

Education and Fiscal Decentralization. The Case of Municipal Education in Chile

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Summary

Chile implemented a radical reform in favor of decentralization at the beginning of the eighties, with municipalities taking over the administration of public school education. The government that came to power in 2014 is committed to revert this reform, removing public schools from municipal control. Using panel data gathered between 2005 and 2013, this study shows that municipalities with greater fiscal autonomy performed better when administrating schools. Two major conclusions may be drawn. One; selective decentralization in favor of “fiscally autonomous” municipalities is a better public policy approach relative to an all across the board centralization option. Second, since this autonomy is very unevenly distributed across municipal governments, a renewed and more affective fiscal equalization system should be established in Chile.

JEL classification: H40; H52; H70; I20

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I. INTRODUCTION

From the perspective of state management, ‘decentralization’ may occur in the political, administrative and fiscal fields, each of them having well documented benefits and costs. Chile went through a process of radical administrative and fiscal decentralization by the early 80s, thereby public schools and primary health centers were handed over to the municipal administration. Currently, Chile has 345 municipal governments, each of them facing common rules and obligations in all relevant matters, but very different access to revenues of their own. Nevertheless, this model is in the process of being radically changed for one in which the municipalities will lose prominence, with public schools being transferred to an administrative entity dependent on the Ministry of Education. This research questions the argument implicit in the reform proposal, which suggests that the municipal administration of public schools is generically deficient. Alternatively, we hypothesize that school level educational results critically depend on the fiscal autonomy of the municipality the school belongs.

Although debate on this subject is well-established (Oates 1999), a flourishing empirical literature has emerged over recent years, with one of its focuses analyzing the effect of fiscal decentralization (*FD*) on the general quality of public spending (e.g. Adam et al. 2014). Although this study aims to contribute to existing literature, it will do so from the perspective of the “fiscal autonomy” (*FA*) component of *FD* and in the context of the municipal data in Chile. It is hypothesized that *FD* in general - and *FA* in particular, has a positive effect on the performance of municipal education, this contention being based on two main assumptions. The first is that

the municipalities with greater *FA* can make more efficient and timely decisions regarding their policy of justified dismissals of teachers with permanent positions, which allows for a substantial improvement in the average quality of the personnel. The second is that this same autonomy is also compatible with salary policies in line with the productivity of contracted teachers, which generates incentives that favor good results in the classroom and therefore better results in national tests of knowledge. Under the premise that *FA* is not homogeneously distributed through all the country's municipalities, this research puts forward two types of *FA* measurements, which are then used to explain the average performance of the schools in each municipality, measured using the so called 'SIMCE' score¹.

The rest of this research is organized as follows. Section II presents the theoretical and empirical debates on the effects of decentralization in education. Section III describes the Chilean case and Section IV presents the data and the econometric analysis. Section V presents the conclusions.

II. DISCUSSION OF THE LITERATURE

¹ SIMCE: 'System of Measuring the Quality of Education'.

Decentralization is mainly justified on the basis of informational benefits (e.g. Von Hayek 1945), a closer match between local residents preferences and the supply of public goods (Oates 1972), potential similarities between inter jurisdictional interaction and the functioning of a competitive private market (Tiebout 1956; Tirole 1994), and a deeper government's accountability (Lockwood 2015). The down side of decentralization includes the loss of scale economies (Oates 2001), potential "elite capture" (Bardhan and Mookherjee 2006), possible social segregation resulting from an excess of autonomy in local territory administration (Bonet 2006, Rodríguez-Pose and Ezcurra 2009), the lack of qualifications at a local bureaucracy level (Prud'homme 1995), the various pitfalls of the well-known Tiebout model and the fallacy of decentralization being seen as a way to get government closer to the people (Treisman 2007), among others.

With different nuances and according to different databases, numerous studies on groups of countries have found evidence favoring the hypothesis that both political and fiscal decentralization improves some facets of educational performance (Lindaman and Thurmaier 2002; Busemeyer 2008; Letelier 2010, 2012; Díaz-Serrano and Meix-Llop, Falch and Fischer 2012). However, a study by Hanushek et al. (2013) presents evidence showing that subnational fiscal autonomy only improves the PISA test for developed countries and it has a negative effect among developing countries. Heterogeneous results may also be seen within developed countries themselves. For example, a study with panel data from 21 OECD countries by Adam et al. (2014) concludes that improvements in the efficiency of education and health provision takes the form of an inverted U, meaning that the benefits are only seen in the countries with a low *FD* level.

When this reaches higher levels, losses on scale economies supersede the benefits obtained from a higher level of accountability, meaning that the *FD* net result could be negative.

With even more diverse results, a second group of studies has tackled the topic in the framework of specific countries. A positive causality between decentralization² and some measurement of educational performance has been reported in the cases of Switzerland (Barankay and Lockwood 2007), Phillipines (Behrman et al. 2003), Nigeria (Akpan 2011), Spain (Solé-Ollé 2009), the United States (Akai et al. (2007), Argentina (Galiani and Schargrotsky 2002), Nicaragua (King and Osler 2000), Bolivia and Colombia (Faguet and Sánchez 2007), among other studies. Non-conclusive or even skeptical results of similar devolution experiences have been reported for Colombia (Melo 2012), Sweden (Ahlin and Mork 2008) , Indonesia (Kristiansen and Pratikno 2006, Toi 2010, Muttaqin et al. 2015) and China (Luo and Chen 2010, Wang et al. 2011).

Closely linked to the problem of decentralization is the question of whether the competition between schools and/or jurisdictions has a visible impact on the quality of education. Among the studies worth mentioning is that of Hoxby (2000) on the metropolitan regions of the United States, which concludes that, despite the fact that choosing your school by “voting with your feet” helps improve the quality of education, said competition also reduces the amount spent per student at a district educational level. By using data from Illinois, Millimet and Collier (2008)

² While in most case studies some type of “fiscal decentralization” is reported, this is very often accompanied by some devolution of political and administrative authority.

provide evidence that reinforces this conclusion. Although these authors conclude that competition between school districts is significant when explaining schools' efficiency, said result is conditioned by the financial autonomy of each district, a precedent that endorses the relevance of FD as a determining factor in educational management. An interesting experience is that of Sweden, a country in which an important pro-decentralizing reform took place at the beginning of the nineties. Certain evidence indicates that the competition between private schools with public financing (*'independent'* schools) improved performance in mathematics as well as the grades of students in the Swedish case (Sandstrom and Bergstrom, 2005).

III. THE CHILEAN CASE

Municipal funding and fiscal autonomy

For most municipal governments in Chile, the majority of funding comes from a "Robin Wood" type of inter municipal redistribution mechanism called the "Common Municipal Fund" (CMF), which – on average- accounts for 63% of all revenues. This is funded from a share of the property tax, business licenses and some other minor local revenues. Despite this fiscal equalization, significant differences in fiscal capacity still remain after redistribution (Letelier y Ormeño 2017, Ahmad, et al 2017). As for the municipal capacity to generate resources of their own, this is generally restricted by national standardized rules and the very distribution of tax bases across the country.

As for the property tax - which stands for 22% of own revenues, this is centrally collected by the National Treasury Office (*Tesorería General de la República*), and also subject to a centrally determined taxable base and common rates across municipal jurisdictions. While the Law allows municipalities to celebrate cooperation agreements with the central authority to regularly update the local cadaster, no more than 20 municipal governments have one. Nevertheless, some leeway exists for municipalities to decide on business licenses which account for 24% of self-generated revenues (the CMF not included), car licenses that provide 16% of these revenues, and a myriad of other minor sources. First, these revenue sources are collected by municipalities themselves, which concedes them some discretionally power to decide on the pressure to be made on potential tax payers. They go from large establishments to individuals who exercise their profession in a rather informal way. Second, the Law defines a range in which municipalities may set the rate to be charged, and also permits differentiate it by zones within the municipal area. While other sources of revenue exist, they are generally small and very unevenly distributed across municipalities. Some worth mentioning ones are garbage collection fees, water and mining rights, and a range of potential Private Public Partnership (PPP) initiatives, as vehicle parking lots, cultural centers and casinos, from which the local authority may get some profits.

The institutional framework of municipal education

Chile has been a pioneer in Latin America in the adoption of a management model for public education that entails both administrative and fiscal decentralization. This process was initiated at the beginning of the eighties, with two types of school with public financing being defined:

municipal schools (MUN-S) and subsidized private schools (SP-S). Originally, the law permitted for profit and non-for profit SP-S stakeholders. Nevertheless, a bill was passed in 2015, thereby only non-for profit providers are permitted. Although MUN-S and SP-S receive basic financing through a subsidy per student (*voucher*), both the municipalities in the first case and private administrators in the second usually make additional contributions, whose magnitude is usually decisive in the quality of the service offered. In theory, this model has two potential benefits. On one hand, the very coexistence of two school education options using public financing causes a higher level of competition among those who offer the service. On the other, the decentralization of the administration of municipal establishments allows for more efficient management, focused on the needs and demands of the community. In 2015, the government in power presented a bill to reform the previously mentioned system, in which municipalities would stop being responsible for public schools, with these being gradually regrouped into 67 wider districts, each of them being deconcentrated units of the Ministry of Education³.

Three elements deserve special attention in this study. The first is that, as a result of the so-called Teacher's Statute implemented in 1991, the municipal level of autonomy experienced a setback, with a certain strictness being introduced into local authorities' capacity to define contracts and fire teaching personnel or relocate them to other schools. The second is that the system initially considered the possibility of MUN-S administration being carried out by so-called Municipal

³ While the bill is still being discussed "in particular", it was already passed in "general" by the Senate.

Corporations, entities of private law with a supposedly more flexible and autonomous system of management that could take advantage from favorable aspects of the private administration of public schools. Although 53 municipalities adopted this model before 1981, the Constitutional Tribunal decided not to allow more municipalities to follow suit after 1988. The third is that the municipalities differ significantly in their degree of fiscal autonomy, a fact that is expressed – among other factors - through the contribution made to financing schools beyond the resources provided by the central government. This contribution equates to approximately 11.4 percent of the whole expenditure being made on municipal schools in 2013, which is distributed very unequally throughout the country⁴.

In the framework of the prevailing model in Chile, the fiscal dimension of the decentralization referred to is reflected in the greater degree of municipal freedom to use their own resources. The latter can be seen in at least three different ways: i) the Teacher's Statute establishes that educational professionals must receive a "minimum basic wage", which is normally negotiated between the teaching union and the government each year. As well as the said minimum, the previously mentioned statute contemplates complementary pay, which is duly regulated according to certain factors. However, the municipality itself can also establish special pay for teaching personal "according to factors that are determined in the regulations that each municipality dictates", ii) the same statute signals that if a tenured teacher is fired from their

⁴ For 2013, this share ranges between 85.4 and 0 percent.

position, they have to be paid two different severance pays. One is common to all employees in the same situation and consists of “a salary per year of service” up to a maximum of eleven salaries, plus a second payment “equivalent to the total pay that they would have received up to the end of the current year”, iii) the municipality can make improvements to school infrastructure using their own resources. As a result, the municipalities with few or no available resources of their own cannot implement autonomous mechanisms to reward teachers’ productivity, fire teachers who perform poorly or carry out improvements to school infrastructure using their own resources. To this is must be added the fact that the general level of professionalization itself differs significantly across municipalities, which aggravates the problem even more, since it condemns municipalities with less fiscal autonomy to a poorer quality of local services. In summary; *FA* - understood as making disposable resources available to local governments, can have a significant impact on the performance of public education.

The Chilean model of administering and financing public education is being profoundly reformed at the moment, justified by the diagnosis that the current system does not guarantee either quality or equity in access to education. Among other elements, a key factor of the proposal presented in 2015 is the promise of the ‘de-municipalization’ of education, putting public schools under the administration of deconcentrated entities of the central government. The hypothesis this study proposes is that said decision is inefficient, since each municipality has a very different capacity and degree of fiscal autonomy to decide on critical topics in school administration. In said context, local governments with fiscal autonomy can make relevant decisions about teaching personnel and the quality of school infrastructure. To the latter must be added the potential

benefit of local authority accountability that municipal dependency provides residents, which would be lost under the proposed blueprint. The former suggests that 'selective decentralization', in virtue of which differences between municipalities can be noted, would allow for certain benefits of decentralized management to be retained at a municipal level in selected cases, together with a centralized administration in schools in municipalities without fiscal autonomy and/or a small capacity for self-management.

Empirical Evidence on the Chilean Case

There are no former studies in Chile aimed at exploring the effect of *FA* on the performance of the MUN-S. However, some evidence suggests that there are significant differences in the result of the SIMCE test among MUN-S according to their geographical location in the country (Contreras and Macías 2002). Given that this is not seen among the SP-S, it can be assumed that this is due to idiosyncratic municipal factors, among which is their very capacity to make decisions freely regarding their teaching staff.

Although different empirical works have supported the hypothesis that the SP-S are more efficient and/or have better results than the MUN-S (Mizala and Romaguera 2002, Sapelli 2003, Paredes and Paredes 2009), it has also been suggested that this difference tends to disappear if control is carried out through socio-economic factors (Aedo and Larrañaga, 1995; Mizala, Romaguera and Ostoic 2005, Mizala and Romaguera 2000). For its part, the decentralization of education itself improved MUN-S efficiency, as long as they maintained their results in the

standardized tests of knowledge with fewer resources per student after the process of municipalization at the beginning of the eighties (Parry 1997). A special mention must be made of the competition between schools and/or municipalities that has a favorable impact, a central element in the design of the Chilean model. In this respect, Auguste and Valenzuela (2003) conclude that such competition does exist. However, it has been proposed that this is more intense between SP-S (Larrañaga 2004, Gallego 2002) and/or between MUN-S that face “harsh budget restrictions” (Gallego 2005). On the other hand, Hsieh and Urquiola (2004, 2006) find no clear evidence of the competition hypothesis. These authors conclude that the most visible effect of the Chilean model is segregation between types of school.

IV. ECONOMETRIC ANALYSIS

Description of the data and empiric model

Our empiric model tries to explain the performance of municipalities in their management of municipal education. The endogenous variable used corresponds to the result of the 'System of Measuring the Quality of Education' (SCORE), whose evaluation is known as the SIMCE test, applied annually in all the country's schools. Although this test is applied in the fourth and eighth grades respectively, only the results of the SIMCE in fourth grade are considered in the period between 2005 and 2013. The corresponding score has been broken down into mathematics, language and the average of both. In order to control the eventual competition effect from the SP-S, the average score of this same test for said schools is also included as an explanatory variable. In the table 1 it can be seen that, although the SPS have a slightly higher average than the MUN-S, the variation range is very similar in both cases. This result is partially explained by the degree of *FD* in each municipality, plus a combination of control variables (CONTROL). The sample is made up of a panel of the 345 municipalities that existed in the 2005-2013 period. In formal terms, the empirical model can be summarized in Equation 1:

$$SCORE_{it} = \alpha + \beta_1 \times FD_{it} + \beta_2 \times CONTROL_{it} + \varepsilon_{it} + \mu_i \quad Ec. 1$$

The term μ_i represents the idiosyncratic effect of each municipality. Table 1 presents a summary of the data.

Regarding our measurement of fiscal decentralization, empirical research on the matter acknowledges this to be a multidimensional concept which entails locally appointed officers, local budget approval, expenditure discretion, local revenue mobilization and tax power, general purpose intergovernmental grants, borrowing power and local power to hire (and fire) personnel (Bahl 2008). Albeit Chilean municipalities face a common institutional frame in all aforementioned traits, they significantly differ in their fiscal autonomy (*FA*), which stands for a particular aspect of *FD*. On the one hand, the share of short term municipal operating costs may have severe implications on the effective municipal expenditure discretion on locally appointed officers and redundancy payments for dismissed employees. On the other, regardless of the common rules being mentioned, local tax power depends on the composition of the tax base, as different sources of local income entail different degrees of autonomy to raise revenues.

In light of considerations above, *FD* will be proxied by a set of alternative measurements of *FA*. Our first proxy (FA_1) builds upon Letelier and Ormeño (2017) as it equals the ratio of Municipal Income net of Personnel Expenses to the full Municipal Income. This definition assumes that the expenses referred to are generally fixed in the short term, which implies that the higher the share of Personnel Expenditures, the lower the level of municipal autonomy. Chilean municipalities have three types of contracts for staff. The first kind is 'permanent', referring to indefinite contracts which can only be ended by administrative brief or voluntarily by the employee in

question. The second category, called ‘contracted’, is valid for a year and said positions are renewed voluntarily each year by the municipality. Although these are not as stable as the first, those employed hardly change over time, only being affected by changes in the political coalition of the mayor, whose position is renewed every four years. The third category is made up of ‘fee-based’ contracts, which are used to pay for one-off contracts that can be easily cancelled. Our definition of FA_1 only takes into consideration permanent and contracted staff. The second expenditure-based measurement (FA_2) follows Barankay and Lockwood (2007) in estimating the proportion of local spending on education carried out as a result of contributions from the municipality itself, a variable that should be interpreted as the capacity of the municipality to intervene and provide resources in education. Both indicators are present in Eq. 2.1 and Eq. 2.2 respectively. The data to construct FA_1 and FA_2 was extracted from the System of Municipal Information (SINIM), where MI is the total income of the municipality, EPS is spending on permanent staff, ECS is spending on contracted staff, EE_M is spending on education using one’s own resources and EE_{CG} is spending on education with the central government meeting the cost of the transfers.

$$FA_1 = \frac{MI - (EPS + ECS)}{MI} \quad Ec. 2.1$$

$$FA_2 = \frac{EE_M}{EE_M + EE_{CG}} \quad Ec. 2.2$$

Given the rather centralized institutional framework that regulates municipal funding in Chile, an equivalent revenue-based proxy for FA is difficult to build (see section II). Nevertheless, we can

get an indirect measurement by gathering observable variables that capture the structure of the local tax base. It can be argued that each municipal revenue item is subject to a different degree of municipal control. Since the property tax is regulated and also collected by the national government, it stands as a rather exogenous source of income. In contrast, business licenses are locally collected and municipal governments have a margin to decide on rates. Car licenses and a number of other small revenues admit some degree of control too, either because they are collected locally or because the municipal government has some leeway to decide on tax rates and charges. Since no unique value-based taxable asset measurement encompasses all these features, we conduct a principal component analysis, thereby two factors are produced (see ANNEX 2). The first one includes the tax value of local properties, the number of registered private companies, and the share of medium size and large companies as separate variables. In the second factor we remove the value of local properties and leave only those items on which the municipal government has more control. Both factors are taken as a proxy of fiscal autonomy and a source of confirmation of results being achieved from our expenditure-based measurements. To differentiate them from our “FA” measurements above, we will call them $FACTOR_1$ and $FACTOR_2$ respectively.

A data summary of variables being used is provided in table 1. Regarding the set of control variables, the so-called Autonomous Income corresponds to the average Autonomous Income of the inhabitants of the area and was extracted from the Survey of Socio-Economic Characterization (CASEN). Given that said survey is carried out every three years, the missing information was provided from the imputation process proposed by Rubin (1987) and Schenker

and Taylor (1996). The values obtained from this process satisfactorily reproduced the real values of the variable. It can be observed that the average Autonomous Income without that imputation was \$ 338,813 (US\$ 684.5) in 2013, with the average of the imputed variable being equal to \$ 320,664 (US\$ 647.8) for the same year. The same is valid for the standard deviation. Another control variable is the parents' level of schooling. However, not all the students who attend a specific municipal school come from families who live in that municipality, which to some extent dilutes the municipality's degree of accountability. Although municipal governments present schools' academic results as an indicator of the good performance of municipal management and therefore as a potentially relevant factor in local elections, said indicator assumes greater relevance the higher the proportion of resident students. If we interpret the parents' level of schooling (Schooling) as both a determining factor in the individual results of students as well as an element of control in school management in the community, said variable should be weighted according to the degree of parents' representation of the municipality in question. This is done through the interaction of Schooling with the opposite of residential mobility.

(Insert table 1 about here)

The other control variables that make up the list include the level of urbanization, a dummy variable for municipal corporations, the relationship between the teaching and non-teaching staff, the so-called municipal 'Permanent Own Income' per inhabitant representing the availability of resources generated by the municipality itself, and two scale variables that capture the impact of the number of schools and the total number of students under municipal administration (see ANNEX for definition and source of variables). Since Chile is divided in 15 regions (the intermedium level of government), a regional dummy is also included.

As far as our *FA* measurements are concerned, an important sample variation can be observed in the case of *FA*₂ (*SD* = 0.112), with a range that goes from 0 % up to 85 % of the educational expenditures being made from municipal contributions. While variation of *FA*₁ is lower (*SD* = 0.054), this variable's extreme values (0.48 versus 0.97) suggest that some municipalities may have "twice" as much fiscal autonomy as some others. Similarly, *FACTOR*₂ appears to have a higher variation with respect to *FACTOR*₁⁵, this being evidence that the composition of tax bases differs significantly across municipalities. In particular, the number of registered companies and the share of large and medium-sized companies contribute significantly to this variation, as *FACTOR*₂ only includes company related factors (table 1).

Results

⁵ The value of both factors were rescaled to range between 0 and 1

Econometric analysis is carried out through two blocks of regressions. The first block is the static analysis, in which a standard panel data model is estimated for each fiscal autonomy measurement. Reported results are those selected by using the Hausman test criteria. In order to capture the temporary nature of the SIMCE test, the second block of regressions uses the Arellano Bond method in its system version (GMM System), which allows for the lag in the endogenous variable (SIMCE) to be controlled and is also appropriate for cases with reduced T (periods) and a large N (number of municipalities) (Roodman 2006), adjusted according to the sample used. It is worth observing that changeable temporary variables have been added to every case, capturing certain changes in the tendencies observed in the municipal SIMCE result in specific years of the sample.

Regardless of the estimation approach, a possible source of bias and inconsistency in the estimations is in the degree of error associated with the use of *FD* proxies (*FA* and *FACTOR*). Although in both cases an attempt is made to capture the degree of local capacity to the financing of schools, diverse unobservable factors may influence the real degree of municipal government involvement in education. First, the range of expenses out of municipal control may exceed spending on staff as defined in *FA₁*. Second, contributions to schools may not precisely reflect the magnitude of the municipality's fiscal efforts in education, since the regular municipal staff may exercise many different functions which may only indirectly attributable to the management of schools. Third, various specific factors may impede municipalities to take proper advantage from its tax base. This situation demands that the potential correlation between *FA* (*FACTOR*) and the error term in *Ec. 1* be controlled through the use of an instrumental variable. In all cases (*FA₁*,

FA_2 , $FACTOR_1$ and $FACTOR_2$), the instrument used is the so-called 'Permanent Own Income' per head as this is highly correlated with each of our endogenous variables, albeit not necessarily with the SIMCE score⁶.

Four main results can be gathered from the estimates. The first is that for both FA proxies and for the three measures of the SIMCE used, fiscal decentralization has a positive and significant effect on the SIMCE score, which is maintained independently of the estimate procedure (tables 2 and 3). The second refers to the magnitude of the effect alluded to. Given that we have measured the SIMCE score in natural logarithms and that FD itself is measured as a ratio, the estimated coefficient for FA is the corresponding semi-elasticity. It follows that we can estimate the long-term impact of FA on the SIMCE (Arellano and Bond 1991), which is reported in Table 4 for the dynamic estimations in table 3. It can be stated that an increase of one point in FA_1 ($100 \times \Delta FA_1$) leads to a 0.38 percent rise in the average SIMCE result with a standard deviation of 0.213². The same measurement for the case of FA_2 suggests that an increase of one point in that variable ($100 \times \Delta FA_2$) generates a rise of 0.15 percent in the SIMCE result with a standard deviation of 0.07. Except for mathematics, the impact alluded to appears to be relatively small, which authenticates the impact of other factors on the result. Our third result hinges upon the use of $FACTOR_1$ and $FACTOR_2$ as alternative (revenue-based) measurements of fiscal autonomy. Estimations are reported in table 5 (static panel) and table 6 (dynamic panel) respectively. Since these factors are not strictly comparable to FA proxies, regressions being reported should be taken as confirmatory

⁶ MENCIONAR LAS CORRELACIONES RELEVANTES (FA Y FACTOR versus IPP_CAP)

ones with respect to those achieved by using FA_1 and FA_2 as endogenous variables. While $FACTOR_2$ appears to be significant and correctly signed in both sets of regressions, the use of $FACTOR_1$ results in this variable being significant in the static panel only. This result is in line with the hypothesis that only variables under the municipal control – as it is the case of $FACTOR_2$ - are relevant as a source of fiscal autonomy.

The fourth set of results refers to the remaining control variables. We should first highlight the robust positive impact of the families' income. Although such a variable is not significant in every case, it is consistently significant when used in the dynamic model (table 3 and 6). The estimated coefficient corresponds to the elasticity of the SIMCE test regarding income, with its value being slightly higher than 0.02 in most cases. This is compatible with previous studies for Chile (for example, Montero and Nahuelpán 2010), as well as other countries (for example, Dahl and Lochner 2012). A second variable worth mentioning is the degree of urbanization. Its estimated coefficient is negative in all dynamic regressions. This confirms a systematic pattern directly visible as a result of the data, which coincides with the increasing migration of students from municipal to subsidized private schools during the years of the sample. Among other reasons, this has its origin in the greater frequency of student demonstrations from 2006 onwards (Letelier and Dávila 2015) and the growing perception of a deterioration in the quality of municipal schools in the period of the study (CEP 2014). In this context, the negative effect of the degree of 'urbanization' can be explained by two factors. First, during the sample period, subsidized private schools were allowed to establish specific selection criteria, which are usually more severe than those prevailing in municipal schools. Secondly, the options for migration

between SP-S and MUN-S were usually very low or even non-existent in rural areas, where there is usually only one municipal establishment and no subsidized private ones (Gallego 2002). It follows that in urban municipalities, the phenomenon of a decrease in the MUN-S score is even more severe. It is equally interesting to state that, having corrected these factors, the performance of schools under the administration of municipal corporations is, relatively speaking, worse and that the result of the SIMCE in the SP-S positively affects the results of the MUN-S.

(Insert table 2 about here)

(Insert table 3 about here)

(Insert table 4 about here)

(Insert table 5 about here)

V CONCLUSIONS

This study generates evidence that ‘Fiscal Decentralization’ (FD) being analyzed from the view point of local fiscal autonomy (FA), has a positive impact on the performance of public schools in Chile, generically called ‘Municipal Schools’. This is based on the estimate of a panel model of municipal data between 2005 and 2013, with robust results concerning four alternative definitions of FA and two estimation strategies. This general conclusion is consistent with our

main hypothesis, according to which Chilean municipalities face significant difficulties both when firing teachers as a result of the compensation they are required to provide and when hiring new teachers. Our results confirm that greater fiscal autonomy allows management of the staff in line with local requirements, which improves educational performance.

In the context of the so-called 'de-municipalization' of education in Chile, promoted by the government in power, two important corollaries may be drawn. One refers to the benefits of completely abandoning the municipal dependency of current schools, under the premise that a general solution does not distinguish differences between municipalities that would necessarily be conducive to a better quality of public school education. Our results show that the municipalities that have a sufficient amount of fiscal autonomy are in a better position to exercise their autonomy and take advantage of the benefits of decentralization. It follows that selective decentralization can generate more efficient results, since the same advises maintaining municipal dependency in some cases and moving towards the municipalization of others. A second corollary hinges upon the need to strengthen the existing municipal fiscal equalization model, as this may improve inter-municipal fiscal equity to the point that a significant number of jurisdictions could properly run education and other basic services.

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Notes.

1. Empirically, the correlation between our instrument and the SIMCE score is systematically non-significant at less than 5 percent from 2009 onward. In this same period, the correlation between the instrument versus DF_1 and DF_2 is consistently significant at less than 1 percent
2. See: Wooldridge, Jeffrey M. *Introductory Econometrics: A Modern Approach*. 4th Edition

TABLES

Table 1: Description of the data (actualizar)

<i>Variables</i>	Obs.	Average	Est. Dev.	Min	Max
<i>Endogenous</i>					
SIMCE ¹ Municipal	2,984	243.010	15.275	172.5	309.75
SIMCE ¹ Subsidized	2,258	254.354	18.155	171.75	309.5
SIMCE Municipal Mathematics	2,984	236.323	16.600	169	316.5
SIMCE Municipal Language	2,984	249.697	15.248	168	313
SIMCE Subsidized Mathematics	2,258	248.035	20.241	155	306
SIMCE Subsidized Language	2,255	260.715	17.213	179.5	323
<i>Control</i>					
Autonomous Income ²	1,290	338,813	173,188.7	117,135.4	2,103,833
Imputed Autonomous Income ²	2,535	320,644.3	155,823	104,974.3	2,103,833
Mobility	3,048	4.777	13.629	1	238.315
Schooling	3,028	8.594	1.382	5.57	13.76
Schooling(1/mobility)	3,028	5.302	3.287	0.0314	13.42
Urbanization	3,048	62.193	29.925	0	100
Education Corporation	3,048	0.151	0.358	0	1
Municipal Student	3,048	4427.838	5,882.35	1	45,835
Municipal Establishments	3,048	16.787	12.492	1	83
Teacher/non Teacher	2,975	1.975	1.144	0	26
IPP per inhabitant ²	3,033	54.802	78.680	1.012	986.055
<i>Fiscal Decentralization</i>					
<i>FD</i> ₁	3,033	0.811	0.054	0.485	0.956
<i>FD</i> ₂	3,024	0.114	0.112	0	0.854
<i>Fiscal Decentralization (factor analysis)</i>					

1: Mathematics and Language average; 2: Pesos 2013.

Table 2: FD Static Panel

VARIABLES	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)
Effects	<i>Fixed</i>	<i>Fixed</i>	<i>Fixed</i>	<i>Fixed</i>	<i>Fixed</i>	<i>Fixed</i>
<i>FD₁</i>	0.935*** (0.287)	0.854** (0.359)	1.008*** (0.330)			
<i>FD₂</i>				0.999*** (0.350)	0.909** (0.432)	1.047*** (0.395)
<i>Ln (income)</i>	0.0128** (0.00515)	0.00474 (0.00545)	0.00783 (0.00512)	0.0187*** (0.00516)	0.0125** (0.00573)	0.0155*** (0.00534)
<i>Schooling(1/mobility)</i>	0.00228** (0.00101)	-0.000417 (0.000993)	0.00155 (0.000947)	0.00111 (0.000949)	-0.00136 (0.000959)	0.000342 (0.000908)
<i>Urbanization</i>	0.000322 (0.000519)	0.000445 (0.000535)	0.000619 (0.000502)	-0.000441 (0.000685)	-0.000243 (0.000716)	-0.000177 (0.000677)
<i>Ln (Municipal students)</i>	-0.102*** (0.00942)	-0.0895*** (0.0101)	-0.0861*** (0.00912)	-0.0685*** (0.0120)	-0.0588*** (0.0137)	-0.0474*** (0.0150)
<i>Ln (SIMCE SUB)</i>	0.241*** (0.0334)	0.166*** (0.0345)	0.200*** (0.0318)	0.223*** (0.0340)	0.152*** (0.0351)	0.179*** (0.0317)
<i>Ln (Municipal establishments)</i>	-0.0380*** (0.0127)	-0.0191 (0.0134)	-0.0525*** (0.0126)	-0.0391*** (0.0144)	-0.0194 (0.0149)	-0.0529*** (0.0144)
<i>Teacher/Non Teacher</i>	-0.00207 (0.00164)	-0.000391 (0.00173)	-0.00334** (0.00164)	-0.00416** (0.00203)	-0.00238 (0.00225)	-0.00565** (0.00220)
<i>D_2007</i>			-0.0203*** (0.00419)			-0.0234*** (0.00560)
<i>D_2008</i>		0.00214 (0.0104)	0.0290*** (0.00905)		0.00181 (0.0116)	0.0273*** (0.00984)
<i>D_2009</i>		0.0175** (0.00817)	0.0189*** (0.00700)		0.0108* (0.00642)	0.0106* (0.00545)
<i>D_2010</i>		0.00465 (0.00518)	0.0388*** (0.00433)		0.00429 (0.00563)	0.0382*** (0.00482)
<i>D_2011</i>		0.0352*** (0.00383)			0.0336*** (0.00407)	
<i>Constant</i>	4.233*** (0.353)	4.571*** (0.405)	4.345*** (0.381)	4.751*** (0.261)	5.015*** (0.287)	4.879*** (0.273)
Observations	2,173	2,173	2,173	2,167	2,167	2,167
Number of munic_id	268	268	268	268	268	268
Wald chi2	3.16e+07***	2.90e+07***	3.36e+07***	2.45e+07***	2.34e+07***	2.58e+07***
Chi2 Hausman test	123.33***	121.60***	76.13***	112.70***	69.42***	105.27***

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Instrument for FD1 and FD2= Permanent own Income per Head.
Ln: Natural logs.

Table 3: Factor Static Panel

VARIABLES	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)
Effects	Fixed	Random G2SLS	Random G2SLS	Fixed	Fixed	Fixed
<i>FACTOR1</i>	0.125** (0.0497)	0.0348** (0.0143)	0.0354*** (0.0114)			
<i>FACTOR2</i>				0.0900*** (0.0225)	0.0700*** (0.0253)	0.0828*** (0.0216)
<i>Ln (income)</i>	0.0154*** (0.00482)	0.000202 (0.00541)	0.00260 (0.00458)	0.0201*** (0.00370)	0.00879** (0.00435)	0.0125*** (0.00375)
<i>Schooling(1/mobility)</i>	0.00186** (0.000858)	8.49e-05 (0.000628)	0.000375 (0.000544)	0.00135* (0.000703)	-0.000801 (0.000793)	0.000784 (0.000664)
<i>Urbanization</i>	0.00122 (0.000807)	-0.000424* (0.000217)	-0.000811*** (0.000180)	0.00104** (0.000433)	0.000960** (0.000476)	0.00121*** (0.000413)
<i>Ln (Municipal students)</i>	-0.0248 (0.0236)	-0.0158 (0.0108)	-0.0160* (0.00872)	-0.0268 (0.0170)	-0.0301 (0.0189)	-0.0201 (0.0166)
<i>Ln (SIMCE SUB)</i>	0.152*** (0.0276)	0.0946*** (0.0262)	0.0853*** (0.0229)	0.160*** (0.0193)	0.106*** (0.0220)	0.126*** (0.0188)
<i>Ln (Municipal establishments)</i>	-0.0480*** (0.0159)	-0.000667 (0.00766)	0.00142 (0.00648)	-0.0342*** (0.0108)	-0.0145 (0.0119)	-0.0431*** (0.0103)
<i>Teacher/Non Teacher</i>	-0.00163 (0.00199)	0.00204 (0.00187)	0.000787 (0.00164)	0.000242 (0.00144)	0.00178 (0.00159)	-0.000418 (0.00138)
<i>D_2007</i>						-0.0144*** (0.00278)
<i>D_2008</i>		-0.0438*** (0.00406)	-0.0181*** (0.00321)		-0.0201*** (0.00308)	0.00470* (0.00271)
<i>D_2009</i>		-0.0196*** (0.00398)	-0.0171*** (0.00297)		0.00327 (0.00330)	0.00423 (0.00284)
<i>D_2010</i>		-0.0203*** (0.00350)	0.0190*** (0.00264)		-0.00218 (0.00316)	0.0331*** (0.00267)
<i>D_2011</i>		0.0180*** (0.00340)			0.0306*** (0.00319)	
<i>D_CORP</i>		-0.00747 (0.0121)	-0.0151 (0.00993)			
<i>Constant</i>	4.789*** (0.262)	5.107*** (0.168)	5.222*** (0.140)	4.700*** (0.196)	5.025*** (0.215)	4.924*** (0.183)
Observations	1,451	1,451	1,451	2,165	2,165	2,165
Number of munic_id	266	266	266	267	267	267
Wald chi2	3.07e+07***	520.21***	321.12***	4.69e+07***	3.88e+07***	5.26e+07***
Chi2 Hausman test	31.44***	9.32	12.60	103.82***	43.96***	115.51***

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Instrument for Factor₁ and Factor₂= Permanent own Income per Head.
Ln: Natural logs.

Avaluo lo tenemos desde 2008 en adelante. Con el factor 2 nuevamente es desde el periodo completo.

Table 4: FD Arellano Bond

VARIABLES	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)
<i>FD₁</i>	0.377** (0.191)	0.359* (0.206)	0.373** (0.186)			
<i>FD₁(-1)</i>	-0.136 (0.0942)	-0.190* (0.109)	-0.140 (0.0971)			
<i>FD₂</i>				0.251*** (0.0798)	0.249** (0.110)	0.260*** (0.0796)
<i>FD₂(-1)</i>				-0.155** (0.0640)	-0.207** (0.0850)	-0.214*** (0.0682)
<i>Ln (income)</i>	0.0219*** (0.00648)	0.0191** (0.00875)	0.0205*** (0.00693)	0.0230*** (0.00586)	0.0239*** (0.00826)	0.0272*** (0.00666)
<i>Schooling(1/mobility)</i>	0.00231 (0.00229)	-0.000917 (0.00274)	0.00278 (0.00236)	0.00166 (0.00181)	-0.00228 (0.00206)	1.59e-05 (0.00181)
<i>Urbanization</i>	-0.000646*** (0.000225)	-0.000742*** (0.000288)	-0.000562** (0.000283)	-0.000756*** (0.000176)	-0.000978*** (0.000235)	-0.00101*** (0.000227)
<i>Ln (Municipal students)</i>	-0.00979 (0.0115)	0.00352 (0.0128)	-0.0132 (0.0112)	-0.00740 (0.00969)	0.0114 (0.0105)	-0.000242 (0.00940)
<i>Ln (SIMCE SUB)</i>	0.575*** (0.0723)	0.548*** (0.143)	0.484*** (0.118)	0.611*** (0.0622)	0.630*** (0.153)	0.660*** (0.106)
<i>Ln (Municipal establishments)</i>	0.0119 (0.0112)	-0.00461 (0.0129)	0.0170 (0.0108)	0.0151 (0.0116)	-0.00939 (0.0128)	0.00768 (0.0112)
<i>Teachers/Non Teachers</i>	0.0301* (0.0168)	0.0369* (0.0199)	0.0183 (0.0179)	0.0193 (0.0143)	0.0230 (0.0195)	0.00579 (0.0172)
<i>D_2008</i>		-0.0234*** (0.00871)	0.0214*** (0.00709)		-0.0233*** (0.00820)	0.0190*** (0.00643)
<i>D_2009</i>		-0.0105 (0.00806)	0.00314 (0.00568)		-0.0153* (0.00864)	-0.00476 (0.00537)
<i>D_2010</i>		-0.0198** (0.00808)	0.0250*** (0.00531)		-0.0226** (0.00888)	0.0202*** (0.00507)
<i>D_2011</i>		0.0200*** (0.00762)			0.0174** (0.00853)	
<i>D_ CORP</i>	-0.00850** (0.00389)	-0.00518 (0.00442)	-0.0102*** (0.00383)	-0.00664* (0.00378)	-0.00477 (0.00418)	-0.0106*** (0.00398)
<i>Ln (SIMCE TOT) (-1)</i>	0.301*** (0.0767)			0.287*** (0.0695)		
<i>Ln (SIMCE TOT) (-2)</i>	0.209*** (0.0758)			0.185*** (0.0691)		
<i>Ln (SIMCE TOT) (-3)</i>	-0.143 (0.134)			-0.110 (0.113)		
<i>Ln (SIMCE MAT) (-1)</i>		0.155* (0.0889)			0.125 (0.0828)	
<i>Ln (SIMCE MAT) (-2)</i>		0.00736 (0.0815)			-0.0368 (0.0750)	
<i>Ln (SIMCE MAT) (-3)</i>		0.234 (0.185)			0.244 (0.169)	
<i>Ln (SIMCE LEN) (-1)</i>			0.252*** (0.0757)			0.154** (0.0757)
<i>Ln (SIMCE LEN) (-2)</i>			0.167** (0.0704)			0.0787 (0.0688)
<i>Ln (SIMCE LEN) (-3)</i>			0.0495 (0.0769)			0.0836 (0.0726)
Observations	1,443	1,443	1,443	1,439	1,439	1,439
Number of munic_id	264	264	264	264	264	264
Fischer	1.61e+06***	1.10e+06***	1.59e+06***	1.75e+06***	1.18e+06***	1.57e+06***
A-Bond test AR(1) (z)	-8.09***	-9.61***	-9.54***	-8.58***	-10.55***	-10.50***
A-Bond test AR(2) (z)	-1.44	1.70*	-0.60	-1.28	2.19**	0.11
Sargan Test (Chi2)	19.44	8.59	24.14**	28.43**	16.36	21.16*

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Ln: Variables in natural logs.

Table 5: Factor Arellano Bond

VARIABLES	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)
<i>FACTOR1</i>	-0.0426 (0.0632)	-0.0346 (0.0582)	-0.0619 (0.0659)			
<i>FACTOR1(-1)</i>	0.0492 (0.0683)	0.0390 (0.0634)	0.0711 (0.0717)			
<i>FACTOR2</i>				0.101** (0.0455)	0.209*** (0.0778)	0.167*** (0.0614)
<i>FACTOR2(-1)</i>				-0.0927** (0.0466)	-0.204*** (0.0774)	-0.160** (0.0621)
<i>Ln (income)</i>	0.0317*** (0.00718)	0.0214** (0.00863)	0.0278*** (0.00823)	0.0257*** (0.00614)	0.0164* (0.00986)	0.0144* (0.00757)
<i>Schooling(1/mobility)</i>	0.000107 (0.00256)	-0.00252 (0.00337)	0.00183 (0.00304)	0.00448* (0.00245)	0.00123 (0.00373)	0.00481* (0.00280)
<i>Urbanization</i>	-0.00103*** (0.000220)	-0.000899*** (0.000278)	-0.000872*** (0.000306)	-0.000581*** (0.000176)	-0.000556*** (0.000264)	-0.000318 (0.000242)
<i>Ln (Municipal students)</i>	0.00827 (0.0126)	0.0162 (0.0146)	-0.000317 (0.0139)	-0.0303** (0.0129)	-0.0243 (0.0204)	-0.0384*** (0.0146)
<i>Ln (SIMCE SUB)</i>	0.684*** (0.0842)	0.552*** (0.145)	0.585*** (0.139)	0.612*** (0.0654)	0.565*** (0.180)	0.440*** (0.111)
<i>Ln (Municipal establishments)</i>	-0.00266 (0.0115)	-0.0159 (0.0142)	0.00690 (0.0127)	0.0288** (0.0126)	0.0160 (0.0198)	0.0344** (0.0140)
<i>Teachers/Non Teachers</i>	-0.0431 (0.0357)	-0.00972 (0.0420)	-0.0503 (0.0425)	0.0387*** (0.0138)	0.0752*** (0.0285)	0.0572*** (0.0218)
<i>D_2008</i>					-0.0371*** (0.0118)	0.0104 (0.00858)
<i>D_2009</i>		-0.00546 (0.00794)	0.00621 (0.00776)		0.000623 (0.0111)	0.0128* (0.00745)
<i>D_2010</i>		-0.0166** (0.00752)	0.0239*** (0.00596)		-0.0226** (0.0113)	0.0258*** (0.00577)
<i>D_2011</i>		0.0226*** (0.00732)			0.0171* (0.0103)	
<i>D_CORP</i>	-0.0143** (0.00679)	-0.00730 (0.00762)	-0.0164** (0.00757)	-0.00986** (0.00416)	-0.00410 (0.00593)	-0.00748 (0.00474)
<i>Ln (SIMCE TOT) (-1)</i>	0.246** (0.101)			0.333*** (0.0815)		
<i>Ln (SIMCE TOT) (-2)</i>	0.153 (0.111)			0.200** (0.0879)		
<i>Ln (SIMCE TOT) (-3)</i>	-0.106 (0.191)			-0.158 (0.150)		
<i>Ln (SIMCE MAT) (-1)</i>		0.165* (0.0929)			0.185* (0.109)	
<i>Ln (SIMCE MAT) (-2)</i>		-0.0125 (0.101)			-0.000810 (0.102)	
<i>Ln (SIMCE MAT) (-3)</i>		0.269 (0.232)			0.235 (0.218)	
<i>Ln (SIMCE LEN) (-1)</i>			0.217** (0.0988)			0.335*** (0.0800)
<i>Ln (SIMCE LEN) (-2)</i>			0.125 (0.0843)			0.190** (0.0780)
<i>Ln (SIMCE LEN) (-3)</i>			0.0654 (0.0927)			0.0370 (0.0891)
Observations	1,211	1,211	1,211	1,440	1,440	1,440
Number of munic_id	263	263	263	264	264	264
Fisher	1.24e+06***	1.11e+06***	959543.77***	1.50e+06***	741887.22	1.07e+06
A-Bond test AR(1) (z)	-6.22***	-9.09***	-4.83***	-7.67***	-6.25***	-6.43***
A-Bond test AR(2) (z)	-0.66	1.49	-0.02	-1.40	1.06	-1.17
Sargan Test (Chi2)	15.71	12.27*	11.28	18.38	7.40	10.68

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Ln: Variables in natural logs.

Table 5: Long Term Elasticities

VARIABLES	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)	Ln (SIMCE TOT)	Ln (SIMCE MAT)	Ln (SIMCE LEN)
FD_1	0.380* (0.213)	0.280 (0.239)	0.438* (0.274)			
FD_2				0.151** (0.077)	0.063 (0.080)	0.067 (0.070)
Observations	1,443	1,443	1,443	1,439	1,439	1,439
Number of munic_id	264	264	264	264	264	264

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

ANNEX: Description and source of variables (actualizar).

<i>Variable</i>	<i>Description</i>	<i>Source/years</i>
SIMCE Mun	Annual average of the SIMCE scores at the 4 th primary level from all municipal schools.	Ministry of Education (MINEDUC). 2005-2013.
SIMCE Sub	Annual average of the SIMCE scores at the 4 th primary level from all subsidized private schools within the municipal area.	Ministry of Education (MINEDUC). 2005-2013
SIMCE Mun Math	Annual average of the SIMCE Math scores at the 4th primary level from all municipal schools.	Ministry of Education (MINEDUC). 2005-2013.
SIMCE Sub Math	Annual average of the SIMCE Math scores at the 4th primary level from all subsidized private schools within the municipal area.	Ministry of Education (MINEDUC). 2005-2013.
SIMCE Mun Language	Annual average of the SIMCE Language scores at the 4th primary level from all municipal schools.	Ministry of Education (MINEDUC). 2005-2013.
SIMCE Sub Languaje	Annual average of the SIMCE Language scores at the 4th primary level from all subsidized private schools within the municipal area.	Ministry of Education (MINEDUC). 2005-2013.
Autonomous Income	Average Autonomous Income of the inhabitants of the municipal area. Estimation based on the Survey of Socio-Economic Characterization (CASEN)	Ministry of Social Development. CASEN 2006, 2009, 2011 y 2013. Imputed values were estimated for the years 2005, 2007-2008, 2010 and 2012.
Mobility	Index of Municipal Mobility. This is estimated as follows: $\frac{[(Floating\ Municipal\ Population) + (Municipal\ Population)]}{Municipal\ Population}$	Own Estimation based don SINIM. Ministry of Social Development. 2005-2013.
Schooling	Municipal Average Schooling.	SINIM, 2005-2013.

Urbanization	Share of “urban” population living in the Municipal area.	SINIM, 2005-2013.
Education Corporation	Dummy variable that equals=1 if the administration of local public schools is made by a Municipal Corporation and “0” if it made by a Municipal Education Department (DEM).	SINIM, 2005-2013. SINIM, 2005-2013
Municipal Students	Number of local school students enrolled in Municipal schools	SINIM, 2005-2013
Municipal Establishments	Number of public Schools being run by the municipality	SINIM, 2005-2013
$\frac{\text{Teaching Personnel}}{\text{Non – Teaching Personnel}}$	Ration between teaching and non-teaching personnel	SINIM, 2005-2013.
FD ₁	Share of Municipal Revenues net of Expenditure on Personnel (see Ec. 2.1)	Estimación propia en base a SINIM 2005-2013.
FD ₂	Share of Municipal Expenditure on Education on Total Expenditure on Education	Estimación propia en base a SINIM 2005-2013.
Permanent Own Income (IPP) per head	The IPP includes all municipal revenues plus the net receipt from the Common Municipal Fund. This is expressed in constant 2013 Chilean pesos.	Own estimation based on the SINIM data base (2005-2013).