revenues would be completely thwarted (crowded-out) by positive changes in discretionary national transfers, contrariwise to when α = 0 in which case increases in local own tax collection would turned into an equivalent change in local total revenues.

Next, equations (12) and (13) respectively stand for provinces' availability of shared revenues (SHARED), which are mainly an increasing function of the yield levels of Value Added and Income Taxes (NTAX), and of national discretionary transfers (DTRANSF) which are –according to the underlying vote-seeking model and to the utility function of some provincial governments- a suitable source of resources for financing the generally unpopular spending on public employment[33].

$(12) \quad SHARED \; = \; \delta \, (NTAX), \qquad for \, \delta´ > 0.$

$(13) \quad DTRANSF \; = \; \overline{DT} \; + \eta \, (SPE), \; for \, \eta´ > 0.$

Finally, the expression (14) shows how the maximization problem looks like once equations (9) through (13) are introduced in (8):

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[32] The explanation could in this case be a certain degree of voters´ fiscal myopia derived from the fact that higher salaries or new civil servants were not paid with own tax resources but with national transfers.
[33] M. Freier pointed out to us that if the utility function of provincial governments included a reelection probability, the latter could be modeled as a function of (unproductive) transfers.

14) *Max c P + REEELECT (SPE) subject to P + SPE ≤ $\overline{PT}$ + $\overline{DT}$ +*
     P, SPE   *α [g (P), e (SPE)] + δ (NTAX) + η (SPE),*

3. WHAT DO STYLIZED FACTS SAY?

3.1. THE COMPOSITION OF OVERALL PROVINCIAL REVENUES IN ARGENTINA[34]

Revenues required for financing provinces' public spending widely fall into two categories: tax and non-tax revenues of which the former ones, comprising provincial and national tax resources, are the most important in magnitude followed by the so called non-tax resources, mainly including oil and mining royalties and current and capital transfers from the central government to provinces. It is worth noting that national tax revenues traditionally constituted provincial level's main financing source embodying rule-based unconditioned transfers (revenue sharing) as well as earmarked rule-based grants.

As the Table 1 shows, Tax Revenues made up in 2014 almost 81% of overall provincial revenues of what 45.1% corresponded to national transfers of unconditioned shared revenues and earmarked rule-based transfers for education and various provincial funds. Nevertheless, the striking feature was that discretionary transfers, that used to be a minor resource to provinces whose percentage shares traditionally averaged 2%-3% of overall revenues, had an important increase as of 2003 and stood in 2014 as the third more important budgetary revenue for provinces; as shown in the rest of the Section and also below in the econometric analysis, this increase might have taken place to the detriment of provinces' financial autonomy, let alone other important costs entailed by the deterioration of the federal fiscal balance and provinces' higher political and economic dependency from the central government.

TABLE 1
ARGENTINA: REVENUE COMPOSITION OF THE PROVINCIAL PUBLIC SECTOR
(Year 2014 – as share of total revenues)

CURRENT REVENUES		**0.937**
Tax Revenues		0.809
Provincial	0.358	
National	0.451	
Revenue Sharing		0.316
Educational Financing		0.041
Others		0.094
Non Tax Revenues		0.060

[34] As of the constitutional reform of 1994, the city of Buenos Aires reached the status of an autonomous political entity somehow similar to a province and so is considered in all the paper's statistical and econometric revenues and spending analyses

Current Transfers	0.055
Others	0.013
CAPITAL REVENUES	**0.063**
Capital Transfers	0.058
Others	0.005
TOTAL	**1.000**

Some particular features need being explained at the moment of analysing the Figure 1, whose content reflects provinces' performance in relation to their main budgetary revenues, in constant pesos of 2005 and as average for the period 2003-2014. In this regard, the better performance of per capita tax revenues in Chubut, La Pampa, Neuquén, Santa Cruz and Tierra del Fuego (Figure 1.1) did not respond to the same cause as though the role of their own fiscal sources mattered[35] in all these jurisdictions (for instance the impact of determined activities such as the oil producing sector, agriculture and cattle raising), the largest per capita tax revenues in Santa Cruz and Tierra del Fuego also reflected the impact of their very low population density, conversely to the case of more densely populated provinces such as Buenos Aires, the Autonomous City of Buenos Aires[36], Córdoba, Mendoza or Santa Fe whose relatively higher per capita tax yields were better explained by their greater level of economic activity.

Another interesting matter to highlight, concerning shared revenues shown by Figure 1.2, is provinces' opposite performance when compared to per capita own tax revenues in figure 1.1. The explanation for this has to be sought at the following two reasons: in the first place, the secondary distribution[37] of shared revenues, as of 1988, did not respond to population, equalization or fiscal efficiency (tax yields, public spending) criteria but to fixed parameters agreed for each province; in the second place, population densities vary greatly among provinces and therefore the sparsely populated ones obviously showed higher per capita receipts.
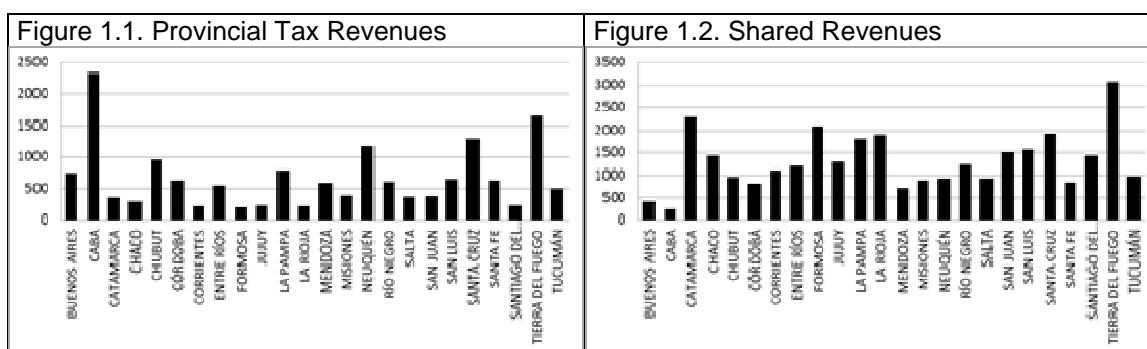
FIGURE 1

ARGENTINA: PROVINCES' BUDGETARY INCOME PER REVENUE CATEGORY

(Average values for the period 2003-2014 in per capita constant pesos of 2005)

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[35] The turnover tax collected from firms trading with oil produces all over the country in part accounted for the high per capita tax yields in Chubut and Neuquén.

[36] The marked preponderance of per capita own tax revenues in the city of Buenos Aires (Figure 1.1) was due to the fact that the city basically resorted to its resources for financing its public spending for what its collection effort was important. Let it also be pointed out that national transfers to city did not normally contribute in a significant way to the city's public finances.

[37] That is distribution of resources among provinces.

Figure 1.1. Provincial Tax Revenues	Figure 1.2. Shared Revenues

When current and capital transfers were analysed, and related to provincial tax revenues (Figures 2, 3 and 4), an inverse correlation soon came up as those jurisdictions accruing in average larger per capita national transfers[38] (Catamarca, Chaco, Formosa, Jujuy, La Rioja, Misiones, San Juan, Santiago del Estero)[39] exhibited in turn the smaller per capita provincial tax revenues. This feature had already been stressed by Rezk and Pérez Aguila (2014) as they pointed out the possible crowding out between these two income categories which could, in their words, be visualized by drawing envelopes in Figures 2, 3 and 4, as a U-shaped line is the prevailing feature in the case of per capita tax revenues and an inverted U-shaped line in the case of national transfers[40] and, particularly, when current transfers are referred to (figure 2).
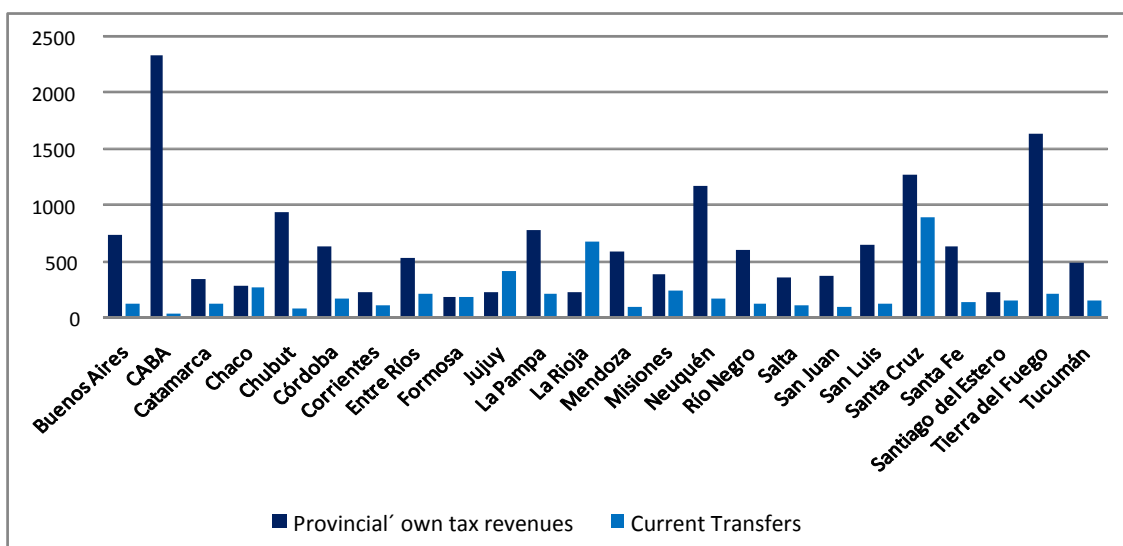
FIGURE 2

ARGENTINA-PROVINCES´ BUDGETARY REVENUE CATEGORIES: OWN TAX REVENUES AND NATIONAL CURRENT TRANSFERS

(Average values for the period 2003-2014 in per capita constant pesos of 2005)

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[38] Again, its scant population in part explained the large per capita value of current and capital transfers in Santa Cruz.

[39] These provinces also claim a poorer fiscal capacity compared to the rest.

[40] The opposite performance of provincial tax collection and of national grants suggested by the graphical representation is so far an approximation to the hypothesis of crowding-out econometrically treated below with the panel data model.
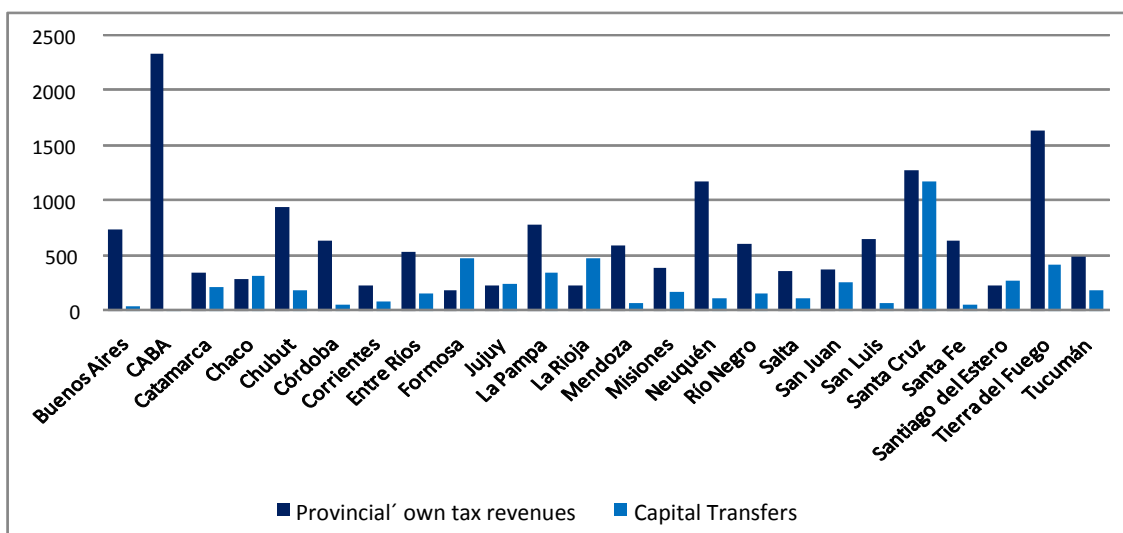
FIGURE 3

ARGENTINA-PROVINCES´ BUDGETARY REVENUE CATEGORIES: OWN TAX REVENUES AND NATIONAL CAPITAL TRANSFERS

(Average values for the period 2003-2014 in per capita constant pesos of 2005)

FIGURE 4

ARGENTINA-PROVINCES´ BUDGETARY REVENUE CATEGORIES: OWN TAX REVENUES AND NATIONAL TOTAL TRANSFERS

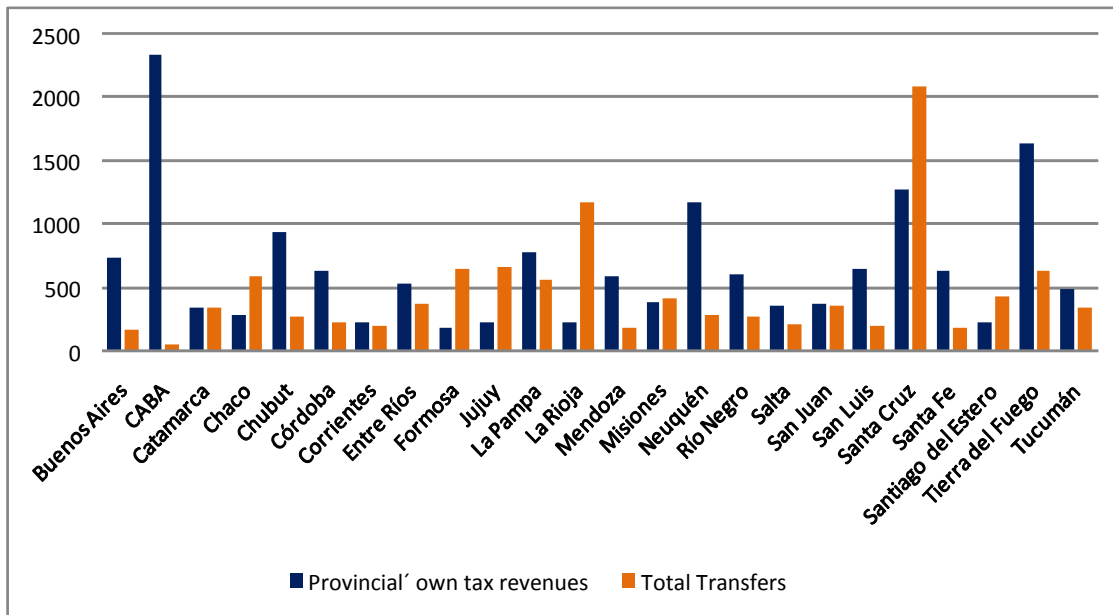(Average values for the period 2003-2014 in per capita constant pesos of 2005)

The combined magnitude of current and capital transfers can be observed in figure 4 as, whereas in four provinces (Catamarca, Corrientes, Misiones and San Juan) provincial tax revenues and national transfers evolved on a par in other six (Chaco, Formosa, Jujuy, La Rioja, Santa Cruz and Santiago del Estero) per capita tax revenues were overrun by per capita national transfers during the period considered. Contrariwise, in the rest of provinces which seemed to have furthered their own tax sources, the incidence of national transfers (both current and capital ones) fell short of that in jurisdictions mentioned first[41].

Next, the Figure 5 presents a static view of provinces' revenue structure and summarizes the preceding analysis related to the financing of the provincial government level in the period 2003-2014. As expected, the pattern confirms the uneven performance regarding financial autonomy with provinces such as Buenos Aires, the city of Buenos Aires, Córdoba, Chubut, Neuquén or Santa Fe, whose own fiscal effort was well above 35%-45% of all their resources; on the opposite side, the fiscal effort of Catamarca, Formosa, Jujuy, La Rioja or Santiago del Estero barely reached 10% and shared revenues and mainly national transfers were essential for making up their fiscal balance[42][43]. In sum, what Figure 5 again shows is the already mentioned trade-off between the shares of provinces' own revenues and received national transfers, which in this

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[41] Let it be mentioned, in passing, the cases of the city of Buenos Aires and of the provinces of Buenos Aires, Córdoba, Chubut, Mendoza, Neuquén, Río Negro, San Luis and Santa Fe.

[42] As mentioned above, in many of these provinces, discretionary national transfers widely exceeded their own tax collection (see Figures 2 and 3). It was also true that shared revenues also exceeded their own tax collection but in this case, at least there is an objective rule-based resource distribution.

[43] The causation issue referred to in footnote 9 above is not a minor one. In this context the appropriate question would be: transfers to certain provinces were substantial because their own fiscal power was small or some jurisdictions preferred to resort to national transfers instead of deepening their own tax sources?

case also added the case of shared revenues as the latter's participation shrank in provinces in which transfers increased[44].

FIGURE 5

ARGENTINA: PROVINCES' INCOME SHARES PER REVENUE CATEGORY, EXCLUDING OTHER INCOMES

(Average for the period 2003-2014)

3.2. THE STRUCTURE AND PERFORMANCE OF PROVINCIAL PUBLIC SPENDING IN ARGENTINA

The Argentine provinces are responsible for 50% - 55% of the country's overall public spending their responsibilities including, besides the so called administrative services, those related to Law and Order (provincial Judiciary and Legislative Powers, Police) and other matters falling under the label of security services, the provision of initial, primary, secondary and tertiary education, health care, housing, labour-promoting activities, poverty checking and welfare programmes (social expenditures[45]), the built-up of the necessary infrastructure for the normal development of economic activities (roads, water

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[44] A possible explanation could be that the yield of the Tax on Bank Credits and Debits created in 2001 was not originally shared with provinces; as of 2009 –and with the objective of ameliorating the negative impact of the international crises upon provinces' public finances- this tax yield began to be partially shared by means of transfers stemming from Soybean Exports Solidarity Fund.

[45] In 13 provinces out of 24, there is a separate provincial Pension System whose beneficiaries are provincial and municipal retired civil servants.

and energy provision, gas pipelines, irrigation, etc.) and the regulation of public utilities (economic expenditures).

For the assessment of provincial public expenditures, a static view based on average figures and shares for the period 2003-2014 was used, as depicted by the ensuing Figures 6 and 7. Data from the National Office for Coordination with Provinces were used and presented in per capita values of 2005, according to the usual categories of government administrative services, security services and social and economic expenditures.

A quick look at the values of provincial spending in the period (Figure 6) immediately reveals a pattern of uneven per capita values across provinces for each of the four categories; likewise, and let alone efficacy and effectiveness considerations[46], per capita constant values of social and administrative expenditures were in average higher than those corresponding to security and economic expenditures. The preceding evidence could be on the one hand reflecting provinces' institutional responsibility in providing important public goods and services (i.e. education and health care) and on the other a political use of administrative spending[47] basically focused on public employment[48].
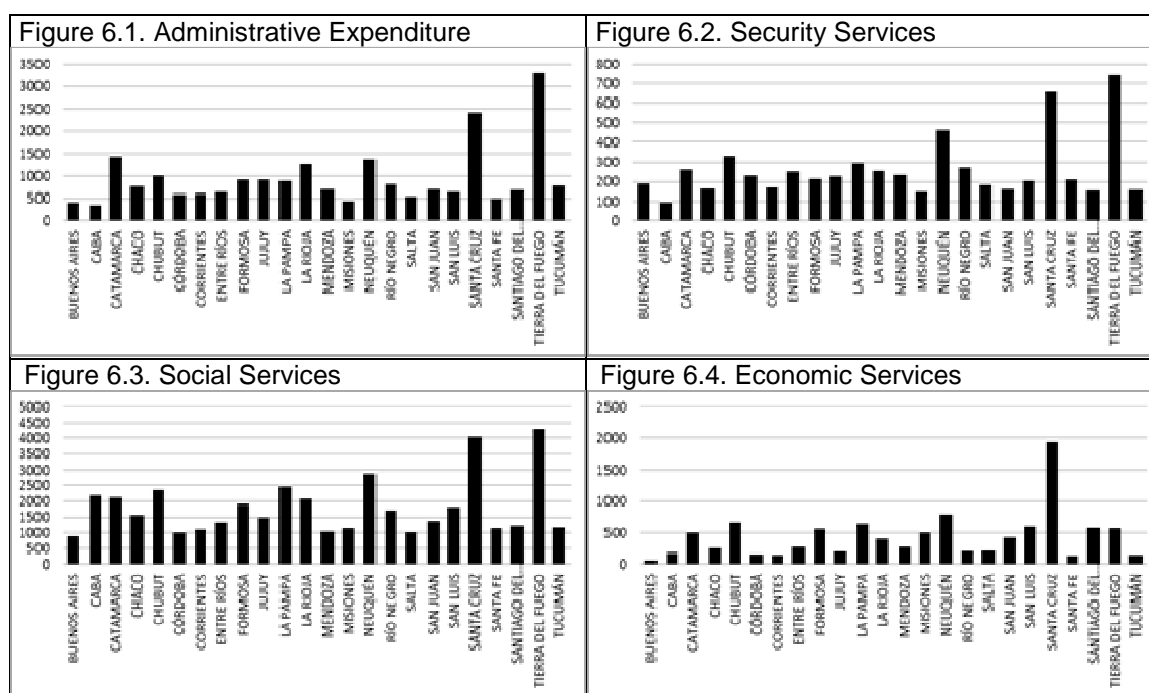
While the Figure 6 presents the main features of public spending by gathering provinces according to expenditures, the Figure 7 serves the purpose of showing the importance of each category in total public spending in the period 2003 – 2004 and in each of the 23 provinces and the autonomous city of Buenos Aires. In this connection, the pattern shown by Figure 7 yields solid evidences of the uneven pattern for the allocation of provincial revenues to almost all spending categories. In backing this assertion, let it be noticed that whereas the main provincial spending (social expenditures) generally presented more similar shares (50% - 60% depending on the province) the rest of categories exhibited highly varying shares per province situation that, as above emphasized and particularly applicable to administrative services, was not independent from the financing source.

FIGURE 6

CATEGORIES OF PROVINCIAL PER CAPITA PUBLIC EXPENDITURE

(Average values for the period 2003-2014 in constant pesos of 2005)

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[46] These matters were dealt with in the econometric section when analyzing their impact upon business creation and subnational growth.

[47] It can be mentioned in passing that per capita administrative spending is larger in provinces exhibiting lower per capita values for their own tax collections and at the same time higher per capita values for the received current national transfers.

[48] Should this prove being true discretionary current transfers might be causing, apart from displacement effects, a negative effect upon the allocation of provincial spending among categories.

Figure 6.1. Administrative Expenditure	Figure 6.2. Security Services

Figure 6.3. Social Services	Figure 6.4. Economic Services

FIGURE 7.

ARGENTINA: PROVINCES' EXPENDITURE SHARES PER CATEGORY
(EXCLUDING PUBLIC DEBT SERVICES)
(Average for the period 2003-2014)

4. THE ECONOMETRIC ESTIMATION OF A PANEL DATA MODEL

The literature review presented in Section 2.1 suggested that crowding-out might occur between revenues accruing from different government levels, induced by the inadequacy of the structure of intergovernmental fiscal relations, and that this same inadequacy –added to wrong or weak subnational fiscal incentives- might also endanger the growth potential of regions, cities, or areas (see equations 5 and 7 above). In addition to this, the content of Section 2.2 (based in the recent Argentine experience) entailed the argument that crowding-out could also take place between sub-national governments' own tax revenues and transfers from the central government, this stemming from provincial rulers' preference for less politically costly budgetary revenues; this alternative hypothesis is here assessed for the Argentine subnational scenario by adapting the analytical framework developed in Section 2.1 to the case of fiscal relations between the federal government and the 24 sub-national jurisdictions, as well as provinces' spending patterns.

The set of series used for the estimation of coefficients included values of annual provincial taxes' yield, discretionary and rule-based current and capital transfers from the central government and provincial public spending by category. Statistical fiscal data from the National Office for Fiscal Coordination with the Provinces were changed to per capita constant values (2005=100), for what the Consumer Price Index (2003-2007) from INDEC[49], the Price Index built by the Statistics Office of the province of San Luis (2008-2014) and intercensus estimates of provincial population from the INDEC were used. Figures for the number of firms and business were obtained from the Statistics on Firms and Registered Wage Earning Labour by Province[50], for the following activities: manufacturing industry, construction, wholesale and retail trade, hotels and restaurants, transport, storage and communication services, financial intermediation and financial services and real estate and managerial services.

It is worth noting, in relation to the first equation of the estimated panel data model (eq. 15) that, following the rationale of the vote-seeking model introduced in section 2.2, the causation sequence has been reversed compared to that of Zhuravskaya's equation (5) above:

$$(15) \quad \Delta \text{ [own tax revenues]}_{it} = \alpha \, \Delta \text{ [national transfers]}_{it} + \eta \text{ [population]}_{it} + \text{ [city effect]}_t + \zeta \text{ [year dummy]}_t + \varepsilon_{it}$$

The following two reasons help to explain the switch between dependent and exogenous variables: in the first place, and conversely to the mentioned Russian case, Argentina does have a rule-based revenue sharing regime[51] with fixed allocation coefficients; in the second place, the hypothesis is here upheld

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[49] National Institute of Statistics and Censuses of Argentina.

[50] Built by the Observatory of Employment and Managerial Dynamics, Ministry of Labour, Employment and Social Security, Argentina.

[51] As said above, the regime is nevertheless subject to severe criticism as the federal government created taxes whose revenue is not shared with provinces (as for instance the tax on bank deposits and withdrawals) while keeps, at the same time, detracting tax revenues that are channelled to the PAYG pension system.

that, due to the possibility of acceding to less costly[52] national discretionary grants, many a province might opt not to deepen its own tax sources.

In relation to the dependent variable '**own tax revenues**', let it be recalled that four taxes make up in Argentina the bulk of the provincial tax yield: in the first place, a variant of the traditional 'turnover tax' whose rates apply to all the stages of an economic transaction[53]; the second most important provincial tax is the 'property tax', reaching both houses in urban areas as well as rural land, the third one the car tax and finally 'stamp duties' required in legal documents such as contracts. There also exist a number of 'fees' required in payment of diverse provincial services.

As reasons to including the exogenous variables '**population**', '**city-specific effects**' and the '**year dummy**' in the above equation have already been given above when introducing the equation (5), let it be pointed out that reasons to resorting to '**national transfers**' responded to the upheld hypothesis that transfers' increases would likely displace revenues from provincial tax sources: therefore, the parameter α, with possible values between -1 and 0, would indicate the weakness of subnational fiscal incentives and the coefficient would be expected to hold a negative sign unless the crowding-out effect did not take place, in which case the value of the parameter should be 0.

As shown below, equation (15) was run under different versions for provinces' revenues and national transfers; that is, in one case, the series only referred to 'provinces' own tax revenues' and, on the other, to 'provinces' overall revenues'[54]; with respect to transfers, 'national current transfers' and 'national capital transfers' were used instead of adding up both items in a unique series standing for national transfers.

The second equation included in the panel model somehow replicated equation (7) above and was meant to ascertain whether provincial fiscal and spending policies were somehow pro-growth and if the fiscal federal setup, regarding the provincial level, was one of 'market preserving federalism':

(16) Δ [number of business]$_{lt}$ = θ [incentives proxy]$_{it}$ + λ [population]$_{it}$ + χ [(pc provexp)]$_{it}$ + [city effect]$_t$ + ζ [year dummy]$_t$ + ε_{it}

Although the matter has already been dealt with by the author, when carrying out her analysis of the Russian experience, it is however worth pointing out that the variable '**number of business**' was taken here at the provincial and not at the city level (as it should have been) the explanation simply being the entailed statistical difficulties of acceding to information in more than a thousand cities and towns whose economic records vary in quantity and quality.

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[52] As said above, less costly must here be understood that provincial authorities always face a political cost when they raise tax rates or create new taxes.

[53] This so called 'cascade' effect and the lack of tax credits cause the well-known 'pyramidation' effect.

[54] The variable 'provinces' overall revenues' also included shared revenues. For many specialists analysing the Argentine Fiscal Federalism, shared revenues are in fact provincial fiscal revenues whose collection was legally delegated to the Central Government by the provinces.

Contrariwise, this information is levied by provincial authorities when computing their domestic geographic products.

As for the exogenous variables included in the equation (16), the rational used for building the '**incentives proxy**' variable was similar to the one in equations (6) and (7): that is, the variable held the value 1 when increases in both the provincial tax resources and national transfers had the same sign and 0 otherwise; in this connection, positive/negative values for θ would mean that strong/weak fiscal incentives for business prevailed at the provincial level. '**pc provexp**' would in turn account for the positive impact of categories of per capita provincial public spending (in this case, Security, Social[55] and Economic Services and Total Spending) upon provincial business creation and economic development, what would be inferred if χ held a positive sign.

Estimations of the equation (15) were carried out by Generalized Least Squares[56], [57] for all the four ensuing variants in which (d_i_top), (d_i_p), (d_i_tc) and (d_i_tk) respectively stood for changes in provinces' own tax and total tax revenues[58] and current and capital national transfers; available STATA options were used in order to correct the problems of heteroscedasticity and correlated error structure and AR1 and panel specific AR1 autocorrelation structures; likewise, the possibility of non-stationary series and, in turn, the risk of spurious correlations was somehow averted as variables in (17) through (18') were taken in differences.

$$(17) \quad (d\_i\_top)_{it} = \alpha \, (d\_i\_tc)_{it} + \eta \, (d\_pob)_{it} + \varepsilon_{it}$$

$$(17') \quad (d\_i\_p)_{it} = \alpha'(d\_i\_tc)_{it} + \eta'(d\_pob)_{it} + \varepsilon'_{it}$$

$$(18) \quad (d\_i\_top)_{it} = \alpha''(d\_i\_tk)_{it} + \eta''(d\_pob)_{it} + \varepsilon''_{it}$$

$$(18') \quad (d\_i\_p)_{it} = \alpha'''(d\_i\_tk)_{it} + \eta'''(d\_pob)_{it} + \varepsilon'''_{it}$$

An interesting feature of the above equations, already stressed by Zhuravskaya, is that when they are estimated with the STATA noconstant option (no intercept) and the sum of city-specific effects is constrained to 0 the parameter α will indicate the magnitude of the crowding out of provinces' own tax revenues by national transfers[59].

Generalized Least Squares and the mentioned STATA options were also resorted to in order to estimate the ensuing variants of equation (16), in which the parameter θ represented the positive/negative impact of provincial fiscal incentives upon business creation. As *(d_emp) represented the annual change in the number of provincial firms,* five variants were in turn used for the variable

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[55] Social services excluded of provincial pension regimes' spending.

[56] Consensus exists among econometricians in that GLS are best suited than MCO for dealing with the problem of serial correlation.

[57] Nevertheless, the econometric analysis showed that when a pooled panel data model was estimated by MCO, with and without the VCE (ROBUST) option for correcting heterocedasticity, results and their statistical significance were rather similar to those of GLS.

[58] That is, changes in the yield of provincial taxes plus those of received rule-based shared revenues.

[59] Notice that the annual year dummy has also been excluded from the estimation.

representing the effect of per capita provincial spending upon business creation: *(d_g_sseg)*, *(d_g_ss)*, *(d_g_se)*, *(d_g_3)* and *(d_g_tot)* respectively standing for per capita law and order services, social services, economic services, the sum of all these three services and per capita total provincial spending[60].

$$(19) \quad (d\_emp)_{it} = \theta\,(i\_tc\_itop)_{it} + \lambda\,(pob)_{it} + \chi\,(d\_g\_ppe)_{it} + \varepsilon_{it}$$

$$(19') \quad (d\_emp)_{it} = \theta'(i\_tc\_ip)_{it} + \lambda'(pob)_{it} + \chi'(d\_g\_ppe)_{it} + \varepsilon'_{it}$$

$$(20) \quad (d\_emp)_{it} = \theta''(i\_tk\_itop)_{it} + \lambda''(pob)_{it} + \chi''(d\_g\_ppe)_{it} + \varepsilon''_{it}$$

$$(21') \quad (d\_emp)_{it} = \theta'''(i\_tk\_ip)_{it} + \lambda'''(pob)_{it} + \chi'''(d\_g\_ppe)_{it} + \varepsilon'''_{it}$$

As in the preceding case, neither the intercept nor the year dummy was included and again the sum of city-specific effect was constrained to 0.

4.1. PAIR-WISE CORRELATION COEFFICIENTS[61]

Results of correlations[62] between the variables used in the regression analysis below are reported in table 2 (for variables included in equations 17 through 18´) and in table 3 (for variables of equations 19 to 21´).

TABLE 2

Variables in equations 17-18´

Variables		Coefficient	P-value
d_i_top	d_i_tc	-0.1686	(0.0060)***
d_i_top	d_i_tk	-0.0256	(0.6789)
d_i_top	d_i_p	0.8032	(0.0000)***
d_i_top	d_pob	0.4979	(0.0000)***
d_i_p	d_i_tc	-0.0191	(0.7576)
d_i_p	d_i_tk	-0.0321	(0.6040)
d_i_p	d_pob	0.3582	(0.0000)***
d_i_tc	d_i_tk	0.2941	(0.0000)***
d_i_tc	d_pob	0.0142	(0.8187)
d_i_tk	d_pob	0.0999	(0.1054)

*, **, *** Significant at 10%, 5% and 1% levels, respectively. P-value in parentheses

In commenting the results, it is clear that annual changes in provinces' own tax and total tax revenues and annual changes in current and capital national transfers are negatively correlated although the coefficients in the second

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[60] In this latter case, administrative services, but not public debt services, were also included.

[61] Pair-wise correlation coefficients were obtained by using Stata´s estimation procedures.

[62] Pair wise correlation coefficients are useful in so far as they yield preliminary indications of whether variables possess some positively or negatively correlated characteristics even acknowledging that, for determining the strength of the relationships between the characteristics, normalized values are required.

column of table 2 above are not significant except for only one case. Conversely, coefficients show the expected positive signs in the rest of cases, although again they are statistically significant (at 1% level) only in four cases. In sum, the results denote that, when correlation is negative, annual changes reach a high value in one variable and a low value in the other one (as in the first quoted case) whereas the annual changes tend to vary together when a positive correlation exists among variables.

Results displayed by the ensuing table 3 show two distinguishing features in relation to those shown by table 2; first, and as expected, only positive correlations appear and second, a greater number of coefficients (in the second column) are now statistically significant at 1%, 5% and 10% levels. In this regard, the positive significant correlations between the ´incentives proxy´ and ´business creation´ variables, and between the former and the various categories of provincial public spending, are particularly worth mentioning matters.

TABLE 3

Variables in equations 19- 21´

Variables		Coefficient	P-value
d_emp	i_tc_itop	0.0370	(0.5683)
d_emp	i_tc_ip	0.0063	(0.9226)
d_emp	i_tk_itop	0.1135	(0.0794)*
d_emp	i_tk_ip	0.0959	(0.1385)
d_emp	d_g_ss	0.0613	(0.3441)
d_emp	d_g_sseg	0.0319	(0.6229)
d_emp	d_g_se	0.0019	(0.9769)
d_emp	d_g_3	0.0448	(0.4894)
d_emp	d_g_tot	0.0499	(0.4420)
i_tc_itop	i_tc_ip	0.7421	(0.0000)***
i_tc_itop	i_tk_itop	0.1197	(0.0642)*
i_tc_itop	i_tk_ip	0.0931	(0.1506)
i_tc_itop	d_g_ss	0.2002	(0.0018)***
i_tc_itop	d_g_sseg	0.0881	(0.1737)
i_tc_itop	d_g_se	0.1576	(0.0145)**
i_tc_itop	d_g_3	0.2132	(0.0009)***
i_tc_itop	d_g_tot	0.2193	(0.0006)***
i_tc_ip	i_tk_itop	0.0869	(0.1795)
i_tc_ip	i_tk_ip	0.1086	(0.0931)*
i_tc_ip	d_g_ss	0.1424	(0.0274)**
i_tc_ip	d_g_sseg	0.1664	(0.0098)***
i_tc_ip	d_g_se	0.1563	(0.0154)**
i_tc_ip	d_g_3	0.1844	(0.0042)***
i_tc_ip	d_g_tot	0.2093	(0.0011)***
i_tk_itop	i_tk_ip	0.7391	(0.0000)***
i_tk_itop	d_g_ss	0.1611	(0.0124)**

i_tk_itop	d_g_sseg	0.1199	(0.0636)*
i_tk_itop	d_g_se	0.1191	(0.0655)*
i_tk_itop	d_g_3	0.1740	(0.0069)***
i_tk_itop	d_g_tot	0.2366	(0.0002)***
i_tk_ip	d_g_ss	0.1757	(0.0064)***
i_tk_ip	d_g_sseg	0.0601	(0.3536)
i_tk_ip	d_g_se	0.1158	(0.0732)*
i_tk_ip	d_g_3	0.1748	(0.0066)***
i_tk_ip	d_g_tot	0.2143	(0.0008)***
d_g_sseg	d_g_ss	0.3900	(0.0000)***
d_g_sseg	d_g_se	0.2534	(0.0001)***
d_g_sseg	d_g_3	0.4919	(0.0000)***
d_g_sseg	d_g_tot	0.5864	(0.0000)***
d_g_ss	d_g_se	0.4400	(0.0000)***
d_g_ss	d_g_3	0.9009	(0.0000)***
d_g_ss	d_g_tot	0.8416	(0.0000)***
d_g_se	d_g_3	0.7730	(0.0000)***
d_g_se	d_g_tot	0.7109	(0.0000)***
d_g_3	d_g_tot	0.9445	(0.0000)***

*, **, *** Significant at 10%, 5% and 1% levels, respectively. P-value in parentheses

4.2. THE ESTIMATION OF REGRESSION EQUATIONS

The following table 4 shows the econometric outcome of the above equation (15) in its variants (17) and (18), resorting exclusively to provinces' own tax collection as the dependent variable and presenting, on the one hand, pooled data OLS regressions (with and without the vce (robust) option) and on the other GLS's panel data estimations of the equation with the abovementioned STATA options for heteroscedasticity structural correlation and serial autocorrelation correction.

A first point to be stressed is that all the first explanatory variable's coefficients held expected negative signs and showed statistical significance, irrespective of whether current or capital transfers were used; a second evident conclusion from figures in table 4 is that both OLS and GLS rendered comparable results although GLS's estimated regressions, including heteroscedasticity and panel specific AR1 autocorrelation correction[63], seemed to be superior from an econometric viewpoint. Finally, the population's positive coefficient resulted significantly different from 0 but of negligible effect upon the dependent variable given its extremely low value.

The econometric verification that national transfers' coefficients were negative in fact suggests that some displacement effect effectively existed caused by the former variable upon provinces' own taxation, notwithstanding that this evidence cannot be straightforwardly compared with that of E.

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[63] The response of the equation to the STATA option reaffirms the already known fact that not only serial correlation but also spatial correlation matters when estimating a panel data model.

Zhuravskaya' s paper. Let it be noticed, in passing, that the magnitude of crowding-out was much smaller in Argentine provinces compared to that affecting Russian local government levels (which were very close to – 1). In seeking an explanation for that, it is worth recalling that in this case the crowding out did not occur –as it did in the predatory state model described in sub-section 2.1, because the Argentine central government automatically curtailed transfers following increases in subnational tax yields but because of some governors' autonomous decision deeming more convenient for their political interest (vote-seeking model) to strive for more national transfers instead of furthering their own tax sources[64]. Furthermore, and in spite of provinces' different quantitative relevance of their own tax yields, the lower magnitude of crowding-out, contrariwise to the mentioned Russian experience with its local government, may be very likely responding to the existence –as of the 1853 constitution- of a politico-institutional and fiscal federal set up endowing both the central government and the provinces with original tax and spending faculties (financial autonomy and autarchy)[65] and traditionally upholding – despite setbacks mainly occurring in the last two decades-provinces' financial autonomy (and related to it accountability) as an aim of the utmost importance[66].

A possible explanation of why the table 4 showed smaller displacement effects upon provinces' own tax revenues, when capital transfers were resorted to, may be sought at the fact that causes underlying these earmarked transfers (compared to the case of current transfers) could be different as in many cases they complemented public works already being financed by the provinces; on the other hand, reasons for that were already given by Rezk and Perez Aguila (2014) who suggested that capital transfers could act in favour of provinces' tax yields, when private contractors are in charge of the works, as provincial governments are required to withhold –on any partial or total payment- the amount corresponding to national and provincial taxes thus curtailing a possible channel for tax evasion.

TABLE 4

Dependent Variable d_i_top

Explanatory Variables	OLS	OLS VCE(ROBUST)	XTGLS (heteroscedastic, correlated error structure and AR1 autocorrelation structure)	XTGLS (heteroscedastic, correlated error structure and panel specific AR1 autocorrelation

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[64] The analysis of provinces' own tax revenues and received national transfers carried out in the stylized facts permits to suggest that had it no been for the relative weight of Buenos Aires, the city of Buenos Aires, Córdoba, Santa Fe and Mendoza, whose share of own tax revenues was substantially higher compared to the rest, coefficients for national transfers in regression equations (10) through (11') would have obtained larger negative values.

[65] As of the amendment of the Constitution in 1994 these faculties also apply to municipal governments.

[66] It is worth emphasizing that the 1994 constitutional amendment reinforced the fiscal and political roles of provinces as instruments of growth and development within the federal scenario.

					structure)	
d_i_tc	-0.213*** (-3.16)	-0.213*** (-1.41)	-0.145*** (-5.17)		-0.194*** (-8.17)	
d_i_tk				-0.132*** (-5.05)		-0.158*** (-4.74)
d_pop	0.003*** (11.31)	0.003*** (4.22)	0.003*** (12.73)	0.002*** (11.54)	0.003*** (26.73)	0.003*** (30.37)
r² overall	0.341	0.341	-	-	-	-
Rho AR(1)	-	-	0.071	0.141	-	-

*** Significant at 1% level. P-value in parentheses

The econometric results of table 5, in which the dependent variable was provinces' overall tax revenues (that is provinces' own tax yield plus shared revenues), show that crowding-out still occurred although its magnitude substantially reduced compared to the preceding case illustrated by table 4. Needless to emphasize, this outcome was strictly related to the already stressed traditional fiscal federalism foundations of prevailing inter-jurisdictional relations in Argentina whose most visible instrument was the Revenue Sharing Regime operating since 1935. Conversely to the situation depicted by the predatory state model for the Russian scenario, provinces have in Argentina access to ruled-based unconditioned transfers whose distributional parameters cannot be changed unilaterally by the central government as conformity of all the 24 jurisdictions will be required; it would be therefore not possible a reduction in revenue share transfers to jurisdictions experiencing increases in their own tax collection[67]

TABLE 5

Dependent variable d_i_p

Explanatory Variables	XTGLS (heteroscedastic, correlated error structure and AR1 autocorrelation structure)		XTGLS (heteroscedastic, correlated error structure and panel specific AR1 autocorrelation structure)	
d_i_tc	-0.073*** (-3.50)		-0.045* (-1.82)	
d_i_tk		-0.115 (-1.59)		-0.132*** (-2.71)
d_pop	0.004***	0.004***	0.004***	0.004***

	(12.49)	(9.25)	(11.15)	(9.44)
Rho AR(1)	0.124	0.131	-	-

*, *** Significant at 10% and 1% levels, respectively. P-value in parentheses.

The econometric outcome of equations (19) through (21') is shown by the ensuing tables 6 and 7 in which values 1 and 0 for the incentive proxy variable respectively depended on the direction of changes in provinces' own tax collection and provinces' overall revenues. Apart from the impact of the ´incentives proxy´ variable, the estimated equations also rendered the impact (with statistical significance included) of three categories of provincial public spending (social security services, social services excluded of social security payments and economic services) upon the creation of businesses at the provincial level[68]. With regard to the ´incentives proxy´ variable, its positive coefficients achieved in both the construction variants permitted tentatively infer that similar changes of direction of provinces' overall revenues and national transfers favoured in general the creation of new businesses. Nevertheless, and taking into consideration that the difference of the dependent variable was used, any hasty jump into extremely optimistic conclusions might be misleading in so far as the actual power of the incentives proxy variable. In this connection, econometric results in tables A and B in the Appendix I, in which both the dependent and the explanatory variable were taken as annual growth rates, indicated very much modest values for the impact of the ´incentives proxy´ variable as, according to the autocorrelation correction option, GLS estimates rendered increases in the number of businesses roughly oscillating between 2 and 3 per cent a year. The upheld hypothesis that only when both the changes of provinces' overall tax revenues and transfers moved in a similar direction the coefficient of the ´incentives proxy´ would substantially increase (enabling provinces to count with the necessary financial resources), seems partially challenged by the existence of crowding-out which, despite being of limited reach, accounted however at the moment of explaining the exogenous variable's modest performance.

The assessment of provincial public spending contribution to business creation showed results that, notwithstanding falling in line with the expected, brought out some worth stressing features. In this connection, the coefficients of all the three spending categories were positive indicating at the same time that they exerted influence upon business creation although the major impact seemed to have stemmed from security services and not from social or economic services[69]. Even though this observation might have resulted surprising as social services, for its contribution to human capital formation and to labour promoting activities, to say the least, and economic services, for its connection with infrastructure provision appeared beforehand as natural candidates to lead the way, some recent and valuable research has been pointing at a different direction as evidence showed that security services [more

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[68] It goes without saying that positive signs for variables' coefficients, apart from the favourable impact upon business creation must also be understood as depicting a "market preserving", sub national pro-growth and development fiscal federal stance.
[69] Nevertheless, the performance of social services, although not that of economic services, was good when growth rates of variables were taken (see tables A and B in the Appendix I).

precisely referred to by Acemoglou et al (2005) as the variable embodying Law and Order and the Judiciary independence], mattered as an explanatory variable in many empirical papers whose interest resided in studying the relationship between economic growth and institutional variables[70]. The low performance of provincial economic services in boosting business creation put also at stake the former's capability to promoting subnational development, despite the fact that this spending category, in the hands of provincial governments, was regarded as the typical pro-growth instrument and this seriously raised the question of whether the subnational provision of economic services was not subject to problems of efficiency and efficacy. Finally, the performance of population did not differ much from what said above and similar conclusions apply.

TABLE 6

Dependent variable d_emp

Explanatory Variables		XTGLS (heteroscedastic, correlated error structure and AR1 autocorrelation structure)				
Fiscal Incentives Proxy	i_tk_itop	30.64** (2.00)	45.18** (2.40)			
	i_tk_ip			81.60*** (3.77)	65.54*** (3.25)	87.36*** (5.47)
Provincial Public Spending	d_g_sseg	0.322** (2.25)		0.530*** (3.13)		
	d_g_ss		0.086** (2.37)		0.093*** (2.86)	
	d_g_3					0.075*** (3.50)
Population		0.000*** (4.18)	0.000*** (2.56)	0.000*** (2.93)	0.000** (2.43)	0.000*** (4.02)
Rho AR(1)		0.691	0.690	0.650	0.646	0.644

, * Significant at 5% and 1% levels, respectively. P-value in parentheses

TABLE 7

Dependent variable d_emp

Explanatory Variables		XTGLS (heteroscedastic, correlated error structure and panel specific AR1 autocorrelation structure)						
Incentives Proxy	i_tc_itop	39.81** (2.26)	22.28** (1.99)					

[70] In this connection S. Edwards (2007) econometrically showed the relation of the variable with the long run of growth of the Latin American Economies; Rezk and Pérez Aguila (2015) also verified the variable's relevance in relation to the long run economic growth in Argentina.

	i_tc_ip			43.83*** (2.96)	31.47** (2.05)				
	i_tk_itop					108.65*** (5.82)	88.41*** (6.75)		
	i_tk_ip							115.11*** (5.86)	155.30*** (8.23)
Provincial Public Spending	d_g_sseg	1.52*** (7.39)		0.992*** (5.62)				1.530*** (6.73)	
	d_g_ss					0.331*** (7.09)			
	d_g_se		0.105** (2.38)						
	d_g_3				0.172*** (4.05)		0.101*** (5.51)		0.261*** (4.58)
Population		0.000*** (8.48)	0.000*** (11.8)	0.000*** (9.07)	0.001*** (18.3)	0.000*** (7.84)	0.001*** (12.2)	0.000*** (12.3)	0.000*** (3.91)

, * Significant at 5% and 1% levels, respectively. P-value in parentheses.

5. CONCLUSIONS

Fiscal federalism and inter-jurisdictional fiscal arrangements among different government levels have become crucial matters for policy makers in the recent decades, this explained by the fact that the number of federal countries is increasing and at the same time strong decentralizing institutional and fiscal processes are taking place in traditionally non federal nations (e.g. Belgium, Chile, Italy, Spain, Russia, United Kingdom) in which notions such as local financial autonomy, people's wellbeing, pro-business climate, development and growth have now acquired particular political relevance.

In this connection, E. Zhuravskaya (2000), in her paper over the characteristic of inter-jurisdictional fiscal arrangements in Russia and China, concluded that fiscal federalism arrangements in the former country were not conducive to local governments' financial autonomy, growth, business creation and to efficacy in the provision of public goods (weak fiscal incentives), contrariwise to what the Chinese performance showed, the main reasons being the unsuitable Russian fiscal arrangements whereby any marginal increase in local governments' own tax revenues could be crowded out by the upper regional level, conversely to the Chinese case in which regional and local government levels relied on long run, objective and more stable revenue sharing agreements.

Argentina is, as of 1853, a federal country in which all the three levels (the central government, the provinces and the municipalities) are constitutionally endowed with tax and spending faculties for collecting taxes and providing important public goods (education, health care, infrastructure) and there also exists a Revenue Sharing Regime whereby the upper level and the

provinces share the revenue of the three main taxes: value added tax, personal and corporate income tax and excise taxes. In spite of that, evidences show a decline in the share of provincial tax revenues accompanied by the growing importance of national discretionary current and capital transfer' in provinces' overall revenues. This feature raises the question of whether Argentina is experiencing the similar crowding-out situation described by Zhuravskaya, with the difference that national transfers now displace provinces' own tax revenue, causing in turn the latter's lower fiscal autonomy, a dwindled provincial governments' accountability towards taxpayers and allocations of national transfers in ways not necessarily conducive to subnational economic and social development.

A panel data model including provinces' fiscal information for the period 2003 – 2014 was resorted to in order to ascertain whether the crowding- out of fiscal resources between the central government and the provincial governments was occurring and to verify if the latter's fiscal incentives and pattern of public expenditures were coherent and consistent with pro-growth and business creation at the subnational level. For that, GLS panel data estimations were carried out of equations respectively including provinces' own tax revenues and business creation as dependent variables and national transfers, incentives proxy, provincial public spending per category and population as explanatory variables.

The econometric outcome ratified the occurrence of the displacement effect although two important differences were found with regard to the Russian predatory case: on the one hand, crowding out partly took place in Argentina because some provincial governments (despite the loss of financial autonomy and the consequent major economic and political dependence from the upper government level) deemed less politically costly (with respect to their taxpayers) to strive for more national transfers instead of furthering their own tax sources; on the other hand, the magnitude of the crowding out was much smaller than the one Zhuravskaya found in the Russian case and this was explained by the positive impact of the existing rule-based Revenue Sharing Regime somehow preventing detrimental effects upon provinces' overall tax resources.

Likewise, the econometric results showed a relative low impact of fiscal incentives and of provincial provision of public goods upon business creation which in the first case might be acknowledging the negative effect of crowding-out (however small) but also the possibility that the efficacy and effectiveness of provincial public goods provision felt short of required.

It is finally worth mentioning that in line with other recent empirical investigations over the role of institutions, the variable Law and Order (represented here by provincial security services) proved to be more important than other sub-national spending categories in promoting business creation.

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TABLE A

Dependent variable tc_emp

Explanatory Variables		XTGLS (heteroscedastic, correlated error structure and AR1 autocorrelation structure)														
Incentives Proxy	i_tc_itop	0.027*** (4.94)	0.033*** (6.04)	0.027*** (7.21)	0.021*** (4.95)												
	i_tc_ip					0.027*** (9.87)	0.021*** (3.48)	0.019*** (4.33)	0.018*** (3.80)								
	i_tk_itop									0.038*** (12.63)	0.039*** (8.30)	0.034*** (8.97)	0.030*** (8.17)				
	i_tk_ip													0.027*** (7.33)	0.037*** (9.13)	0.034*** (15.00)	0.027*** (7.01)
Provincial Public Spending	tc_g_ss	0.155*** (5.46)				0.206*** (15.13)				0.164*** (9.33)				0.195*** (11.88)			
	tc_g_se		0.016* (1.92)				0.020* (1.93)				0.021** (2.28)				0.025*** (3.22)		
	tc_g_3			0.169*** (8.39)				0.215*** (9.31)				0.163*** (8.57)				0.187*** (21.01)	
	tc_g_tot				0.238*** (10.38)				0.224*** (9.01)				0.212*** (8.26)				0.227*** (14.75)
Population		2.28e-09*** (3.00)	2.03e-09* (1.84)	1.66e-09*** (3.99)	1.55e-09*** (3.45)	1.46e-09 (0.90)	3.40e-09*** (3.81)	1.93e-09 (0.84)	2.37e-09 (1.01)	1.90e-09*** (4.04)	3.20e-09*** (7.40)	3.89e-09 (1.57)	1.47e-08** (2.30)	1.08e-08* (1.88)	3.05e-09*** (6.06)	9.07e-09 (1.23)	2.97e-09* (1.77)
Rho AR(1)		0.101	0.227	0.131	0.033	0.151	0.301	0.185	0.102	0.150	0.222	0.141	0.090	0.145	0.220	0.141	0.069

*, **, *** Significant at 10%, 5% and 1% levels, respectively.

TABLE B

Dependent variable tc_emp

Explanatory Variables		XTGLS (heteroscedastic, correlated error structure and panel sprecific AR1 autocorrelation structure)															
Incentives Proxy	i_tc_itop	0.020*** (4.09)	0.041*** (9.86)	0.025*** (6.05)	0.022*** (5.82)												
	i_tc_ip					0.021*** (4.39)	0.026*** (5.13)	0.017*** (3.42)	0.021*** (5.16)								
	i_tk_itop									0.030*** (8.26)	0.034*** (7.07)	0.032*** (11.80)	0.024*** (6.38)				
	i_tk_ip													0.032*** (7.09)	0.038*** (8.92)	0.032*** (8.97)	0.024*** (6.97)
Provincial Public Spending	tc_g_ss	0.151*** (5.20)				0.159*** (5.93)				0.152*** (6.89)				0.170*** (9.61)			
	tc_g_se		0.025*** (2.79)				0.035*** (4.18)				0.020** (2.32)				0.025*** (3.97)		
	tc_g_3			0.193*** (7.49)				0.209*** (7.99)				0.222*** (18.75)				0.203*** (11.10)	
	tc_g_tot				0.212*** (11.34)				0.251*** (12.13)				0.227*** (10.05)				0.241*** (15.84)
Population		1.70e-09*** (2.77)	3.12e-09*** (4.59)	1.97e-09*** (3.56)	5.91e-09*** (2.98)	1.77e-09*** (3.34)	3.13e-09*** (3.48)	1.82e-09*** (3.68)	1.40e-09*** (4.26)	2.89e-08*** (3.20)	1.06e-08* (1.49)	1.43e-08** (2.20)	6.52e-09* (1.69)	9.92e-09* (1.87)	4.95e-09*** (2.87)	6.47e-09* (1.90)	2.99e-09** (2.27)

*, **, *** Significant at 10%, 5% and 1% levels, respectively.