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Regional inequalities: the role of intergovernmental fiscal transfers in Uruguay

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Abstract

In this paper we explore the bidirectional relationship between intergovernmental transfers and regional income inequalities in Uruguay. Based on the construction of a simultaneous equations model, that accounts for the joint determination of these two variables, and by using a panel of departments (regions) over the period 1990-2012, our empirical results show that the central government transfers to regional governments does not have a significant impact on regional income inequalities levels. In fact, these transfers are strongly determined by the historical validation of public expenditure executed by regional governments but not by regional income disparities levels. Our results are consistent with the lack of territorial cohesion criteria in the normative governing the allocation of these transfers in Uruguay. Finally, these results have clear policy implications based on the necessary revision of the normative scheme of intergovernmental regional transfers in Uruguay if the objective is to arrive to a country with a higher degree of territorial cohesion.

Key words: intergovernmental transfers, regional inequalities, panel data, simultaneous equations, Uruguay

JEL Classification: C33, H77, R11

Regional inequalities: the role of intergovernmental fiscal transfers in Uruguay

1. Introduction

In this article we analyze the bidirectional relationship between intergovernmental transfers and regional income inequalities in Uruguay over the period 1990-2012.

The analysis about the relationship between these two variables is an important question which has engaged scholars over the years. The intergovernmental transfers are an important tool for territorial cohesion in developed countries where territorial inequities are also considered when these countries design the normative scheme of their regional transfers. The European Union model of territorial cohesion, by using a range of fiscal instruments, is a clear example of this (Böhme 2009 and Böhme et al. 2011). However, a regional transfers scheme that does not provide in a clear and explicit way a territorial convergence normative criteria, probably do not contribute to the territorial convergence and even more, it could reinforce the existing disparities (Martinez-Vazquez and Sepulveda 2011; Alm and Martinez-Vazquez 2015).

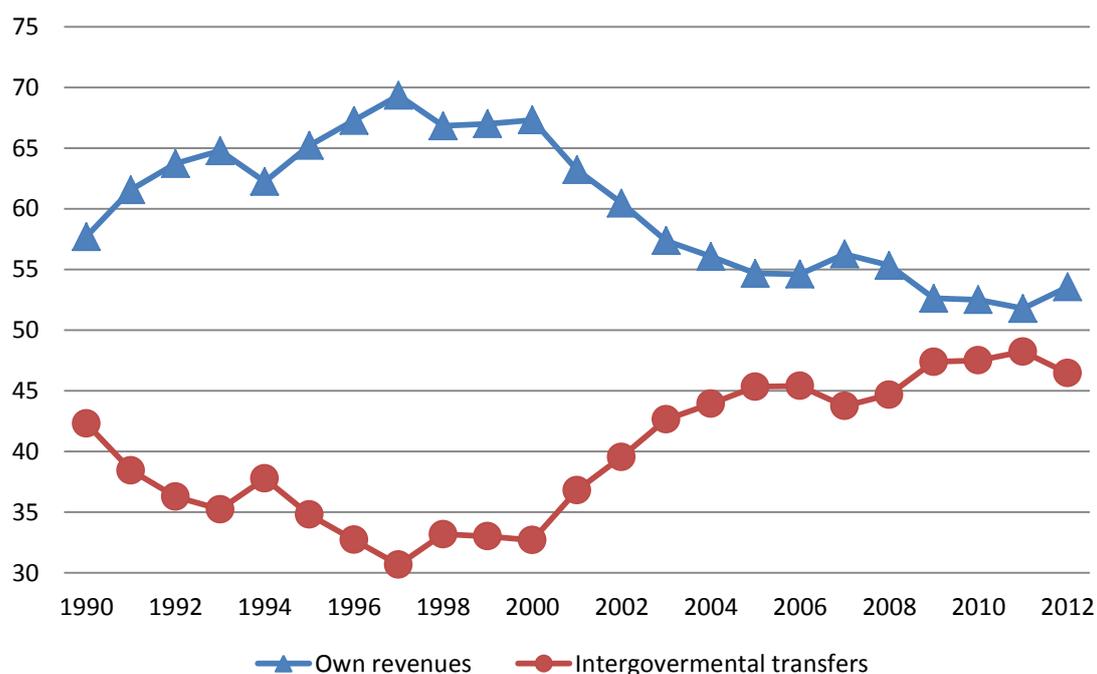
Although in recent years the majority of Latin American Countries (LAC) have implemented major reforms of their public finances at regional level¹, are virtually non-existent those countries that have implemented successful systems of intergovernmental transfers that explicitly pursue the objective of territorial cohesion. Most of these countries have implemented *revenuesharing* systems which have serious design problems since simultaneously pursue multiple objectives, for example, efficiency and national standards of utility and equity. These systems have been also subjected to high levels of volatility of the revenues levels of sub-national governments by introducing disincentives in the collection of own resources and

¹ For a detailed analysis of these reforms see Brosio and Jiménez (2012).

ignoring the differences between sub-central governments' fiscal capacity and expenditure needs (Martinez-Vazquez and Sepulveda, 2012).

In a fiscal centralized country like Uruguay, becomes really important to analyze the role of intergovernmental transfers as one of the most important fiscal tools for regional convergence. These transfers represent an important percentage of Uruguayan regional governments (RGs) revenues and their relative importance has been increasing in recent decades (Figure 1).

**Figure 1 - Regional Governments revenues, by type (1990 - 2012)
In percentage of total Regional Governments revenues**



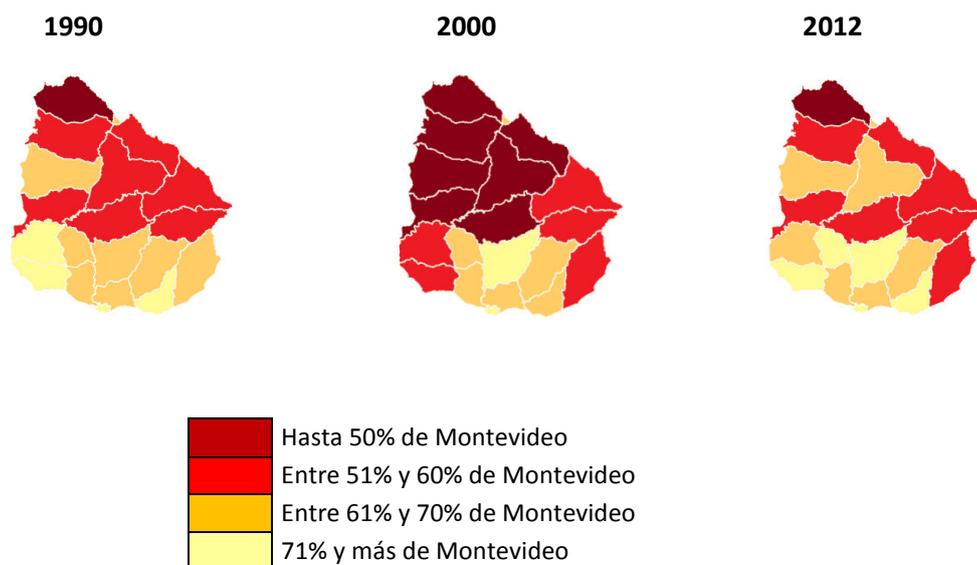
Source: Office of Planning and Budget - Presidency of the Republic

Moreover, even being a small country, Uruguay shows important differences in terms of per capita income levels between regions². The figure 2 shows this situation considering the relationship between households per capita income of each department

² Uruguay is divided in 19 departments which are the second level of government, after Central Government. For a detail of the administrative composition of Uruguay see Table A.1 in the Appendix.

(region) in relation with Montevideo (the most populous and richest department of the country) for the years 1990, 2000 and 2012.

Figure 2 – Relationship between household's per capita income of each department and the mean value of Montevideo, for selected years



Source: Continuous Household Survey of the National Institute of Statistics of Uruguay

An important feature is the enormous importance (or weight) of Montevideo (the capital) in the national economy. Over the period 1990 to 2012, household's per capita income of Montevideo, according to data from the Continuous Household Survey of the National Institute of Statistics of Uruguay, is between 120% or 130% of the national average income per capita. In turn, the situation between the other departments of the country is not homogeneous. In particular, we can observe lower relative incomes of the departments in the north and northeast of the country, while the departments of the south coast (from Colonia to Maldonado) show higher relative incomes.

During the last two decades have occurred five national administrations and the same number of regional authorities in Uruguay, with alternation of political parties that rule both at central and at regional levels³. In this context, the analyzed period (1990 - 2012) enables us to identify regularities and structural relationships between intergovernmental transfers and regional income inequalities.

Considering this context, we propose to reconsider the relationship between regional inequalities and intergovernmental transfers based on a panel of departments (regions) of Uruguay over the period 1990 to 2012 and by way of estimation techniques which deal head on with the potential interdependencies. Specifically, we consider a simultaneous equation model which accounts for the joint determination of these relevant endogenous variables. This approach allows us to obtain more appropriate estimates of the relevant parameters and, ultimately, helps us identify the causal relationships between the two variables that we focus on.

Our empirical results show that the central government transfers to regional governments does not have a significant impact on regional income inequalities levels. In fact, our estimates support the idea that regional inequalities have a significant and negative impact on intergovernmental transfers. That is, the richest is one department the more per capita intergovernmental transfers he receives. The intergovernmental transfers also are positively determined by the historical public expenditure executed by regional governments and negatively affected by the population size of the departments. The RGs size exemplifies the importance of fiscal needs of these regional governments. While the positive effect of departments' population might be driven in response to the perceived presence of scale economies in the delivery of sub-

³ The political parties that have alternated in the central and regional governments are: Partido Colorado, Partido Nacional and Encuentro Progresista-Frente Amplio. For a more detailed analysis of economic aspects of these governments, see Amarante et al (2011).

national public services or due to the potentially disproportionate lobbying power of smaller sub national jurisdictions. Specially, these empirical results are consistent with the lack of territorial cohesion criteria established in clear and priority basis in current normative in Uruguay. Given this context, our analysis has clear policy implications based on the necessary revision of regional transfer's regulatory scheme in Uruguay if the objective is to arrive at a country with a higher degree of territorial cohesion.

The article is structured as follows. Section 2 reviews the contributions that have explored how the design and implementation of sub-national finances could affect regional inequalities and how regional inequalities levels could affect the allocation of these sub-national finances. Section 3 performs an analysis of current normative and administration of regional public finances in Uruguay. Section 4 describes how we measure our key endogenous variables. Section 5 details the empirical methodology applied. Then, in section 6 we present our empirical findings and some robustness analysis. Finally, section 7 details the conclusions and some policy implications.

2. Sub-national finances and regional inequalities in the economic literature

In an effort to elucidate the causal channels linking regional inequalities' and sub-national finances we review the economic literature that has analyzed their bidirectional relationship.

2.1 The determinants of intergovernmental transfers

Several studies have analyzed the scheme that governs the design of regional intergovernmental transfers. Mainly three strands of literature consider different factors that may affect the distribution of these regional intergovernmental transfers

(Boex and Martinez-Vazquez, 2005). Firstly, the public finance literature provides a normative guidance on how intergovernmental grants should be distributed in order to improve the efficient and specifically the equitable allocation of resources in a country (Musgrave, 1959; Oates, 1972). In pursuit efficiency objective, the intergovernmental transfer's scheme seeks to correct for under-provision of certain local public services. Since not all the benefits from the provision of certain public services accrue to the local government level, local governments would tend to under-provide certain local public services (for example, education). As a result, in the presence of positive externalities in the delivery of local services, the normative pursuit of economic efficiency would result in the central government providing greater intergovernmental transfers in response to higher local expenditure needs (for example, as reflected by the number of school-aged children). The second normative economic objective, which is of the special interest in the present study, is to achieve a more equitable distribution of resources across the population. In this sense, policies that assure equitable access to public services is often pursued through equalizing intergovernmental transfers schemes.

Secondly, political economy arguments could also contribute to explaining how governments determine the intergovernmental transfers. Some public choice models argue that political decision-making processes can be "captured" by powerful interest groups, so that the distribution of public resources across local government units would be at least partially determined by political and institutional factors (Raimondo 1983; Grossman 1994; Atlas et al. 1995). An implication of this literature is that sub-national governments with powerful political interests can be expected to receive larger intergovernmental transfers. For example, local jurisdictions that have disproportionately greater representation on a per capita basis (e.g., regions that have

more legislators per capita) might be expected to attract more intergovernmental transfers on a per capita basis. Also, theoretically, elected officials with smaller constituencies have a greater incentive (and opportunity) to lobby for greater intergovernmental resources, as the pay-off per vote is greater (Weingast 1979; Atlas et al. 1995; Porto and Sanguinetti 2001). This strand of political economy literature also argues that jurisdictions which are represented at the national level by senior lawmakers or government officials might wield their influence to bias the transfer mechanism in favor of their home districts. Likewise, local governments that are able to exert greater political pressure on the center may receive greater political benefits in the form of greater transfers. For instance, sub-national governments that have greater resources to exert political pressure on the central government (for instance, by financially supporting political candidates) may be able to convince the central government to engage in counter-equalizing intergovernmental grants. A final political economy argument centers on the size of jurisdictions. Pereira (1996) argues that smaller local governments might receive greater intergovernmental transfers on a per capita basis as a result of the mechanism used for local government lobbying activities. Independent of the impact of potential scale economies, and independent of the national electoral system, smaller jurisdictions might be able to increase their relative share of intergovernmental transfers if local government lobbying organizations are based on the “one mayor, one vote” principle. For instance, if each mayor has one vote in the policy recommendations of the national association of local governments, then the association’s common position will tend to be biased in favor of smaller jurisdictions.

Thirdly, a growing body of political economy literature has been centered on how incumbents use intergovernmental transfers for strategic purposes. The central idea of

this approach is that political parties and candidates use redistributive policies as an instrument in order to maximize their electoral results, aside from other normative or efficiency considerations. This argument involves two assumptions. First, it assumes that politicians are mainly self-interested rent-seekers and they principally care about (re)-election. Second, it assumes that voters are mainly interested in the private consumption derived from public policies investment. Based on those premises, the literature has investigated the political determinants driving this strategic use of transfers. In this sense, scholars mainly points problems caused by the central government authorities that discriminate in the allocation of intergovernmental transfers between local governments politically aligned and non-aligned which could result in not desired effects on territorial cohesion. Various analytical models argue that the intergovernmental transfers are distributed between regions for the purpose of winning votes or elections in the future. These models can be divided into two main groups: "models of swing voters" and "models of core supporters". The strategy of allocating more transfers to regions with a high proportion of undecided voters is based on the assumption that these marginal transfers could affect the decision of which party voters choose (Lindbeck and Weibull, 1987; Dixit and Londregan, 1995, 1996). In these models, voter turnout is fixed, so the electoral competition is driven by the efforts of "conversion" rather than "mobilizing". Meanwhile, loyal voters models are based on assumptions derived from Cox and McCubbins (1986) which states that, if politicians are risk averse, funds will be allocated in regions where voters are clearly aligned with the government political party ("core supporters"). Several empirical studies have tested these hypotheses finding significant effects of political alignment, for example, Grossman (1994) and Levitt and Snyder (1995) for the United States, Worthington and Dollery (1998) for Australia, Khemani (2003) and Dasgupta et al

(2004) for India, Diaz-Cayeros et al (2007) for Mexico, Sole-Ollé and Sorribas (2008) for Spain, and Brollo and Nannicini (2012) for Brazil.

2.2 The regional effects of sub-national finances

The economic literature also has analyzed the effects of different sub-national fiscal instruments on regional inequalities. Firstly, intergovernmental transfers can foster spending on public services that create spillovers effects to the local economy, reducing the use of inefficient local taxes (Dahlby and Wilson, 1994), or ensure the access to essential public goods throughout all the economy (Buchanan, 1950). In turn, intergovernmental transfers to poorer regions, have the potential to foster local production reducing regional inequalities (Limoneiro, 2015). Related with prior argument, the effect of these transfers in reducing income inequalities can occur within regions which could generate a feedback effect between equality and growth inside these regions, contributing to the reduction of inequalities between regions (Betson and Haveman, 1984). However, several studies argue that when the design of intergovernmental transfers system is assigned to a wide range of responsibilities or pursue conflicting objectives, it fails to achieve its goals, especially in reducing regional inequalities (Martinez-Vazquez and Sepulveda 2011; Alm and Martinez-Vazquez 2015). Secondly, another important factor that may explain the reduction of regional inequalities could be the degree of fiscal autonomy of regional governments. There are several reasons why of fiscal decentralization may reduce regional inequalities. On the one hand, regional governments have more and better information about the needs of their constituents and therefore find it easier to adjust their policies to local preferences (Oates, 1972). This should lead to more effective policies in order to promote regional economic development (Oates, 1993). On the other hand, fiscal

decentralization can promote inter-jurisdictional competition for scarce fiscal resources, which could generate a penalties system for inefficient local governments and, consequently, promote regional convergence (Brennan and Buchanan, 1980; Weingast, 1995; McKinnon, 1997; Qian and Weingast, 1997). Voters can use as a benchmark the results obtained by governments of each jurisdiction and this can lead to greater efficiency in the provision of local public goods (Salmon, 1987; Breton, 1996). However, there are studies that argue that increasing regional fiscal autonomy could increase regional inequalities. Because fiscal decentralization means taking resources away from the central government, it can weaken the scope of the intergovernmental regional transfers (Prud'homme, 1995). Moreover, decentralization can increase the ability to reduce net outflows of resources by sub-national governments of the richest regions, limiting redistributive policies of the central government (Rodríguez-Pose and Ezcurra, 2010). Related with this, in highly decentralized countries where the potential for redistribution by the central government are limited, the richest and greater regions may finance local public goods at lower tax rates, which also help to consolidate or increase regional inequalities (Prud'homme, 1995; Keen and Marchand, 1997; Oates, 1999).

3. Regional public finances: the Uruguayan case

The fiscal revenues of RGs in Uruguay can be classified in two main categories:

- Own resources: local taxes⁴ or taxes fixed by the Central Government but collected by RGs.
- Intergovernmental transfers.

⁴ The main ones are the property tax on urban and suburban real assets and vehicle taxes.

Although, from the constitutional reform of 1996, the country has begun to implement an incipient process of decentralization or greater fiscal autonomy of the RGs, Uruguay is a fiscal centralized country. Nearly the 90% of national public expenditure over the period 1990 - 2012, was directly executed by Central Government, while RGs are responsible for only 10% of the execution of these public spending⁵. In fact, the powers formally assigned to the RGs, the second level of government, are defined in the Basic Law of Governance and Administration of the Departments (No. 9.515) that remains unchanged since 1935.

The traditional competences of the RGs are public services that could be compared with those assigned to a third level of government in other Latin America countries (BID 2007). These activities mainly are: the investment and maintenance of urban equipment, road maintenance, traffic organization, public transport, cleaning, public lighting, cemetery services, and health control and land management issues. Additionally, since 1985, with the return of democracy, the public services provided by RGs have been expanded. Thus, now they are involved in activities related with the promotion of social and economic development (see Rodríguez Miranda 2014, and Arocena 2008). In turn, since the constitutional reform of 1996, RGs have gained greater opportunities to expand its fiscal autonomy. However, these opportunities have not been exploited. The RGs have followed traditional and centralist logic for demand more resources from the central government in order to address their activities (BID 2007 and 2009). Thus, the RGs avoid the political costs of implement new and/or higher local taxes (Arocena, 2008). Moreover, various modifications reflected in the 1996s constitutional reform are decentralization measures with a general and

⁵ For a detail of the composition and importance of RGs revenues see tables A.5 and 4.6 in the Appendix.

indeterminate nature, since failed to build a strong agreement that favors greater decentralization of powers and resources for RGs (CEDES, 2010).

As a result of the above processes, the RGs have tended to "pressure" the central government for the purposes of achieving to higher level of intergovernmental transfers in order to finance their traditional and non-traditional policies.

The intergovernmental transfers in Uruguay are defined in the National Budget Law, in each five-year period of government. However, during these government periods are emerging laws that add complementary items into intergovernmental transfers. In many cases justified by exceptional issues (e.g. financial crisis, drought) but in most cases, they end up consolidating as permanent items (Rodríguez-Miranda, 2014).

During the nineties, in National Budget Laws (1991-1995 and 1996-2000), the main items of intergovernmental transfers were determined by negotiation between the central government and each RG separately. From the 2001 the changes established in the constitutional reform of 1996 were incorporated. The Article 214 provides, in each five-year period, an aliquot of the total national budget to be distributed between the RGs. With the setting of a fixed annual percentage of the national budget was tried to avoid the logic of negotiations and pay the transfer scheme only once in the national budget. However, it is important to point out that central government has continued giving extra items outside the scope of the National Budget Law. In fact, this negotiation between the central government and each RG separately has given priority to expenditure needs of the RGs and their capacity for political pressure (lobbying) in order to access to more resources (Rodríguez-Miranda, 2014). The other constitutional article governing unconditional transfers is the number 298 (Development Fund of the Interior FDI), which is also defined in the National Budget Law. However, only the

33.5% of FDI goes directly to the RGs and the remaining 66.5% is also controlled by the Central Government.

In this sense, we could say that the presence of a formula-based allocation mechanism in itself does not assure that the allocation of resources is objective, fair, efficient or stable in Uruguay. In this country, the central government has the discretion to unilaterally change most of the factors included in the allocation formula and change their relative weights from year to year, giving the central government *de facto* control to alter the effective distribution intergovernmental transfers'. In general terms, it could be said that the normative scheme of intergovernmental transfers in Uruguay defines an aliquot of each RG in every five in the National Budget Law, resulting in percentages that reflect the capabilities of political negotiation and historical trajectories respect how much each RG have received, without reflecting relevant criteria of territorial cohesion. The regional distribution of resources does not exemplify a clear and pre-established mechanism for calculating these percentages. In fact, it is widely recognized among fiscal policy experts and practitioners that *ad hoc* intergovernmental transfers which are determined annually or local government allocations that are negotiated as part of the central government budget formulation process are inherently more centralizing than formula-based grants (Bahl 1999).

4. Data: endogenous variables

In this section we review the indicators employed to measure regional inequalities and intergovernmental regional transfers. We construct an unbalanced panel of 18

departments over the period 1990 to 2012, basing our selection on the availability, frequency and quality of the data⁶.

In order to measure regional inequalities (RI), we construct an approach to a measure commonly used in the literature focused on regional analysis⁷. More specifically, we use a distance measure or coefficient of variation ($CV_{i,t}$) from a reference value or benchmark, which is the Montevideo department (the department with the highest per capita income over the whole period)⁸. In this context, the regional inequalities indicator takes the following form:

$$CV_{i,t} = \left(\left(\frac{1}{y_{MTV,t}} (y_{MTV,t} - y_{i,t})^2 \right)^{1/2} \right) * 100 \quad (1)$$

where $y_{MTV,t}$ is the average per capita income of Montevideo at the moment t, while $y_{i,t}$ is the average per capita income of department i at time t. The CV index basically reflects inequalities between regions in Uruguay. It ranges between 0 (equality) and 1 (maximum inequalities).

Finally, the intergovernmental transfer index is measured as RG revenues that originate in transfers received from the central government expressed in per capita terms (for similar indexes see, for example, Boex 2003, Brodjonegoro and Martinez-Vazquez 2004, Sollé-Ollé and Sorribas-Navarro 2008).

⁶ See Appendix Table A.2 for a list of departments including, Table A.3 for variables definitions and data sources and Table A.4 for summary statistics.

⁷ See Williamson (1965), Ezcurra and Pascual (2008), Lessmann (2009), and Rodríguez-Pose and Ezcurra (2010).

⁸ The selection of Montevideo as a reference value, in addition to considering its position as the richest region of the country, consider also that this RG began to receive transfers from the central government since 2006 (being their income, up to that year, 100% from own resources).

5. Empirical methodology

Given the potential interdependence between our key variables, it is necessary to apply an empirical method that considers their mutual influence in order to avoid severe specification errors. Consequently we propose to estimate a full system for the joint determination of these relevant endogenous variables. Specifically, we propose to estimate a simultaneous equation model (SEM) which consists of a series of two equations describing regional inequalities and central government transfers. The proposed model takes the following form:

$$\left\{ \begin{array}{l} RI_{it} = \mu_0 + \mu_1 TR_{1,it} + \mu_2 X_{1,it} + u_{1,it} \\ TR_{it} = \eta_0 + \eta_1 RI_{2,it} + \eta_2 Y_{2,it} + u_{2,it} \end{array} \right. \quad (3)$$

$$(4)$$

where RI_{it} , and TR_{it} refer to our dependent variables of regional inequalities and central government transfers, respectively. In turn, $i = 1, \dots, 18$ refer to regional governments, $t = 1, \dots, T$ to years, (μ_0, η_0) are constant terms, (μ_1, η_1) are the coefficients associated to the endogenous variables, (μ_2, η_2) are the coefficient vectors associated to the explanatory or control variables $X_{1,it}$, and $Y_{2,it}$ respectively, while $u_{n,it}$ ($n = 1, 2$) refers to the error terms for each of the two equations of the SEM model.

We estimate our model with annual data and; additionally, three-year averages of all variables have been considered. By taking three-year averages will reduce the short-

run fluctuations and therefore the influence of the economic cycle, thus permitting a focus on the structural relationships.

Finally, in order to exploit efficiency gains from the correlation of error terms cross equation, the full set of equations of the SEM jointly estimated through full information methods. This method thus deals explicitly with the a-priori interdependence between regional inequalities and central government transfers, as such, allows us to obtain more appropriate estimates of the relevant parameters. Moreover, we assume that the disturbances from the different regression equations at a given point in time are correlated, because of common unobservable factors. In order to exploit efficiency gains from the correlation of error terms across equations and the mutual influence of the relevant endogenous variables, the full set of three equations of the SEM will be jointly estimated using system instrumental variables methods (SIV)⁹. More specifically, we use two methods of estimation. Firstly, the SEM model is estimated using three-stage least squares (3SLS) accounting for heteroskedasticity and contemporaneous correlation of the errors across equations. The 3SLS is an IV-GLS estimator which achieves consistency through instrumentation and efficiency through appropriate weighting¹⁰. However, because the modern approach to SIV methods is based on the principle of the generalized method of moments (GMM)¹¹, the SEM model is also estimated by way of GMM estimators. Specifically, we consider a (two-step) three-stage least squares GMM estimator (3SLS-GMM) with an unadjusted

⁹ See Wooldridge (2010) for a good explanation of these SIV methods. And, see Greene (2012), Kmenta (1997) and Zellner and Theil (1962) for references on system estimation methodology. Avery (1977) and Baltagi (1981, 2008) discuss applications of these methodologies to panel data models.

¹⁰ See Zellner and Theil (1962), Kmenta (1997) and Greene (2003; pp. 405-407) for references on 3SLS estimation methodology. However, see Avery (1977) and Baltagi (1981 and 2008; chapter 7) for applications of 3SLS to an error components model.

¹¹ The GMM estimator is discussed in all the leading textbooks, including Cameron and Trivedi (2005 and 2010), Davidson and MacKinnon (2004), Hayashi (2000), and Wooldridge (2010). The collection of papers by Matyas (1999) provides both theoretical and applied aspects of GMM.

weight matrix¹². It is important to mention that an important feature of GMM estimation is that by selecting different weight matrices, we can obtain estimators that also can tolerate heteroskedasticity, autocorrelation, and other features of the error terms. Compared to a single-equation approach, these two system estimation methods are able to spell out feed-back simultaneities among the key endogenous variables, and as a result obtain consistent and more efficient estimates. Moreover, these two estimation methods are appropriate when some of the control variables are endogenous (see Wooldridge 2010). In this case, and in the presence of significant within variability, we employ lags of the potential endogenous control variables as instruments (see, most notably Barro 2000)¹³.

In every equation, the number of exclusions is sufficient for the order condition of the identification to be satisfied. More specifically, each equation of the system is identified given that at least one control variables actually appear in the other equation but not in the reference equation (see Wooldridge 2010, Theorem 9.1). In turn, the rank condition of every equation of the system (3) to (4) can be safely assumed to hold in a model of this size¹⁴. The selection of the control variables included in each regression of the system is guided by the need to reduce omitted variable bias. Thus, there is the a-priori expectation that the control variables may be related to the two key variables we scrutinize in this article.

¹² The 3SLS-GMM estimator is a two-step GMM estimator. In the first step, we do the equivalent of 2SLS on each equation, and then we compute a weight matrix based on the matrix of moment conditions. In this context, the two step 3sls-gmm estimation obtains parameter estimates based on the initial weight matrix, computes a new weight matrix based on those estimates, and then reestimates the parameters based on that weight matrix (see Hayashi 2000, Chapter 4).

¹³ In fact, we employ lagged values as instruments for the following control variables: region GDP per capita, region population and regional government expenditure per capita. All the control variables employed are fully discussed below.

¹⁴ For a complete exposition of the identification of equation systems, see Greene (2012), Bjorn and Krishnakumar (2008) or Theil (1971).

*The control variables*¹⁵

The set of control variables for each equation in the systems is based on prior specifications of regional inequalities¹⁶ and government transfers equations¹⁷, and also considering the availability, frequency and quality of the data sources.

In transfers' equation, we consider that the per capita amount of intergovernmental transfers received by RGs is mainly determined by four factors: an approximation to local expenditure needs, a measure of RGs revenue capacity, a measure of political factors, and the population size of different departments (regions) of Uruguay.

Since RGs in Uruguay basically provide municipal services (see section 3) we cannot use the age distribution of regional population in order to approximate education, health and social security services. These services are the responsibility of central government. As a result, we choose to work with the lagged value of the expenditures of RGs in order to approach fiscal needs but also the negotiating capacity of these RGs. In order to take into account richness of the departments and their local revenue capacity, we always control for GDP per capita of the department. The sign of this variable is conceptually indeterminate. If equity concerns are dominant in the allocation of intergovernmental transfers (Grossman 1994), then we should find a negative sign. However, if sub-national wealth is predominantly a reflection of political power, the sign might be expected to be positive. Also, according to the political economy literature, a positive relationship should be expected between political factors, such as political alignment between central government and RGs, and

¹⁵ The Table A.3 in the Appendix provides the definitions and sources of all variables

¹⁶ See, for example, Ezcurra and Pascual (2008), Lessman (2009), Ezcurra and Rodríguez-Pose (2014), and Kyriacou et al. (2015).

¹⁷ See, for example, Alm and Boex (2001), Porto and Sanguinetti (2001), Boex (2003), Brodjonegoro and Martínez-Vázquez (2004), Sollé-Ollé and Sorribas-Navarro (2008), Curto-Grau, Solé-Ollé and Sorribas-Navarro (2012)

size of intergovernmental transfers. In this sense, we have included a dummy variable that tries to capture the political alignment criteria in the allocation of intergovernmental transfers. Finally, we also include as control variable, the population size of different departments of Uruguay. The expected sign of this variable is negative (smaller departments receive greater per capita transfers), which may be caused either by scale economies or due to the potentially disproportionate lobbying power of smaller sub national jurisdictions.

In regional inequalities equation, we consider a variable that measure the degree of regional autonomy or fiscal decentralization in Uruguay. Since, by law, the RGs in Uruguay must meet exactly the same functions, we think that RG own revenues per capita are a well indicator of fiscal decentralization. Based on historical evidence also we control by a categorical variable that measure the potential for regional development in Uruguay. More specifically, this variable groups the Uruguayan departments in three main regions (Rodríguez-Miranda 2006 and 2014; Barrenechea and Troncoso 2008). The indicator is a categorical variable that takes values 0, 1 and 2. The value 0 is assigned to departments that show a low potential for regional development, in practical terms is defined as persistently departments that in the period 1990-2012 are shown worst positioned relative to national average GDP per capita. A value of 1 is assigned to departments that hold intermediate positions in the national context. The value 2 is assigned to departments that persistently show the best indicators in the national context and, therefore, are at the top of the ranking between departments¹⁸. Also, in inequalities equations we consider an indicator of regional assets inequality measured by the Gini index of the average years of education of the

¹⁸ The RGs with value 2 are: Canelones, Maldonado, Colonia and San José. With value 1 are: Paysandú, Lavalleja, Salto, Río Negro, Soriano, Rocha, Florida and Flores. Finally, with value 0 are: Treinta y Tres, Rivera, Tacuarembó, Artigas, Durazno and Cerro Largo.

population of each department. An indicator that measures the distance in kilometres to Montevideo (city port and the greater domestic consumption market) which seeks to gather the argument of the New Economic Geography which postulates the economies of agglomeration as a factor of territorial inequality. And, finally, we consider two indicators of department economic activity: the unemployment rate and the activity rate.

6. Results

We report our empirical findings in tables 1 and 2. The former employs annual data while the latter uses three year averages. The large difference in the number of observations in each case means that table 2 can be seen as a robustness check of the results based on annual data. Moreover, using three year averages helps us to focus on the structural relationships since it tends to reduce short-run fluctuations due to the business cycle (see also, Lessmann 2009 and 2012; Muinelo-Gallo and Rodriguez Miranda 2014; and Kyriacou et al. 2015).

To facilitate the interpretation of the results we will discuss them in the context of different estimated models. Always we report our results considering 3SLS and 3SLS-GMM estimators. Firstly, we report the estimations of the base model (columns 1 to 4), the columns 1 and 2 report the base model with regional inequalities indicator (CV index), while the columns 3 and 4 consider the log of the departments' GDP per capita. Both collinear variables measure the regional equalizer criteria of the central government when allocate regional transfers. Secondly, as additional robustness check, we report our estimations considering additional control variables (columns 5 to 8). We re-estimate our models, replacing the categorical regional variable for its

fundamentals. More specifically, we substitute this regional index by the Gini index of the average years of education of the population of each department. An indicator that measures the distance in kilometres to Montevideo and finally, two indicators of department economic activity: the unemployment rate and the activity rate.

Table 1 SEM model - Regressions results (Annual)

	Base model								More control variables							
	CV Index				Log of GDP per capita				CV Index				Log of GDP per capita			
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	3SLS		3SLS-GMM		3SLS		3SLS-GMM		3SLS		3SLS-GMM		3SLS		3SLS-GMM	
	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR
Regional inequalities (RI)		-0.632* (0.423)		-0.966*** (0.187)		--		--		-1.199*** (0.272)		-0.966*** (0.187)		--		--
Central Government Transfers (TR)	-0.051 (0.052)		-0.060 (0.071)		-0.065 (0.091)		-0.060 (0.078)		-0.010 (0.007)		-0.015 (0.059)		-0.013 (0.014)		0.015 (0.018)	
Log of Region GDP pc		--		--		0.492*** (0.057)		0.511*** (0.063)		--		--		0.484*** (0.057)		0.511*** (0.063)
Political Alignment		0.006 (0.028)		-0.078 (0.087)		0.030 (0.026)		-0.050 (0.056)		0.003 (0.0028)		-0.078 (0.079)		0.029 (0.026)		-0.050 (0.057)
Log of Region Population		-0.557*** (0.025)		-0.510*** (0.026)		-1.021*** (0.059)		-0.987*** (0.065)		-0.561*** (0.025)		-0.510*** (0.026)		-1.015*** (0.059)		-0.987*** (0.065)
Log of Regional government expenditure pc		0.212*** (0.050)		0.284*** (0.042)		0.055* (0.043)		0.150*** (0.045)		0.173*** (0.044)		0.284*** (0.042)		0.058*** (0.043)		0.150*** (0.045)
Decentralization	-0.031*** (0.008)		-0.029*** (0.008)		-0.029*** (0.008)		-0.028*** (0.008)		-0.034*** (0.006)		-0.034*** (0.006)		-0.038*** (0.006)		-0.034*** (0.006)	
Asset Inequality	--		--		--		--		0.010*** (0.001)		0.008*** (0.001)		0.009*** (0.001)		0.008*** (0.001)	
Unemployment rate	--		--		--		--		0.002*** (0.001)		0.003*** (0.001)		0.002*** (0.001)		0.003*** (0.001)	
Activity rate	--		--		--		--		-0.442*** (0.076)		-0.403*** (0.079)		-0.406*** (0.077)		-0.403*** (0.080)	
Regional index	-0.078*** (0.006)		-0.081*** (0.006)		-0.082*** (0.006)		-0.081*** (0.006)		--		--		--		--	
Distance index	--		--		--		--		0.025*** (0.002)		0.028*** (0.002)		0.026*** (0.002)		0.028*** (0.002)	
Temporal effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.517	0.771	--	--	0.516	0.800	--	--	0.656	0.769	--	--	0.657	0.800	--	--
J-test	--	--	0.0000	0.0000	--	--	0.0000	0.0000	--	--	0.0000	0.0000	--	--	0.0000	0.0000
Observations	378	378	378	378	378	378	378	378	378	378	378	378	378	378	378	378

Notes: Robust standard errors are reported in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. J-test: Hansen test of over-identifying restrictions indicating the validity of the chosen instruments. Included instruments: Lagged values of: Log region GDP per capita, Log of region population and Log regional government expenditure per capita.

Table 2 SEM model - Regressions results (3 year means)

	Base model								More control variables							
	CV Index				Log of GDP per capita				CV Index				Log of GDP per capita			
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	3SLS		3SLS-GMM		3SLS		3SLS-GMM		3SLS		3SLS-GMM		3SLS		3SLS-GMM	
	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR	Eq 1: RI	Eq2: TR
Regional inequalities (RI)		-0.225* (0.198)		-1.430*** (0.344)		--			-0.221*** (0.086)		-1.430*** (0.344)		--		--	
Central Government Transfers (TR)	-0.046 (0.045)		-0.069 (0.071)		-0.045 (0.046)		-0.069 (0.073)		-0.006 (0.011)		-0.018 (0.060)		-0.006 (0.011)	0.018 (0.018)		
Log of Region GDP pc		--		--	0.500*** (0.075)		0.347*** (0.135)		--		--		0.444*** (0.075)		0.347*** (0.134)	
Political Alignment		-0.012 (0.027)		-0.059 (0.048)		0.007 (0.028)		-0.037 (0.051)		-0.011 (0.027)		-0.059 (0.048)		-0.008 (0.028)		-0.037 (0.051)
Log of Region Population		-0.562*** (0.023)		-0.518*** (0.043)		-0.557*** (0.024)		-0.484*** (0.046)		-0.561*** (0.023)		-0.518*** (0.043)		-0.557*** (0.024)		-0.484*** (0.046)
Log of Regional government expenditure pc		0.193*** (0.045)		0.235*** (0.071)		0.190*** (0.047)		0.214*** (0.085)		0.194*** (0.041)		0.235*** (0.071)		0.192*** (0.047)		0.214*** (0.085)
Decentralization	-0.031*** (0.013)		-0.025** (0.013)		-0.033*** (0.013)		-0.025** (0.013)		-0.040*** (0.010)		-0.033*** (0.010)		-0.042*** (0.010)		-0.033*** (0.010)	
Asset Inequality	--		--		--		--		0.010*** (0.003)		0.013*** (0.002)		0.010*** (0.003)		0.013*** (0.002)	
Unemployment rate	--		--		--		--		0.002 (0.001)		0.002** (0.001)		0.002* (0.001)		0.002** (0.001)	
Activity rate	--		--		--		--		-0.079* (0.017)		-0.221* (0.153)		-0.111*** (0.077)		-0.221*** (0.153)	
Regional index	-0.076*** (0.009)		-0.083*** (0.009)		-0.074*** (0.006)		-0.083*** (0.009)		--		--		--		--	
Distance index	--		--		--		--		0.028*** (0.004)		0.027*** (0.003)		0.028*** (0.004)		0.027*** (0.003)	
Temporal effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	0.627	0.934	--	--	0.627	0.934	--	--	0.755	0.934	--	--	0.755	0.934	--	--
J-test	--	--	0.0000	0.0000	--	--	0.0000	0.0000	--	--	0.0000	0.0000	--	--	0.0000	0.0000
Observations	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114

Notes: Robust standard errors are reported in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. J-test: Hansen test of over-identifying restrictions indicating the validity of the chosen instruments. Included instruments: Lagged values of: Log region GDP per capita, Log region population and Log regional government expenditure per capita.

Beginning with the relationship between intergovernmental transfers and regional inequalities, our estimates support the idea that regional inequalities have a significant and negative impact on transfers. That is, the greater is the distance of one department to the mean value of per capita income of the richest department of the country (Montevideo) less per capita transfers this department receives. This result also is reflected by the fact that there is a positive and significant effect of the GDP per capita of the department on intergovernmental transfers. Remember that GDP pc also accounts for the impact of local revenue capacity on intergovernmental transfers but mainly this sub-national wealth could be a reflection of political power of richest departments of the country. Furthermore, we did not find a significant impact of transfers on regional inequalities. These transfers do not to have a regional equalizer effect in Uruguay. Finally, regardless of the indicators employed or the additional controls included in the regressions, our results are maintained.

In relation with control variables in central government transfers equations, we always observe a positive and significant impact of lagged regional government size (regional government expenditure over region GDP). That is, on average, the more RGs spends the more transfers are obtained; this is maintained when tri-annual averages data, namely that the RGs expenditures of the last three years has a positive impact on present intergovernmental transfers received. This result could reflect the impact of RGs fiscal needs but also the negotiating capacity of these RGs when demands resources to the central government through regional transfers. Also the department's population size is significant and positively related with transfer's allocation. On average, a larger population of one department, the greater the intergovernmental transfers he received. The observed relationship might be driven in response to the perceived presence of scale economies in the delivery of sub-national public services, which could prompt

policy makers to include an equal shares component into the allocation formula. Alternatively, the fiscal bias in favor of smaller (less populous) sub-national governments may be driven by political motivations, either to secure broad political support from the sub-national government tier (including less populous rural areas) in the vertical power structure, or to secure the political support of sub-national representatives (for instance, senators) at the national level. Finally, with regard to the political alignment variable we never obtain a significant effect of this variable. Therefore, with regard to the determination of the intergovernmental transfers cannot be said that there is logic of award and punishment to RGs aligned and non-aligned politically with the political party in the central government.

In relation with control variables of regional inequalities equations, we observe a significant and negative impact of fiscal decentralization indicator (see Muinelo-Gallo and Rodriguez-Miranda 2014). Lastly, we observe a significant and negative impact of our indicator of regional development. So the greatest develop potential is the minor regional inequalities are. In turn, when we replace this indicator by different variables that might explain its composition (columns 5 to 8 of tables 1 and 2) we get the expected significance and sign of each of these new variables included. In this sense, the regional development variable is mainly explained by unequal assets index (education Gini index), the distance from the capital (as the argument of economies of agglomeration) and factors related with regional economic activity (activity rate and unemployment rate).

7. Conclusions

In this article we have analyzed the bidirectional relationship between intergovernmental transfers and regional inequalities in Uruguay. Our main results points that intergovernmental transfers do not play a significant role to reduce regional income inequalities in Uruguay. In turn, richer departments in Uruguay receive more per capita intergovernmental transfers than poorer departments. The distribution of these resources is also explained by the size of the regions (population) and by the historical size of the RGs.

This empirical evidence is consistent with the lack of territorial cohesion criteria established in clear and priority way in current normative in Uruguay. Although we can observe the presence of objective formula-based of intergovernmental transfers system, the final allocation and incidence of these transfers is not according to what is stated in the formula because there are other intervening factors. Furthermore, the intergovernmental transfer's mechanism itself is often on *ad hoc* basis. In fact, the allocation of intergovernmental transfers on an *ad hoc* basis provides public officials and politicians with an opportunity to wield their influence to the benefit of their constituents.

Also, it's really important to mention that most of the RGs in Uruguay exhibit, increasingly higher dependence on intergovernmental transfers. In this context, the actual scheme of political negotiations between the central government and RGs could be perverse because it would seem that induce developing rent seeking capabilities via intergovernmental transfers, rather than generate genuine capabilities to achieve more sources of revenues. This logic could not be a successful process of generating greater regional cohesion.

Considering this context, becomes really important a major revision of the intergovernmental regional transfers normative scheme in Uruguay in order to achieve to a more cohesion country. In this sense, we believe that the system intergovernmental transfers must rely on a stable, equitable and efficient allocation mechanism. Furthermore, if Uruguay intends to continue advancing in their decentralization process, this new transfer system will provide support for the bulk of expected benefits of decentralization process.

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Appendix

Table A. 1. Administrative division of the República Oriental del Uruguay



Table A. 2 - Departments (regions)

Artigas, Canelones, Cerro Largo, Colonia, Durazno, Flores, Florida, Lavalleja, Maldonado, Paysandú, Salto, San José, Soriano, Río Negro, Rivera, Rocha, Tacuarembó, Treinta y Tres, Montevideo (reference department).

Table A.3 Data definitions and sources

Variable	Definition	Source
Regional inequality (RI)	Coefficient of variation, calculated with average per capita income of households	Continuous Household Survey of the National Institute of Statistics of Uruguay
Intergovernmental Transfers (TR)	Intergovernmental per capita transfers	Office of Planning and Budget - Presidency of the Republic Ministry of Economy and Finance General Accounting Office Social Security Bank
Region GDP per capita	GDP pc of the department (region)	Office of Planning and Budget - Presidency of the Republic
Political Alignment	Dummy variable that takes the value 1 if the political party of RG department at time t is the same as the political party that governs the central state and 0 otherwise	Electoral Court of the República Oriental del Uruguay
Region Population	Department population (in thousands)	Continuous Household Survey of the National Institute of Statistics of Uruguay
Regional government expenditure pc	Total RG expenditure over department GDP	Office of Planning and Budget - Presidency of the Republic

Variable	Definition	Source
Fiscal Decentralization	Percentage representing departmental own revenues in per capita terms.	Office of Planning and Budget - Presidency of the Republic Ministry of Economy and Finance General Accounting Office Social Security Bank
Asset Inequality	Gini index of education: schooling years of department population	Continuous Household Survey of the National Institute of Statistics of Uruguay
Unemployment rate	Percentage of department labour force that is unemployed but actively seeking employment and willing to work	National Institute of Statistics of Uruguay
Activity rate	Percentage of the department population, both employed and unemployed, that constitutes the manpower supply of the labour market, regardless of their current labour status.	National Institute of Statistics of Uruguay
Regional index	Categorical variable that takes values 0, 1 and 2. The value 0 is assigned to departments that show a low potential for regional development, in practical terms is defined as persistently departments that in the period 1990-2012 are shown worst positioned relative to national average GDP per capita. A value of 1 is assigned to departments that hold intermediate positions in the national context. The value 2 is assigned to departments that persistently show the best indicators in the national context and, therefore, are at the top of the ranking between Uruguayan departments	Central Bank of Uruguay
Distance index	Categorical variable takes values from 0 (nearest to Montevideo) to 5 (farthest to Montevideo).	National Institute of Statistics of Uruguay

Table A.4 - Summary statistics

		Mean	Standard deviation	Minimum	Maximum	Observations
Regional inequalities (RI)	Overall	42.0836	8.8980	4.4070	63.5422	N = 396
	Between		6.8731	28.8672	55.1539	n = 18
	Within		5.8686	12.4003	58.2173	T = 23
Central Government Transfers (TR)	Overall	6.5043	0.4703	4.8469	7.5096	N = 396
	Between		0.4085	5.3107	7.1267	n = 18
	Within		0.2514	5.9360	7.1628	T = 23
Log of Region GDP pc	Overall	10.2363	0.2699	9.5864	11.0080	N = 396
	Between		0.2031	9.7768	10.5484	n = 18
	Within		0.1451	9.9115	10.7433	T = 23
Political Alignment	Overall	0.0899	0.2865	0	1	N = 396
	Between		0.0514	0.0476	0.1905	n = 18
	Within		0.2821	0	1	T = 23
Log of Region Population	Overall	11.3686	0.5720	10.1308	13.1730	N = 396
	Between		0.5864	10.1505	13.0681	n = 18
	Within		0.0394	11.1723	11.4783	T = 23
Log of Regional government expenditure pc	Overall	18.4774	0.8392	15.3668	20.4419	N = 396
	Between		0.5374	17.6924	19.8799	n = 18
	Within		0.6563	15.8251	19.3731	T = 23
Fiscal Decentralization	Overall	6.5780	0.4870	5.5404	8.4268	N = 396
	Between		0.4531	5.9930	8.1227	n = 18
	Within		0.2068	5.8158	7.3960	T = 23
Asset Inequality	Overall	36.7411	2.5611	28.3771	42.5625	N = 396
	Between		1.5604	33.2762	39.2486	n = 18
	Within		2.0625	31.8420	41.2813	T = 23
Unemployment rate	Overall	10.9066	4.4435	1.0808	25.5014	N = 396
	Between		1.9939	6.1194	14.5634	n = 18
	Within		3.9975	1.8494	24.9726	T = 23
Activity rate	Overall	11.4022	11.4022	6.4860	17.9441	N = 396
	Between		2.9647	6.4860	17.9441	n = 18
	Within		0	11.4022	11.4022	T = 23
Regional index	Overall	0.8889	0.7380	0	2	N = 396
	Between		0.7584	0	2	n = 18
	Within		0	0.8889	0.8889	T = 23
Distance index	Overall	3.6667	1.5295	1	6	N = 396
	Between		1.5718	1	6	n = 18
	Within		0	3.6667	3.6667	T = 23

Table A.5 - Composition of departmental revenues, selected years
(% of national GDP)

	Own revenues				Intergovernmental transfers				Total revenues			
	1990	2000	2005	2012	1990	2000	2005	2012	1990	2000	2005	2012
Artigas	0,034	0,033	0,032	0,026	0,045	0,020	0,035	0,048	0,079	0,052	0,067	0,074
Canelones	0,162	0,290	0,250	0,207	0,043	0,063	0,123	0,104	0,205	0,353	0,373	0,311
Cerro Largo	0,017	0,024	0,023	0,021	0,037	0,034	0,065	0,056	0,054	0,058	0,088	0,077
Colonia	0,043	0,077	0,066	0,074	0,032	0,035	0,049	0,044	0,075	0,112	0,115	0,118
Durazno	0,017	0,030	0,027	0,027	0,040	0,031	0,060	0,048	0,057	0,061	0,087	0,075
Flores	0,010	0,021	0,021	0,022	0,019	0,017	0,029	0,026	0,029	0,038	0,050	0,048
Florida	0,018	0,031	0,030	0,020	0,030	0,036	0,045	0,040	0,048	0,067	0,075	0,060
Lavalleja	0,022	0,036	0,032	0,024	0,030	0,027	0,044	0,045	0,052	0,063	0,076	0,069
Maldonado	0,199	0,328	0,320	0,282	0,036	0,048	0,080	0,068	0,235	0,376	0,400	0,350
Paysandú	0,047	0,050	0,042	0,040	0,039	0,048	0,063	0,058	0,086	0,098	0,105	0,098
Rio Negro	0,021	0,027	0,023	0,018	0,039	0,030	0,040	0,047	0,060	0,057	0,063	0,065
Rivera	0,046	0,035	0,031	0,034	0,034	0,027	0,051	0,043	0,080	0,062	0,082	0,077
Rocha	0,031	0,065	0,055	0,057	0,033	0,034	0,042	0,050	0,064	0,099	0,097	0,107
Salto	0,067	0,070	0,063	0,057	0,036	0,047	0,062	0,062	0,103	0,117	0,125	0,119
San José	0,028	0,038	0,049	0,040	0,031	0,026	0,046	0,043	0,059	0,064	0,095	0,083
Soriano	0,040	0,037	0,028	0,030	0,066	0,041	0,053	0,050	0,106	0,078	0,081	0,080
Tacuarembó	0,035	0,048	0,038	0,030	0,044	0,037	0,056	0,052	0,079	0,085	0,094	0,082
Treinta y Tres	0,019	0,023	0,020	0,015	0,023	0,022	0,037	0,041	0,042	0,045	0,057	0,056
Uruguay (without Montevideo)	0,856	1,263	1,152	1,024	0,657	0,623	0,955	0,925	1,513	1,885	2,107	1,949

Source: Office of Planning and Budget - Presidency of the Republic

Table A.6 – Composition of departmental revenues, selected years
(% of departmental total revenues)

	Own revenues				Intergovernmental transfers			
	1990	2000	2005	2012	1990	2000	2005	2012
Artigas	48,9	62,3	78,6	34,7	51,1	37,7	21,4	65,3
Canelones	79,2	82,0	67,0	66,6	20,8	18,0	33,0	33,4
Cerro Largo	32,3	40,9	26,0	27,2	67,7	59,1	74,0	72,8
Colonia	57,3	68,8	57,3	62,9	42,7	31,2	42,7	26,1
Durazno	29,7	48,7	31,5	36,3	70,3	51,3	68,5	63,7
Flores	35,4	54,4	42,3	46,6	64,6	45,6	57,7	53,4
Florida	36,6	46,9	39,9	32,7	63,4	53,1	60,1	57,3
Lavalleja	42,3	57,7	42,2	34,7	57,7	42,3	57,8	65,3
Maldonado	84,7	87,3	79,8	80,6	15,3	12,7	10,2	9,4
Paysandú	54,6	50,9	40,1	40,7	45,4	49,1	59,9	59,3
Rio Negro	35,3	47,3	36,6	27,2	64,7	52,7	63,4	72,8
Rivera	57,1	56,3	37,9	43,7	42,9	43,7	62,1	56,3
Rocha	48,4	65,5	57,0	53,3	51,6	34,5	43,0	46,7
Salto	65,2	59,5	50,2	48,0	34,8	40,5	49,8	52,0
San José	47,2	59,2	51,9	48,7	52,8	40,8	48,1	51,3
Soriano	37,5	47,5	34,2	37,1	62,5	52,5	65,8	62,9
Tacuarembó	44,2	56,7	40,8	36,5	55,8	43,3	59,2	63,5
Treinta y Tres	45,4	51,2	35,9	26,1	54,6	48,8	64,1	73,9

Source: Office of Planning and Budget - Presidency of the Republic