

Models of local governments and their impact in public finance: the case of Argentina.*

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July 18, 2020

Abstract

Local governments in Argentina experimented an important institutional change throughout the 20th century. They moved from a “*business economic model*” to an “*agency model*”, since the provincial government decentralized functions and expenditures. Using panel data for the 135 municipalities of the province of Buenos Aires - the main provincial government of Argentina - between 1970 and 2014 we document that (i) the share of indivisible goods in the budget has grown; (ii) municipalities have become more transfer-dependent; (iii) the structure of own revenues has changed toward less participation of taxes designed according to the “benefit principle”; (iv) there is no “tax laziness” meaning that transfers and own revenues are complementary; (v) municipal expenditure rises 0.87 pesos against 1 peso of additional transfers; and (vi) transfers have “fiscal equalization” effect among municipalities. Our interpretation of revenues and expenditures reaction against additional transfers is a version of the “flypaper effect”, which is a departure from the normative model of transfers. The empirical analysis remarks on the relevance of using an estimation strategy that contemplates the properties of panels with both large numbers of cross-section (N) and time-series (T) observations. Overall, the findings lead to rethinking the municipal financing system and its coherence with the national tax system.

JEL CODES: H71, H72, H73.

KEYWORDS: local governments, normative models, tax collection, expenditures, intergovernmental transfers.

*We thank seminar participants at Torcuato Di Tella University (Annual Meeting of Fiscal Federalism) and AAEP 2019 (Annual Meeting of the Argentine Association of Political Economy). We would also like to thank Carlos Lamarche for helpful comments and discussion. All views expressed in this paper are entirely those of the authors. Alberto Porto’s affiliation is National University of La Plata (UNLP) and National Academy of Economic Science of Argentina (ANCE). Email: aporto@gmail.com. Jorge Puig’s affiliation is UNLP. Email: jorge.puig@econo.unlp.edu.ar. 16-digit ORCID identifier: 0000-0001-5033-5608

“Seen from a great height — a “bird’s-eye view”, if you will— how local governments are financed may appear to be a rather small and unimportant issue, one that is easily lost from sight amidst the swirling clouds of international financial crises and the headline claiming activities of national politicians and governments. Viewed from street level, however, down where people actually live, few aspects of the public sector have a more direct and tangible effect on the daily lives of citizens than the level and quality of local public services—and both the level and quality of such services are, arguably, dependent to a considerable extent upon how they are financed”. Bird (2012)

1 Introduction

In Argentina, as in many other countries, studies on public economics have generally focused on the National or the provincial level, with secondary attention to local governments (i.e., municipalities). However, there are several reasons to pay attention to them since their importance has been increasing in recent decades. Actually, municipalities represent 7.3 percent of aggregate public expenditure, equivalent to 3.2 percent of Gross Domestic Product (GDP). In 1980 those figures were 5.5 percent and 1.6 percent respectively (Table 1, panel A). Most of municipal expenditure (2.2 percent of GDP) is for social purposes (Table 1, panel B). Historically, the composition of expenditures was mostly explained by the provision of urban services (e.g., lighting, cleaning) which are essentially divisible goods mainly financed according to the “benefit principle” with prices and fees. Over time municipalities have become more active in financing goods such as health, education and housing which are essentially indivisible goods (Table 1, panel C). For them there is no possibility of total financing through the prices and fees system. This modification triggers changes on municipalities way of financing to higher municipal taxes or higher provincial transfers. In 1970 provincial transfers represented 28.8 percent of municipal revenues, 39.6 percent in 1980, and 49.7 percent in 2014.¹

Since revenues are more concentrated at a higher level (e.g., provincial) than expenditures, intergovernmental transfers to municipalities are used to fill the gap. They also compensate horizontal imbalances due to differences in fiscal capacity and needs (Oates, 1972). The second-generation theory of fiscal federalism (Weingast, 1995, 2009; Oates, 2005) remarks several problems that may arise with transfers. First, they can generate perverse incentives for irresponsible behavior of recipient governments (e.g., excessive expenditure, tax laziness, indebtedness). Second, central or provincial government can depart from the normative theory of transfers by

¹National direction of provincial affairs. Ministry of Economy, Argentina.

incorporating political criteria's and use transfers to create financial and political dependence on local governments.

There is an extensive literature about the role of transfers in developing countries. In presence of vertical imbalances (i.e., expenditures are more decentralized than revenues) the departure of the “Wicksellian connection” can generate incentives to press for additional transfers (or debt) and local revenue mobilization may decline (Ahmad, 1997; Bird & Vaillancourt, 1999; Brosio & Jiménez, 2012; Bird & Slack, 2014; Bhatt & Scaramozzino, 2015; Lewis & Smoke, 2017). Additionally, the quantity or quality in public goods provision could fail.

In this paper we analyze the role of intergovernmental transfers to local governments in Argentina. The interest arises from the recognition that the research on the fiscal consequences of multilevel governance has largely focused on the interaction between federal and state governments. Yet, the federal system is considerably more complex and also includes the local level that is very important in the provision of goods and services. We focus on the 135 municipalities of the province of Buenos Aires, the main provincial government of Argentina that accounts for 39.4 percent of the country's population and 35.1 percent of the national GDP. Municipalities of Buenos Aires present remarkable heterogeneity in expenditure per capita, productive structure, economic development and social indicators (Porto, 2004). Interestingly they have experienced an important institutional change throughout the 20th century. They moved from a “*business economic model*” (until 1978) to an “*agency model*”, since the provincial government decentralized functions and expenditures. This change had important effects on financing. Until 1978 transfers were designed in order to close vertical and horizontal imbalances. Since then a new transfer was added to finance health expenditures. Given that change and the growing role of transfers we study if there were changes in the structure of municipalities own revenues as well as tax laziness. On top of that we explore the response of expenditures against additional provincial transfers and the implications on territorial equity.

We provide empirical results employing panel data for the 135 municipalities of Buenos Aires from 1970 to 2014. Our empirical analysis remarks the relevance of using an estimation strategy that contemplates the properties of panels with both large numbers of cross-section (N) and time-series (T) observations. Our main results can be summarized as follows: (i) growing share of indivisible goods; (ii) municipalities have become more transfer-dependent; (iii) the structure of own revenues has changed toward less participation of taxes designed according to the “benefit principle”; (iv) there is not “tax laziness” meaning that transfers and own revenues are complementary; (v) municipal expenditure rises 0.87 pesos against 1 peso of additional provincial transfers; (vi) there is evidence of the “flypaper effect”; and (vii) transfers have a “fiscal equalization” effect among municipalities.

This paper contributes to a better understanding of the incentives generated by transfers on the behavior of local governments and the implications for the global public sector performance (Prud'homme, 1995; Ahmad, 1997; Bird & Vailancourt, 1999; Goodspeed, 2002; Inman, 2003; Brosio & Jiménez, 2012; Bhatt & Scaramozzino, 2015). Argentina is usually presented as an example of the “bad side” of fiscal decentralization and transfers (Prud'homme, 1995; Jones *et al.*, 2000; Nicolini *et al.*, 2002; Goodspeed, 2002; Webb, 2002; Inman, 2003; Oates, 2005, 2006, 2008; Weingast, 2009). However, this view focus on the relation between central government and provinces. To the best of our knowledge, there is no evidence on the relation between provinces and municipalities in Argentina. In addition, this work provides evidence to other important studies with mixed results. Zhuravskaya (2000) suggested that local governments in Russia have nearly no incentive to exert any tax-generating effort when transfers increase.² Similar findings are provided by Rajaraman & Vasishtha (2000) in the analysis of local governments in India. For the same country, Bhatt & Scaramozzino (2015) analyzed the relationship between federal transfers, state domestic product, and fiscal deficits. To some extent the findings are in line with our results, since the evidence in is supportive of the view that the Indian federal transfers system is “gap-filling” and has been successful in directing resources toward the poorer states. Buettner & Wildasin (2006) found that the adjustment of local governments to an increase in external grants results in reduced subsequent own revenue generation. On the other hand, Skidmore (1999) analyzed local governments in United States and identified a positive effect of higher-tier government aid to local governments on locally generated revenues. Mogues & Benin (2012) supported that greater past external transfers to local governments do not encourage internal revenue generation in Ghana, but instead have a depressing effect on own revenues. Lewis & Smoke (2017) offered a mixed support for presumed perverse incentives of transfers in Indonesia. They seem not to provide a disincentive for local governments to increase their own revenues but they incentive to increase local personnel spending.³

²Also for Russia, a contribution related to our paper is Alexeev *et al.* (2019). This paper studied the relationship between decentralization and fiscal deficit in the case of local governments in Russia considering the impact of decentralization of expenses, transfers and own resources. Expenditure decentralization has a positive effect on consolidated regional budget balances, while transfer dependence of municipalities is associated with higher deficits. The impact of revenue decentralization depends on whether a regional government can use its tax revenue assignments with the same high degree of discretion that generally characterizes explicit fiscal transfers.

³In a recent closely related contribution with our paper, Masaki (2018) showed strong evidence that intergovernmental transfers help expand local revenues in Tanzania. It argues that in places where the existing capacity of local government authorities to administer tax collection is weak and political costs of enforcing taxation are low intergovernmental transfers facilitate local revenue

The paper proceeds as follows. Section 2 describes municipalities in Argentina, focusing on the province of Buenos Aires, and the evolution of their local public finances. Section 3 presents the empirical examination on the effects of intergovernmental transfers on local governments own revenues and expenditures. Section 4 studies the effects of intergovernmental transfers on territorial equity. Conclusions are presented in Section 5.

2 Local governments in Argentina

Argentina is a federal country with four levels of government: the National, the subnational including 23 provinces, the Autonomous City of Buenos Aires and more than 2300 local governments.⁴ The last reform of the National Constitution, passed in 1994, enshrined municipal autonomy. National government accounts for 58.1 percent of total expenditure and collects 72.9 percent of the total revenues. In provinces and the Autonomous City of Buenos Aires these figures are 34.5 percent and 23.5 percent, respectively. For municipalities 7.4 percent and 3.6 percent, respectively. There are significant vertical imbalances covered by transfers from the Nation to provinces and from provinces to the municipalities (Vegh & Vuletin, 2015; Porto, 2019).

2.1 The province of Buenos Aires

2.1.1 Main characteristics and local government model over the 20th Century

Buenos Aires is the main province of Argentina. It accounts for 39.4 percent of the country's population and for 35.1 percent of national GDP. It contains 135 municipalities. The expenditures of municipalities are very sizeable being equal to the total provincial expenditures of Cordoba, the second main province in the country. The population of several municipalities is greater than the population of many provinces. In addition, municipalities exhibit a huge heterogeneity in many aspects such as population, population density, social indicators and productive structure (Porto, 2004). This diversity is reflected in the fiscal data. In 2014, less populated municipalities registered a per capita expenditure of 8,485 pesos, while highly populated had one of 3,508 pesos.

Until three quarters of the previous century the local government sector was characterized by a *“business economic model”* (Bird, 2012). As a result, municipal-

generation instead of undermining it.

⁴Approximately 1,100 are municipalities and 1,200 are local governments without a municipal hierarchy.

ities were in charge of divisible public goods provision. These goods were financed according to the “benefit principle” (i.e., local prices or fees) and complemented by provincial transfers from a revenue-sharing system. In 1978 took place an important institutional reform that moved municipalities towards an “agency model” (Bird, 2012). Some provincial functions were decentralized, engaging municipalities in the provision of health, education, safety, social promotion, libraries, etc. Since this type of goods are indivisible and could not be financed according to the “benefit principle”, this change affected the form of financing: more local taxes and/or more provincial transfers./footnoteMany other countries experimented this type of changes that affect the form of financing. For example, Masaki (2018) clearly illustrates the case of Tanzania where, as part of this decentralization process, local government authorities have increasingly assumed the role of raising own revenues to finance their budgets and providing basic public services to their citizens.

2.1.2 Evolution of fiscal variables

Since the institutional reform of 1978 the structure of expenditures can be defined as follows:

$$TE_{i,t} = DGE_{i,t} + HRIGE_{i,t} + OIGE_{i,t} \quad (1)$$

where $TE_{i,t}$ is the total expenditure for municipality i at year t . It is composed by expenditures on divisible goods ($DGE_{i,t}$), health and related indivisible goods ($HRIGE_{i,t}$) and other indivisible goods ($OIGE_{i,t}$) such as social promotion, libraries, etc. A cost-based transfers were established to finance health expenditures: 42 percent of the total revenue sharing was allocated to the subset of municipalities that provide this service. This is an important source of heterogeneity which must be considered in the empirical analysis. The evolution of expenditures between 1970 and 2014 is presented in Table 2, Panel A. Some trends are very clear. First, over time (particularly after the reform in 1978) the share of divisible goods decreases. Second, health and related indivisible goods have become increasingly relevant. Finally, current expenditure gained relative participation.

In a similar way the structure of local government revenues for municipality i at year t ($R_{i,t}$) can be defined as follows:

$$R_{i,t} = OSR_{i,t} + TRH_{i,t} + TRO_{i,t} + D_{i,t} \quad (2)$$

Terms of the right-hand side corresponds to own revenues ($OSR_{i,t}$), transfers for health financing ($TRH_{i,t}$), transfers for other services ($TRO_{i,t}$) and debt ($D_{i,t}$), respectively. The first term is the result of local tax policy and local tax administration, with restrictions derived from the National Constitution and national and

provincial laws.⁵ The remaining two terms are provincial decision variables.

Local financing structure has undergone a great change over time in two directions (Table 2, Panel B). On the one hand, transfers almost doubled their relative participation.⁶ On the other hand, own revenues composition changed against those based on the “benefit principle”. Municipalities have few opportunities to follow the guidelines that arise from the literature that own revenue should increase proportionally to the local economy (Oates, 1972; Bird, 2010) due to the restrictions imposed by the other levels of government. Within this context they found in the old “turnover taxes” the way to get additional financing despite their distortive effects. Financing pressures have taken priority over the distortive effects and this trade-off is part of a rethinking of municipal financing that escapes the objective of this work.

3 Effects of intergovernmental transfers on local government own revenues and expenditures

One conclusion emerged in the previous sections. The main components of municipal revenues have evolved asymmetrically. The change on municipalities functions and the limitations on the use of local taxation has become municipalities increasingly dependent on provincial transfers. In this section we study the effects of greater transfers on local government own revenues and expenditures. Specifically, we try to answer the following questions: i) Has the change in the local governments model affected the collection of local taxes?; ii) Has there been tax laziness in municipalities?; and iii) Has the change affected municipal expenditures?

3.1 Methodology

We began by analyzing the response of own revenues against variations in intergovernmental transfers. For this purpose, the basic set-up can be represented in the following equation:

$$R_{i,t} = \lambda_i d_t + \beta_{rev_i} TR_{i,t} + \sigma_i X_{i,t} + \mu_{i,t} \quad (3)$$

$$\mu_{i,t} = \theta_i f_t + \epsilon_{i,t}, \quad i=1,2,\dots,N \text{ and } t=1,2,\dots,TN$$

where $R_{i,t}$ and $TR_{i,t}$ are own revenues and provincial transfers for municipality i in year t , respectively. d_t and f_t represent observed and unobserved common effects,

⁵These decisions include the setting of tax bases, tax rates, exemptions and deductions.

⁶Between 1970-2014 indebtedness of the municipalities was -on average- 2 percent of total revenues. Additionally, in Table 1 can be appreciated the participation of municipal expenditures on debt services.

and $\epsilon_{i,t}$ is the usual error term. In addition, as standard in the literature (Jones *et al.*, 2000; Jimenez, 2015; Lewis & Smoke, 2017) a vector of control variables ($X_{i,t}$) is included. Specifically, we use per capita consumption of electricity as a local personal income indicator, population and population density as indicators of local needs.⁷ β_{rev_i} is the parameter of interest to be estimated. A negative value indicates the operation of perverse incentives or “tax laziness”. A positive one indicates complementarity between own revenues and provincial transfers.

The other relevant relation comes from the reaction of municipal expenditures. Here a model of expenditure determinants is estimated. Specifically,

$$TE_{i,t} = \lambda_i d_t + \beta_{exp_i} TR_{i,t} + \sigma_i X_{i,t} + \mu_{i,t} \quad (4)$$

where $TE_{i,t}$ is total expenditure for municipality i in year t . The independent variable of interest is, again, provincial transfers ($TR_{i,t}$) and β_{exp_i} is the parameter of interest to be estimated. $\beta_{exp_i} < 1 (> 1)$ means that expenditures grow less (more) than the transfer. The rest of the basic set-up of the right-hand side replicates equation 3.

Concerns about cross-sectional dependence is an important issue in panel data econometrics and ignoring them might have serious consequences. Spatial effects, omitted common effects or interaction within socioeconomic networks might be the reason of cross-correlated errors (Chudik & Pesaran, 2013). If we assume that cross-sectional dependence is caused by the presence of common factors, which are unobserved but uncorrelated with the included regressors, the standard fixed-effects (FE) and random-effects (RE) estimators are consistent, although not efficient, and the estimated standard errors are biased. On the other hand, if the unobserved components that create interdependencies across cross sections are correlated with the included regressors, the FE and RE estimators will be biased and inconsistent (De Hoyos & Sarafidis, 2006). Since the N and T of our data set is large we test cross-sectional dependence using tests provided by Frees (1995) and Pesaran (2004). Results are presented in Table 3, Panel A. Accordingly, the null hypothesis of cross-sectional independence is strongly rejected. Thus, to avoid inconsistency, methods that are robust to cross-sectional dependence will be used.

Stationarity of the series is also investigated. Since there is cross-sectional dependence we employed the panel unit root test, provided by Pesaran (2007), which allows cross-sectional dependence in the data in addition to the Maddala & Wu (1999) first generation panel unit root test. Panel B in Table 3 presents the result of the panel unit root tests. According to the Maddala & Wu (1999) test, all variables

⁷See Table A1 (Appendix) for descriptive statistics and Table A2 for the list of municipalities of the province of Buenos Aires.

are stationary in their level forms if a time trend is included. If a time trend is not included only revenues and population remain stationary. As for the [Pesaran \(2007\)](#) test, all variables excepting population are nonstationary whether a time trend is included or not. After recalling the cross-sectional dependence in our data, we opt for the results of the [Pesaran \(2007\)](#) test and assume that all series are $I(0)$.

Even though many researchers assumed homogeneous slope coefficients in panel data models across individual units, the slope homogeneity assumption is not valid in panels with large N and T ([Pesaran & Smith, 1995](#)).⁸ Since the data have a fairly large N and T , we employ the [Pesaran & Yamagata \(2008\)](#) slope homogeneity test, which is valid under the presence of cross-sectional dependence.⁹ Panel C in [Table 3](#) shows the results of the slope homogeneity test. Accordingly, test statistics are larger than the critical values denoted in [Pesaran & Yamagata \(2008\)](#) and we reject the null hypothesis of slope homogeneity.

Additional concerns may arise given the endogenous nature of the relationship between transfers, revenues and expenditures ([Jones et al., 2000](#)). The analysis must consider that health expenditures (HRIGE) are provided only in a subset of municipalities and are financed with cost-based provincial transfers (TRH) that reflect the expenditure incurred by each municipality. For that reason, in order to work with an homogeneous group and to remove endogeneity both health expenditures and the transfers that finance it must be canceled. Thus, net provincial transfers (TRO) are exogenous to the municipality. They depend on the variables considered for the revenue sharing system that cannot be manipulated (i.e., population, surface and the inverse of the tax capacity).

3.2 Data

Data used in the empirical examination are for the period 1970 – 2014. Fiscal variables were obtained from Ministry of Economy of the Province of Buenos Aires (Mecon PBA). They are expressed in constant (2007) per-capita terms. Data on

⁸Thanks to the availability of data with greater frequency, we see panels with both large N 's and T 's more often. However, it should be noted that the asymptotic of large N , large T dynamic panels are different from the asymptotic of traditional large N , small T dynamic panels ([Blackburne & Frank, 2007](#)). Using FE, RE and instrumental variable estimators requires pooling of individual groups and allowing only the intercepts to differ across the groups.

⁹[Zellner \(1962\)](#) proposed the SURE (seemingly unrelated regression equation) framework to test the slope homogeneity assumption when there is a small cross-section dimension (N) around 5–10 and large time series dimension of the panel (T) around 80–100. However, if N is large and T is small, one cannot implement the SURE approach since standard F tests are not valid under these conditions ([Pesaran & Yamagata, 2008](#)). The SURE approach also does not allow for cross-sectional dependence.

population were obtained from Provincial Direction of Statistics of the Mecon PBA. Total electricity consumption draws from Ministry of Energy of Argentina.

3.3 Empirical analysis

As the data are both cross-sectional dependent and heterogeneously sloped, we use two recent panel data estimators robust to these issues. The first method is Common Correlated Effects Mean Group (CCEMG), firstly introduced by [Pesaran \(2006\)](#).¹⁰ The second method is the Augmented Mean Group (AMG) estimator, developed by [Eberhardt & Bond \(2009\)](#) and [Teal & Eberhardt \(2010\)](#). The main difference between the CCEMG and AMG estimators is the approximation method of the unobserved common factors (f_t) in equation 3. The CCEMG estimator uses linear combinations of the cross-sectional averages of the observed common effects as well as the dependent and explanatory variables ([kap, 2011](#)). After that, each individual coefficient is estimated by OLS. As for the AMG estimator, it employs a two-step method to estimate the unobserved common dynamic effect and allows for cross sectional dependence by including the common dynamic effect parameter. First, it augments the equation with time dummies and make an estimation using the first difference OLS. Second, the group-specific regression model is augmented either with an explicit variable or a unit coefficient imposed on each group member. The imposition of a unit coefficient is implemented by subtracting the AMG estimator from the dependent variable.

As [Pesaran & Smith \(1995\)](#) point out, traditional methods such as fixed effects (FE), random effects (RE) and the generalized methods of moments (GMM) aim to fix the fixed effect heterogeneity issue in panels with large N and small T. However, since they do not take endogeneity caused by the heterogeneity into account, they produce inconsistent results. The Mean Group (MG) estimator developed by [Pesaran & Smith \(1995\)](#) allows intercepts, slopes and error variances to differ across groups. It fits a separate model for each group and takes arithmetic average of the coefficients. If the time-series dimension is long enough, the MG estimator produces consistent estimates. However, it does not take cross-section dependence into account and assumes away $\theta_i f_t$ or models these unobservables with a linear trend ([Eberhardt, 2012](#)). Even if the MG does not care about cross-sectional dependence, we also include its regression results to make a comparison with other estimators'. For the same purpose we include the standard FE and RE estimator.¹¹

¹⁰In addition to slope heterogeneity and cross-sectional dependence, the CCEMG estimator is also robust to structural breaks and nonstationary unobserved common factors.

¹¹Estimates include the 123 municipalities that present data for the overall 1970-2014 period. We remove recently created municipalities (i.e., Municipality of Lezama, that was created in 2010)

Table 4 shows the results from the specification in equation 3. Column 1 and 2 shows the standard FE and RE estimation, respectively. It can be appreciated that own revenues rise around 0.10 pesos against 1 peso of additional provincial transfers. This increase in own revenues is 0.17-0.20 pesos if MG estimation is used (Columns 3 and 4). However, when we use the CCEMG estimator the coefficient is reduced up to 0.03 and becomes not statically significant. When the estimation is performed by using the AMG estimator the coefficient remains around 0.04 and is now statically significant. Thus, in all specifications the coefficient of provincial transfers is positive and, in some, statistically significant indicating that there is a complementarity relationship with own revenues. The question of whether transfers generate “tax laziness” is answered negatively. Control variables suggest that municipalities with higher income collect more revenues from own source. More populated or denser municipalities collect lower revenues. ¹²

The relevance of the estimation method becomes even more determinant when estimating equation 4. Results are presented in Table 5. Columns 1 and 2 show that local government expenditure rises around 1.20 pesos against 1 peso of additional provincial transfers. This increase in expenditures is close to 1.25 peso if the MG estimator is employed (Columns 3 and 4). So, if cross sectional dependence is not addressed in all specification an increase of 1 peso in provincial transfers causes an increase of more than 1 peso in the per capita expenditure. However, when controlling for cross sectional dependence the coefficient, although still statically significant, becomes lower than one. Thus, the empirical analysis remarks the relevance of using an estimation strategy that contemplates the properties of the panel’s time series. Our reliable results are those obtained with the CCEMG (Columns 5 and 6) and AMG (Columns 7 and 8) respectively. Given an increase in transfers, spending increases by around 0.83-0.87 pesos.

Municipalities are subject to budget constrain (i.e., spending plus savings must be equal to own revenues plus provincial transfers) and our results satisfy it. In Table 6 we replicate the estimations with municipalities surplus as dependent variable, as in Lewis & Smoke (2017).¹³ When CCEMG and AMG estimators are used, the surplus (savings) increases by 0.17-0.19 pesos. As surplus can be accumulated to invest in future periods, it can be considered as future expenditure. With this interpretation, the entire transfers and the increase in own resources would be spent

to preserve a large N and large T sample. For MG, CCEMG and AMG estimators we estimate specifications with and without time trend. See Tables A3, A4 and A5 for robustness checks when including population density as an alternative indicator of local needs.

¹²Similar results are provided by Jimenez (2015), who also supported the idea of a positive relationship between intergovernmental transfers and own revenues for states in the USA.

¹³We define surplus (deficit) as a positive (negative) difference between revenues and expenditures.

on the public good provision. It is a version of the “flypaper effect” which is a departure from the normative model of transfers (Bradford & Oates, 1971; Hines & Thaler, 1995).¹⁴

4 Effects of intergovernmental transfers on local governments territorial equity

Finally, we try to answer which was the impact of intergovernmental transfers on territorial equity. Usually, transfers are designed to ensure similar levels of public goods provision at similar levels of taxation among municipalities. This “fiscal equalization” seeks to correct disparities due to differences in tax capacity and/or expenditure needs for a similar set of services.¹⁵ Again, for an appropriate measurement, transfers that finance health spending must be stripped out because they are received only for a subset of municipalities that provide those goods. As mentioned, the provincial revenue-sharing law establishes a special (cost-based) compensation for them. The (weighted by population) Gini coefficient is measured before (GIb) and after (GIa) transfers. It’s important to remark that transfers can also cause reranking that weakens the equalization power (i.e., when municipalities that were among those with lower per capita own revenues have higher total revenue per capita after transfers). The Reynolds & Smolensky (1977) coefficient is decomposed as follows:

$$RS^* = (GIb - Cdb) - (GIa - Cdb) \quad (5)$$

where Cdb is the distribution of total revenues maintaining the initial order of own revenues. RS^* is defined positive if there are equalization. Results are presented in Figure 1. Since 1975 transfers have equalizing effect and there is reranking.

¹⁴The flypaper effect results when a dollar of exogenous grant-in-aid leads to significantly greater public spending than an equivalent dollar of citizen income: “*money sticks where it hits*”. Viewing governments as agents for a representative citizen voter, this empirical result is an anomaly (Inman, 2008). The term flypaper effect was originally coined in early papers (Henderson, 1968; Gramlich, 1969) that uncovered this empirical regularity. Unfortunately, there is not a reliable time series on municipal income (i.e., municipal Gross Domestic Product) to estimate the marginal propensity to consume income and compare it with the marginal propensity to consume provincial transfers. There is only reliable data on municipal gdp for the year 2003. We performed a cross-section estimate for that year and we obtain a marginal propensity to consume income of 0.04.

¹⁵See Martinez-Vazquez & Searle (2007); Charbit & Blöchliger (2008).

5 Conclusions

The evidence presented in this paper allows to obtain relevant conclusions for the municipal fiscal policy. The findings may be useful for the design of fiscal policy in terms of promoting economic development and given the growing role of local governments in the new era of globalization -i.e., more size and more functions- (Bell, 1987; Courchene, 1993). Municipal functions in Argentina have changed significantly over time. The evolution on expenditures had impact on financing. When they provided mainly divisible goods the financing came from prices and fees. But, when they started to provide mainly indivisible goods, the transfer-based financing increased significantly. As a result, municipalities became more transfer-dependent.

The change in the structure of financing leads to several questions about the behavior of the municipalities that were empirically studied in this paper. The question of whether transfers generate “tax laziness” is answered negatively. Increases in transfers are linked to increases in own revenues, indicating complementarity. An increase of 1 peso in provincial transfers causes an increase of 0.87 peso in the per capita expenditure. Municipal saving increases fulfilling the local budget constraint. As surplus can be accumulated to invest in future periods, it can be considered as future expenditure. With this interpretation, the entire transfers and the increase in own resources would be spent on the public good provision. It is a version of the “flypaper effect” which is a departure from the normative model of transfers. Transfers are an instrument of “fiscal equalization” as the inequality of own tax capacity (own revenues) is higher than inequality of total tax capacity (own revenues plus transfers). Transfers also cause reranking between municipalities.

The increasing importance of municipalities in the provision of public and quasi-public goods in Argentina will lead to rethink the municipal financing system and its coherence with the national tax system. There are several topics that demand attention for the research agenda. One is to study the desirability of reversing the departure of the “Wicksellian connection” between expenditures and revenues, that has been increasing over time. This implies modernizing and strengthening municipal tax bases and reducing municipal dependence on transfers. Another is to overcome the trade-off between financial needs and the distortive taxation generated by the municipal turnover tax.

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Tables and figures

Table 1: Local Governments Expenditure in Argentina. Evolution 1980-2014.

Panel A. Total expenditure, by level of government. In % of GDP								
	1980	1985	1990	1995	2000	2005	2010	2014
Central Government	19.1	20.1	19.0	17.1	17.4	14.5	21.0	26.1
Provinces	8.3	8.3	9.4	11.7	12.5	12.2	14.1	15.5
Local Governments	1.6	1.5	2.0	2.6	2.8	2.6	3.2	3.3
Total	29.0	30.0	30.4	31.5	32.8	29.3	38.4	44.9

Panel B. Local governments expenditure by purpose. In % of GDP								
	1980	1985	1990	1995	2000	2005	2010	2014
Functioning	0.6	0.5	0.7	0.9	0.7	0.6	0.7	0.8
Social spending	0.8	0.8	1.1	1.4	1.9	1.8	2.2	2.2
Economic services	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.3
Public Debt Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.6	1.5	2.0	2.6	2.8	2.6	3.2	3.3

Panel C. Local governments expenditure by function. In % of local government social expenditure								
	1980	1985	1990	1995	2000	2005	2010	2014
Education	7.5	6.1	5.8	9.0	9.2	7.7	7.6	8.7
Health	14.6	20.4	18.2	20.7	25.3	19.9	20.6	21.3
Drinking water and sewage	0.0	0.0	0.0	0.0	5.4	5.2	5.8	5.4
Housing and urban planning	0.0	0.0	0.0	7.7	11.6	17.6	18.3	19.2
Promotion and social assistance	11.1	10.6	13.9	9.1	10.7	11.3	15.2	11.9
Social security and working programs	0.0	0.0	0.0	0.2	1.3	7.4	1.8	1.9
Other urban services	66.8	62.9	62.2	53.3	36.5	30.9	30.8	31.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' elaboration based on Sub Secretary of Macroeconomic Programming, Ministry of Economy, Argentina.

Table 2: Local Governments Expenditure and Revenues in Buenos Aires. Evolution 1970-2014.

Panel A. Local government expenditures										
	1970	1975	1980	1985	1990	1995	2000	2005	2010	2014
	Classification by function									
Indivisibles goods										
Health and related	36.0	48.0	60.0	60.6	65.3	69.2	75.4	72.3	75.4	69.0
Other indivisible goods	7.0	12.0	17.0	17.6	16.1	15.5	15.0	15.3	15.0	20.0
Divisibles goods	29.0	36.0	43.0	43.0	49.1	53.7	60.4	57.0	60.4	49.0
	64.0	52.0	40.0	39.4	34.7	30.8	24.6	27.7	24.6	31.0
Current expenditure	69.3	86.0	71.0	87.2	89.4	87.9	76.7	84.2	76.7	83.6
Capital expenditure	30.7	14.0	29.0	12.8	10.6	12.1	23.3	15.8	23.3	16.4
Panel B. Local government revenues										
	1970	1975	1980	1985	1990	1995	2000	2005	2010	2014
Provincial transfers	28.8	51.4	36.9	29.0	38.6	40.9	41.8	51.0	56.2	53.4
Own-source revenues	71.2	48.6	63.1	71.0	61.4	59.1	58.2	49.0	43.8	46.6
Turnover taxes					23.3	27.2	26.3	35.2	41.8	49.7
According to benefit principle					76.7	72.8	73.7	64.8	58.2	50.3

Source: Authors' elaboration based on the Ministry of Economy of the Province of Buenos Aires. *Notes:* Divisible goods include urban services (lighting, sweeping, cleaning, garbage collection and roads maintenance). Indivisible goods include general administration, deliberative council, social welfare, health, security and local development. Shares of Panel A are over total expenditure. Shares of Panel B are over total revenues. Share of turnover taxes and own revenues according to benefit principle are calculated over the total of own revenues

Table 3: Cross-sectional Dependence, Unit Root and Slope Homogeneity Test Results.

Panel A. Cross-sectional Dependence Test		
	Revenues	Expenditure
Pesaran's (2004)	8.28***	12.01***
Frees's (1995)	9.77***	7.15***
Panel B. Unit Root Test		
	Revenues	Expenditure
Maddala and Wu's (1999)	Specification without trend	Specification with trend
Transfers	125.89	777.26***
Revenues	603.8***	624.52***
Expenditure	251.97	814.16***
Income	148.8	345.15***
Population	2042.49***	574.8***
Pesaran's (2007)		
Transfers	-24.9***	-21.98***
Revenues	-12.18***	-10.96***
Expenditure	-20.90***	-17.31***
Income	-5.14***	-4.44***
Population	12.66	8.88
Panel C. Slope Homogeneity Test		
	Revenues	Expenditure
Pesaran and Yamagata (2008)	38.94***	24.76***
Pesaran and Yamagata (2008) - Adj	40.85***	25.97***

Source: Authors' elaboration. Notes: Statistical significance *** p < 0.01, ** p < 0.05, * p < 0.1. The null hypothesis in Panel A is no cross-sectional dependence. The null hypothesis in Panel B is nonstationary. The null hypothesis in Panel C is slope homogeneity.

Table 4: Relationship Between Own Revenues and Provincial Transfers. Panel Regressions. Municipalities of the Province of Buenos Aires.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Transfers	0.0961*** (0.0214)	0.100*** (0.0210)	0.167*** (0.0294)	0.202*** (0.0275)	0.0262 (0.0262)	0.0321 (0.0260)	0.0424* (0.0226)	0.0394*** (0.0186)
Local Income	26.67*** (7.673)	26.51*** (7.596)	23.47 (18.37)	1.119 (16.20)	16.54 (15.30)	12.39 (16.70)	46.28*** (9.182)	22.66 (14.02)
Local Needs (pop)	65.67 (76.88)	16.83 (64.81)	-35,569* (19,789)	-40,783* (23,142)	-12,633 (16,024)	-40,856 (25,852)	-19,077*** (6,618)	-22,580*** (9,791)
Constant	252.9*** (9.135)	261.2*** (18.54)	214.1 (144.8)	90.40 (255.3)	-46.15 (160.6)	603.2* (327.7)	333.0*** (75.75)	351.2*** (165.5)
Observations	5,494	5,494	5,494	5,494	5,494	5,494	5,494	5,494
Method	Fixed Effects	Random Effects	MG	MG	CCEMG	CCEMG	AMG	AMG
Trend			No	Yes	No	Yes	No	Yes
Number of groups	123	123	123	123	123	123	123	123

Source: Authors' elaboration. Notes: robust cluster standard errors in brackets. Significance level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, respectively.

Table 5: Relationship Between Expenditures and Provincial Transfers. Panel Regressions. Municipalities of the Province of Buenos Aires.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Transfers	1.188*** (0.0244)	1.196*** (0.0241)	1.232*** (0.0383)	1.253*** (0.0380)	0.858*** (0.0344)	0.868*** (0.0376)	0.848*** (0.0272)	0.834*** (0.0275)
Local Income	28.93*** (7.362)	28.63*** (7.257)	63.98** (30.87)	66.77** (32.69)	33.23 (26.52)	31.09 (29.04)	28.82 (18.25)	15.75 (28.17)
Local Needs (pop)	52.46 (80.67)	-32.93 (60.10)	-41,150* (21,532)	-41,121 (33,628)	8,081 (18,382)	-37,235 (39,429)	-14,303* (7,614)	-13,143 (22,842)
Constant	274.1*** (11.79)	284.9*** (20.89)	269.7 (192.5)	-68.12 (330.9)	115.7 (198.6)	783.9* (464.4)	391.1*** (112.2)	272.2 (253.9)
Observations	5,494	5,494	5,494	5,494	5,494	5,494	5,494	5,494
Method	Fixed Effects	Random Effects	MG	MG	CCEMG	CCEMG	AMG	AMG
Trend			No	Yes	No	Yes	No	Yes
Number of groups	123	123	123	123	123	123	123	123

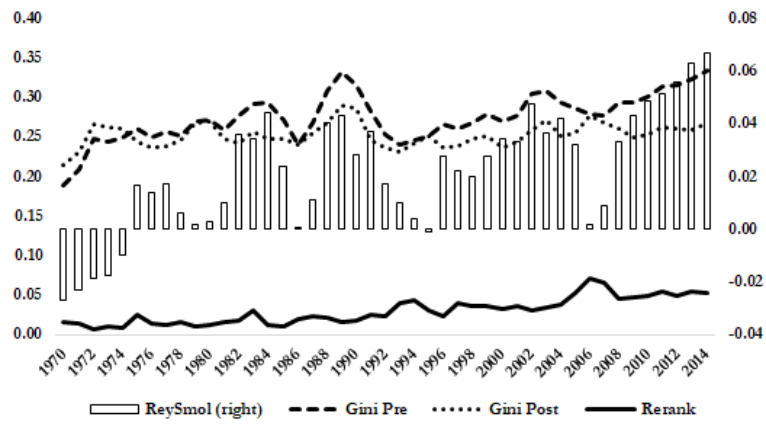
Source: Authors' elaboration. Notes: robust cluster standard errors in brackets. Significance level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, respectively.

Table 6: Relationship Between Surplus and Provincial Transfers. Panel Regressions. Municipalities of the Province of Buenos Aires.

	Surplus							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Transfers	-0.0918*** (0.0158)	-0.0902*** (0.0152)	-0.0660*** (0.0206)	-0.0520** (0.0237)	0.168*** (0.0298)	0.166*** (0.0320)	0.186*** (0.0196)	0.194*** (0.0238)
Local Income	-1.932 (2.484)	-2.415 (2.258)	-43.04** (19.70)	-66.46** (28.34)	-14.90 (28.92)	-18.59 (28.83)	5.754 (16.11)	4.960 (22.94)
Local Needs (pop)	13.85 (18.86)	15.81 (10.82)	6.193 (7.430)	-114.3 (17.507)	-23.075 (18.520)	-9.537 (28.557)	-3.695 (6.661)	-4.770 (15.397)
Constant	-22.12*** (5.742)	-22.39*** (6.564)	-58.13 (97.35)	173.5 (196.3)	-134.3 (196.4)	-100.2 (322.1)	-68.92 (73.51)	44.51 (179.1)
Observations	5,494	5,494	5,494	5,494	5,494	5,494	5,494	5,494
Method	Fixed Effects	Random Effects	MG	MG	CCEMG	CCEMG	AMG	AMG
Trend			No	Yes	No	Yes	No	Yes
Number of groups	123	123	123	123	123	123	123	123

Source: Authors' elaboration. Notes: robust cluster standard errors in brackets. Significance level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, respectively.

Figure 1: Effect of Provincial Transfers on Municipal Equity. Evolution 1970-2014. Gini, Reynolds-Smolensky and Reranking coefficients.



Source: Authors' elaboration based on the Ministry of Economy of the Province of Buenos Aires.

Appendix

Table A1: Descriptive Statistics.

	Mean	Standard Deviation	Percentile 10	Percentile 90	Obs	Min	Max
Own revenues	\$ 330.4	\$ 239.2	\$ 130.4	\$ 563.4	\$ 5,690.0	\$ 32.4	\$ 4,379.9
Transfers	\$ 406.8	\$ 377.9	\$ 91.2	\$ 907.4	\$ 5,681.0	\$ 13.7	\$ 4,218.3
Expenditures	\$ 800.9	\$ 587.4	\$ 271.7	\$ 1,529.1	\$ 5,688.0	\$ 29.7	\$ 7,701.4
Population	98085.7	171412.3	8977.2	324753.7	5790.0	1234.0	1775816.0
Population Density	41.9	75.3	89.8	58.9	1.0	36.5	130.9
Economic Activity	152854.7	299169.3	5019.0	468481.0	5761.0	92.0	5000840.0

Source: Authors' elaboration. *Notes:* : \$ denotes constant (2007) pesos. Own revenues, Transfers and Expenditures are expressed in per capita terms. Population Density is measured as population over surface in Km2. Economic Activity is measured in Megawatt hour.

Table A2: Municipalities of province of Buenos Aires. Population-based classification.

High Population (>340 thousand inhabitants)	Average Population (>65 thousand inhabitants)	Small Population (<65 thousand inhabitants)		
Almirante Brown	Azul	25 De Mayo	General Las Heras	Pinamar
Avellaneda	Balcarce	Adolfo Alsina	General Lavalle	Puan
Bahia Blanca	Bragado	Alberti	General Madariaga	Punta Indio
Berazategui	Campana	Arrecifes	General Paz	Ramallo
Berisso	Chacabuco	Ayacucho	General Pinto	Rauch
Ensenada	Chivilcoy	Baradero	General Sarmiento	Rivadavia
Esteban Echeverria	Coronel Rosales	Bartolome Mitre	General Viamonte	Rojas
Ezeiza	Escobar	Bolivar	General Villegas	Roque Perez
Florencio Varela	General Rodriguez	Brandsen	Gonzales Chaves	Saavedra
General Pueyrredon	Junin	Cañuelas	Guamini	Saladillo
General San Martin	Lujan	Capitan Sarmiento	Hipolito Yrigoyen	Salliquelo
Hurlingham	Marcos Paz	Carlos Casares	Juarez	Salto
Ituzaingo	Mercedes	Carlos Tejedor	L. N. Alem	San Andres De Giles
Jose C. Paz	Necochea	Carmen De Areco	La Costa	San Antonio De Areco
La Matanza	Olavarria	Castelli	Laprida	San Cayetano
La Plata	Pehuajo	Chascomus	Las Flores	Suipacha
Lanus	Pergamino	Colon	Lezama	Tapalque
Lomas De Zamora	Pila	Coronel Dorrego	Lincoln	Tordillo
Malvinas Argentinas	San Nicolas	Coronel Pringles	Loberia	Tornquist
Merlo	San Pedro	Coronel Suarez	Lobos	Trenque Lauquen
Moreno	San Vicente	Daireaux	Magdalena	Tres Lomas
Moron	Tandil	Dolores	Maipu	Villa Gesell
Presidente Peron	Tres Arroyos	Exaltacion De La Cruz	Mar Chiquita	Villarino
Quilmes	Zarate	Florentino Ameghino	Monte	
San Fernando		General Alvarado	Monte Hermoso	
San Isidro		General Alvear	Navarro	
San Miguel		General Arenales	Nueva De Julio	
Tigre		General Belgrano	Patagones	
Tres De Febrero		General Guido	Pellegrini	
Vicente Lopez		General Lamadrid	Pilar	

Source: Authors' elaboration.

Table A3: Relationship Between Own Revenues and Provincial Transfers. Robustness check. Panel Regressions. Municipalities of the Province of Buenos Aires.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Own Revenues								
Transfers	0.0966*** (0.0215)	0.100*** (0.0211)	0.167*** (0.0294)	0.202*** (0.0275)	0.0219 (0.0305)	0.0256 (0.0256)	0.0438* (0.0227)	0.0401*** (0.0186)
Local Income	27.20*** (7.623)	26.82*** (7.526)	23.47 (18.37)	1.119 (16.20)	21.34 (18.54)	14.07 (16.78)	47.78*** (9.250)	23.15* (14.03)
Local Needs (dens)	-0.0131 (0.0131)	-0.0122 (0.00823)	-84.30 (60.49)	-73.39 (69.70)	-29.65 (38.57)	-99.16 (85.67)	-42.64** (19.02)	-53.03* (31.28)
Constant	267.5*** (10.98)	271.0*** (18.55)	214.1 (144.8)	90.40 (255.3)	-23.14 (167.9)	506.1 (351.9)	327.7*** (76.21)	354.0*** (165.7)
Observations	5,494	5,494	5,494	5,494	5,494	5,494	5,494	5,494
Method	Fixed Effects	Random Effects	MG	MG	CCEMG	CCEMG	AMG	AMG
Trend			No	Yes	No	Yes	No	Yes
Number of groups	123	123	123	123	123	123	123	123

Source: Authors' elaboration. Notes: robust cluster standard errors in brackets. Significance level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, respectively.

Table A4: Relationship Between Expenditures and Provincial Transfers. Robustness check. Panel Regressions. Municipalities of the Province of Buenos Aires.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Expenditures								
Transfers	1.188*** (0.0244)	1.196*** (0.0241)	1.232*** (0.0383)	1.253*** (0.0380)	0.868*** (0.0365)	0.866*** (0.0361)	0.851*** (0.0273)	0.834*** (0.0275)
Local Income	29.37*** (7.326)	28.68*** (7.187)	63.98** (30.87)	66.77** (32.69)	30.73 (24.78)	28.30 (30.75)	32.22* (18.43)	16.60 (28.16)
Local Needs (dens)	-0.0113 (0.0126)	-0.0111* (0.00599)	-105.4 (67.57)	-47.71 (96.83)	7.686 (45.39)	-247.2* (144.1)	-37.53 (22.83)	-14.06 (59.68)
Constant	286.4*** (12.97)	289.7*** (20.43)	269.7 (192.5)	-68.12 (330.9)	181.5 (242.5)	1,057** (519.5)	377.8*** (112.8)	271.2 (254.0)
Observations	5,494	5,494	5,494	5,494	5,494	5,494	5,494	5,494
Method	Fixed Effects	Random Effects	MG	MG	CCEMG	CCEMG	AMG	AMG
Trend			No	Yes	No	Yes	No	Yes
Number of groups	123	123	123	123	123	123	123	123

Source: Authors' elaboration. Notes: robust cluster standard errors in brackets. Significance level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, respectively.

Table A5: Relationship Between Surplus and Provincial Transfers. Robustness check. Panel Regressions. Municipalities of the Province of Buenos Aires.

	Surplus							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Transfers	-0.0917*** (0.0157)	-0.0909*** (0.0151)	-0.0660*** (0.0206)	-0.0520** (0.0237)	0.152*** (0.0297)	0.162*** (0.0319)	0.186*** (0.0197)	0.194*** (0.0237)
Local Income	-1.833 (2.490)	-2.285 (2.257)	-43.04** (19.70)	-66.46** (28.34)	-7.689 (28.82)	-14.40 (29.35)	3.879 (16.21)	4.592 (22.91)
Local Needs (dens)	-0.00182 (0.00227)	0.000497 (0.00102)	22.27 (22.23)	-27.71 (49.40)	-35.13 (62.11)	99.33 (131.7)	-10.78 (19.27)	-27.69 (41.06)
Constant	-19.68*** (5.845)	-21.15*** (6.244)	-58.13 (97.35)	173.5 (196.3)	-205.1 (213.9)	-416.8 (410.6)	-60.09 (74.14)	47.01 (179.0)
Observations	5,494	5,494	5,494	5,494	5,494	5,494	5,494	5,494
Method	Fixed Effects	Random Effects	MG	MG	CCEMG	CCEMG	AMG	AMG
Trend			No	Yes	No	Yes	No	Yes
Number of groups	123	123	123	123	123	123	123	123

Source: Authors' elaboration. Notes: robust cluster standard errors in brackets. Significance level * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, respectively.