

The Impact of Globalization on Subnational Expenditures: Efficiency and Compensation Effects^{*}

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Abstract

The aim of this paper is to study the effects of economic openness and globalization on the structure of provincial government expenditures in Argentina. In particular, we are interested in the effects on social expenditures and its components, as an expression of the welfare state. Much of the existing literature has examined this relationship at the country level. This work contributes to this literature by extending analysis to the subnational sector. A dynamic panel data model is estimated using GMM – both in Differences and in Systems for the 24 jurisdictions of Argentina (23 provinces and the city of Buenos Aires) over the period 1993-2010. The paper includes a measure of globalization adapted from the KOF index proposed by Dreher (2006) which is estimated at the level of sub-national governments. Results indicate that economic openness and globalization have a negative impact on the participation of social expenditures. This is the expected result taking into account the “efficiency” effect versus the “compensation” effect.

JEL Classifications: H71, H72

Keywords: globalization, openness, social expenditures, sub-national governments

Abbreviations: General Agreement on Trade in Services (GATS), World Trade Organization (WTO), Gross Domestic Product (GDP), Per capita Gross Domestic Product (GDPpc), Generalized Method of Moments (GMM), Seemingly Unrelated Regressions Models (SUR)

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1. Introduction

Over the last several decades, the world economy has undergone a process of significant economic opening and globalization. The last thirty years have brought about declines in transportation and communication costs, impressive technological advances, and an era of informatic revolution. These changes, along with policies implemented by the World Trade Organization (WTO) and the General Agreement on Trade in Services (GATS), have encouraged globalization and global economic, social, and political integration. According to Bernanke (2006), the scale and pace of this ongoing episode of global economic integration is without precedent. While in the year 1960 world exports and imports accounted for 24% of the world gross domestic product (GDP), in 2013 participation amounted to 59.6%. Argentina has also experienced these changes and undergone an intense process of economic opening: while in 1960 exports and imports accounted for 11% of GDP, in 2014 they reached 29% (World Bank).

Literature on the impact of economic openness and globalization on the structure of government spending distinguishes two effects: “efficiency” and “compensation”. The hypothesis of “efficiency” holds that due to an increase in the marginal cost of public funds, the government must reduce social expenditures while preserving essential public goods, like security and justice. The “compensation” approach runs in the opposite direction, emphasizing the role of government as insurer, compensating through social welfare programs individuals and/or regions that may be negatively affected by economic openness and globalization. Taking into account the opposite directions of these forces, the literature has also argued that they could be counterbalanced without a significant net effect on the structure of a government’s expenditures.

This paper examines the effects of economic openness and globalization on the structure of provincial public expenditures in a developing economy like Argentina, which is characterized by a high share of the public sector in the GDP and a high share of the provinces in the provision of social expenditures. Most studies that have focused on this trend have examined this relationship at the country level. This work offers a novel contribution by extending analysis to the sub-national sector using an adaptation of the Dreher’s measure of globalization (KOF). A dynamic panel data model is estimated for 24 sub-national jurisdictions in Argentina for the period 1993-2010 using the Generalized Method of Moments (GMM) – both in Differences and in Systems. Estimations are made for the share of the total budget of four types of expenditures (functioning of the state, social services, economic services and debt), but the central focus of this work is the result for social expenditures as an expression of the welfare state. This work uses, on the one hand, a measure of economic openness given by the relationship between exports and GDP. On the other hand, it uses a measure of globalization (KOFA)¹ which takes into account not only economic variables but also social and political ones. Although there is an extensive literature focused on the empirical analysis of this issue, to the knowledge of the authors, there has been no analysis done at the sub-national level.

The most important conclusion of this study is that economic openness and globalization have a negative impact on the share of provincial social expenditures as a net result of the “efficiency” and “compensation” hypothesis. The relationship is positive for functioning of the state and economic services and negative for debt expenditures. Besides the impact on the structure, economic openness and globalization also decrease the size of the total provincial public expenditures and all types of expenditures in terms of GDP. The results are robust to different estimation methods.

¹ See section 5.2 for the definition, methodology and the data sources for the estimation of the KOFA at the provincial level.

The paper is organized as follows. Section 2 presents a brief review of the literature. Section 3 develops a simple theoretical model for the impact of openness and globalization on the size and the composition of public spending. Section 4 performs a descriptive analysis and section 5 deals with the methodology and the estimations. Section 6 concludes.

2. Literature Review

Several important works have studied the effects of globalization on expenditure structures and other variables in the public sector, including the structure of tax revenues (Garrett, 1995; Quinn, 1997; Rodrik, 1997; Swank, 1997), the level of public debt (Azzimonti, de Francisco & Quadrini, 2011), and the size of the public budget (Rodrik, 1998; Heinemann, 2000). While these studies have made important theoretical advances, some ambiguities remain. Empirical evidence has been largely focused on matters relating to tax structures (Schulze & Ursprung, 1999; Heinemann, 2000), and results are still incipient and inconclusive.

Papers that have concentrated specifically on the impact of globalization on public expenditures have distinguished between two effects: “efficiency” and “compensation”. The “efficiency” approach states that the government reduces taxes in order to promote international trade, attract investments, decrease social expenditures, and preserve the functions of essential public goods such as defense, security and justice (Breton & Ursprung, 2002; Sinn, 2004). Under this framework, globalization reduces the range and size of welfare programs (Dreher, Sturm & Ursprung, 2006). The “compensation” approach proposes the opposite: it emphasizes the role of government as insurer, compensating -through social welfare programs- individuals and/or regions that may be adversely affected by economic openness and globalization (Cameron, 1978; Rodrik, 1998). Taking into account the opposite directions of each of these forces, some studies have argued that the approaches could be counterbalanced so that openness and globalization ultimately have no significant influence on the structure of government expenditures.

Schulze and Ursprung (1999); Ursprung (2008); Gemell, Kneller and Sanz (2008) and others have conducted relevant literature reviews. Their findings emphasize a diversity of results. For example, Schulze and Ursprung (1999) focus on those studies that examine the relationship between globalization and the welfare state. The authors conclude that, at the aggregate level, many of these studies find a negative relationship between globalization and the ability of states to conduct independent fiscal policies. On the revenue side, careful interpretation of empirical evidence suggests that the hypothesis that the tax structure has been influenced by the globalization process cannot be rejected; on the expenditure side, there is strong evidence that globalization has led to a change in the level of public expenditure or in its composition. The authors note that these results may be due to the fact that most studies do not disaggregate public expenditure series. According to Meinhard and Potrafke (2011), this approach was used in “first generation literature”, which examined the relationship between globalization and the welfare state (during the 90s).

Meanwhile, “second generation literature” applied more sophisticated techniques, used more disaggregated data and defined different proxies for both variables (globalization and the size of the state). Major studies from this wave of scholarship include Heinemann (2000), Garrett and Mitchell (2001), Dreher (2003), Dreher *et al.* (2006), Kittel and Winner (2005), Ursprung (2008), Gemell, Kneller, and Sanz (2008) and Saenz Rodriguez, Sabaté Sort and Gadea Rivas (2011). Despite their shared approaches, these studies did not reach a consensus on the relationship between globalization and the size of the welfare state.

Dreher *et al.* (2006) is an interesting example of a paper that studies the effects of economic opening and globalization on the expenditure structure, using different variables to measure globalization and two different data subsets depending on the classification of expenditures. The authors conclude that globalization has no effects on the structure of public expenditures coinciding

with the findings of Iversen and Cusack (2000), Heinemann (2000) and Dreher (2003) and suggest three explanations for this result. First, as already noted, the “efficiency” and “compensation” effects may neutralize each other. Second, the impact of globalization on expenditures may be diffuse due to possible indirect effects on different categories of expenditures. Third, the authors believe that, in some cases, the effects of globalization can be exaggerated in popular discussion and may simply not exist.

However, it is possible to find literature both in favor of the “efficiency” approach (Bretschger & Hettich, 2002 for taxes; Busemeyer, 2009) as well as works in favor of the “compensation” approach (Rodrik, 1998; Cameron, 1978; Bretschger & Hettich, 2002 for expenditures).

It also bears mentioning that several works reference country-specific factors that may explain the different structures of spending, for example, democratic countries versus non-democratic countries (Rudra, 2005), political ideology (Potrafke, 2009), number of voters (Ha, 2008), and so on. Studies show evidence based on a sample of OECD countries (Rodrik, 1997; Dreher *et al.*, 2006), Latin American countries (Kaufman & Segura-Ubiergo, 2001; Avelino, Brown & Hunter, 2005; Wibbels, 2006; Segura-Ubiergo, 2007; Azar, 2013), developing countries (Rudra & Haggard, 2005), a select number of countries of Eastern Europe (Leibrecht, Klien & Onaran, 2011) and African countries (Adams & Sakyi, 2012). Another subsection of studies focuses on the effects of globalization for different types of expenditures, such as education or social security (Baskaran & Hessami, 2012; Leibrecht *et al.*, 2011).

In sum, the literature does not conclusively identify the theoretical effects of economic openness and globalization on the composition and/or the size of the public sector. In fact, empirical evidence shows different results. Thus, this paper offers an important contribution to the field by tracing the lineage of these behaviors in a country like Argentina and by using a novel approach: it examines, at the subnational level, the relationship between the composition of public expenditures and economic openness (X/GDP) and globalization (KOFA).

3. A Simple Model of Public Expenditure: Size and Composition

This section presents a simple model of the determinants of the size and the structure of public expenditures. To simplify, a single level of government (or the consolidated expenditure of various levels of government) is assumed. The government provides three goods (G_1 , G_2 and G_3). The benefit of each type of expenditure is separable and the marginal benefits are positive and decreasing. The total expenditure is financed with a single tax, with a positive and increasing marginal cost. X is a vector of exogenous variables that modifies the benefits and the costs. The government maximizes the net benefit given by

$$L = B(G_1, G_2, G_3, X) - C(R, X) - \lambda(G_1 + G_2 + G_3 - R)$$

with the first-order conditions:

$$B'_i = C'_R = \lambda, \quad i = 1, 2, 3$$

where B'_i is the marginal benefit of expenditures, C'_R is the marginal cost of collection and λ is the Lagrange multiplier. Figure 1 represents the equilibrium.

Suppose an exogenous change in X , for example, a movement towards economic openness and globalization. This change will increase the marginal benefit of the expenditures (G_i) destined to compensate people affected negatively by loss of employments, lower wages, fewer hours worked, among other effects ($\frac{\partial(\frac{\partial B_i}{\partial G_i})}{\partial X} > 0$) and it will also increase the cost of collection due to the great

mobility of goods and factors ($-\frac{\partial(\frac{\partial C}{\partial R})}{\partial X} > 0$). In the simplest case in which B'_i ($i = 2, 3$) are not modified, the new equilibrium is presented in Figure 2. The solid lines represent the initial situation and the dotted lines represent the final situation. Expenditures G_2 and G_3 decrease and the result is ambiguous for G_1 and $R (= G)$. In Figure 2 it is assumed that G_1 increases and G decreases.

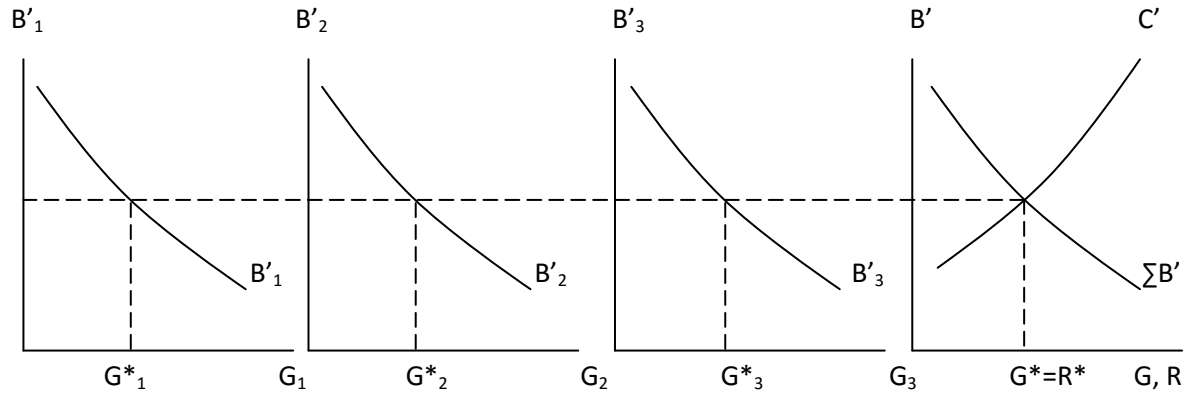


Figure 1

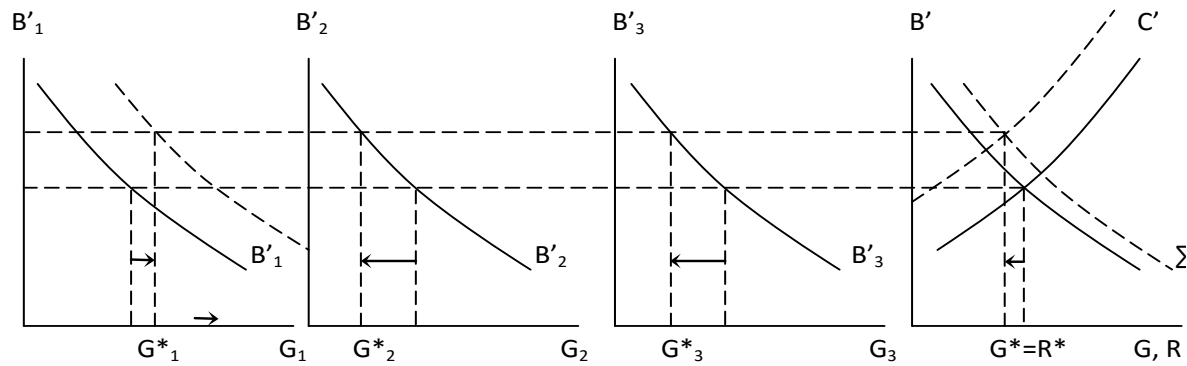


Figure 2

A more realistic alternative assumes that the change in X will affect the three goods, either directly or indirectly. Figure 3 represents a situation in which there is a direct effect of X on G_1 and R , and an indirect effect due to the interdependence among all goods. Assuming that G_1 and G_2 are gross complements, and G_1 and G_3 are gross substitutes, the result for G_1 , G_2 and R is ambiguous since it depends on the elasticities and the movements of the functions. The only unambiguous result is the decrease of G_3 .²

In general, both in Figure 2 and 3, the theoretical results are ambiguous and the net effects need to be determined by empirical research.

² Other factors can modify the size and composition of public spending such as changes in domestic economic policies.

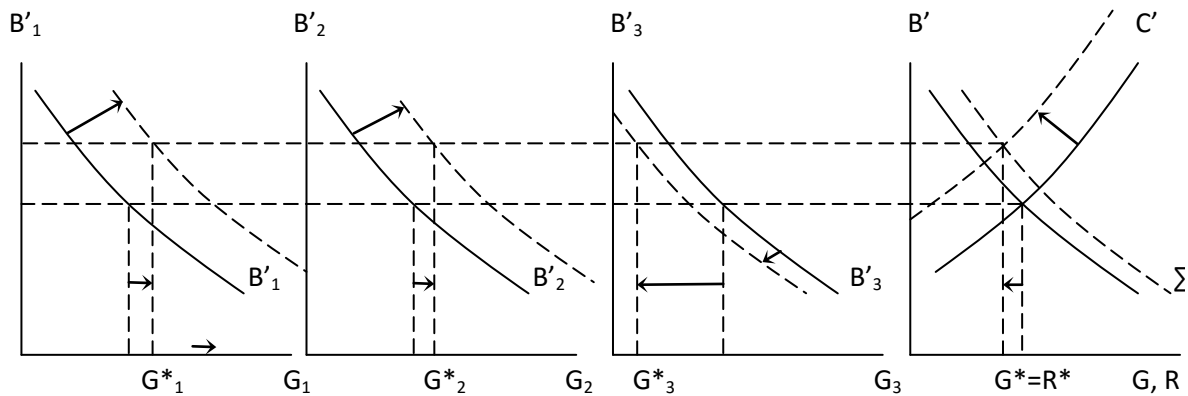


Figure 3

The model reflects the fiscal situation in the provinces of Argentina. The movement of C' is the consequence of the increasing marginal cost of provincial revenues that finance about 50% of expenditures.³ A remarkable change over the last three years is based in an important increase in the own provincial revenue with a rise in the most distortive taxes (those with lower political cost, such as the gross income or turnover tax) and a decrease in the less distortive taxes (those with higher political cost, such as property taxes). Gross income rose from 47% of own provincial resources in 1993 to 75% in 2010. Between those years, property taxes fell from 17% to 6.6%.

Economic openness and globalization increase the demand for social expenditures in the two levels of government since both the nation and the provinces provide this type of expenditure – social expenditures represent 61% of total national expenditures and 70% of total provincial expenditures. Education and health are the main provincial expenditures. The phenomena of unemployment, lower wages and fewer hours worked due to economic openness and globalization increase the demand for these goods when private provision is replaced by public provision.

The increase in the benefits of provincial social expenditures is represented in the figures by the movement of B'_1 . The Nation, faced with the need to finance the increase of its demand (various types of subsidies for (individuals and goods), centralizes fiscal resources that should be shared with the provinces according to the revenue-sharing regimens, and introduces new non-shared taxes. The participation of the provinces in total resources collected by the Nation fell from 41% in 1993 to less than 30% in 2010. Pressures for increasing expenditures in the provinces (movement of B'_1) and for decreasing national transfers, led to the need to modify the provincial tax structure as indicated, which increases the marginal cost of the public funds.

4. Globalization, Openness and Public Expenditure in Argentina

This section presents a brief description of the size and structure of public expenditures in Argentina, their evolution during the 1993-2010 periods and their relationship to the measures of economic openness and globalization already mentioned. It also provides data on the revenue side at various levels of government.

Figure 4 shows the evolution of the provincial public expenditures in terms of GDP, which rose from 13% in the early years of the 90s to 17% in 2010.

³ The rest are financed by transfers from the national government, for which the marginal cost is assumed constant (Wildasin, 1987).

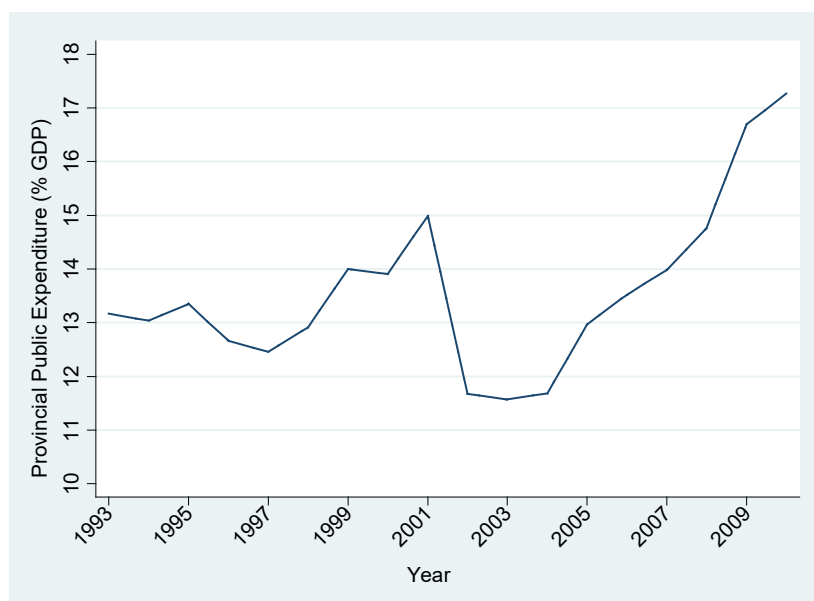


Figure 4. Provincial public expenditure (% GDP), 1993-2010

Source: Own elaboration using data from DCNFP (Department of National Fiscal Coordination with the Provinces), Ministry of Economy

Table 1. Horizontal composition of public expenditures by level of government (%), Argentina 2010

	Consolidate	National	Provincial	Municipal
Total Expenditures	100.00	54.25	38.25	7.51
Functioning of the state	100.00	39.01	47.10	13.88
<i>General Administration</i>	100.00	33.64	38.91	27.44
<i>Justice</i>	100.00	31.62	68.38	0.00
<i>Security</i>	100.00	49.47	50.53	0.00
Social Expenditures	100.00	51.23	41.60	7.17
<i>Education, Culture, and Science and Technology</i>	100.00	22.35	75.38	2.28
<i>Health</i>	100.00	52.20	42.18	5.62
<i>Social Programs</i>	100.00	63.78	26.21	10.01
Expenditures on Economic Services	100.00	73.10	22.75	4.15
Public Debt Services Expenditures	100.00	88.26	11.11	0.63

Source: Own elaboration using data from Directorate for Analysis of Public Expenditure and Social Programs, Department of Economic Policy, Ministry of Economy

The structure of public expenditures by level of government (national, provincial and municipal) is shown in Table 1: almost 54% of total public expenditures correspond to the national government, 38% to provincial and 8% to municipal. The share of provincial expenditures on functioning of the state is 47% (general administration, justice and security), 41% for social expenditures, 23% for economic services and 11% for public debt. The provinces have a more important role than the national government in funding both education (with a share of 75%) and justice (68%).⁴

Data in regards to revenue is presented in Tables 2 and 3. Table 2 shows that total tax collection is highly centralized in the national government (86%) but due to the revenue-sharing system, the net revenue is 65% for the national government and 35% for the provincial governments.

Table 2. Composition of total tax collection by level of government, Argentina 2010

	Consolidate	National	Provincial
Total Tax Collection	100.00	85.77	14.23
Net Revenue	100.00	64.77	35.23

Source: Own elaboration using data from INDEC, Ministry of Economy

Table 3 presents the structure of the net revenue of the provinces. The share of own resources is 40% and the share of transfers from the national level of government is 60%. The gross income tax represents around 75% of own resources, whereas property taxes represent 7%, and other taxes and charges represent 18% of the same.

Table 3. Vertical structure of net revenues of provinces, Argentina 2010

	%	%
Total Revenue	100.00	
Own Resources	40.39	100.00
<i>Gross Income</i>	30.06	74.43
<i>Property Tax</i>	2.96	7.33
<i>Other Taxes and Charges</i>	7.37	18.24
Transfers from the National Government	59.61	

Source: Own elaboration using data from Directorate for Analysis of Public Expenditure and Social Programs, Department of Economic Policy and INDEC, Ministry of Economy

Figure 5 shows the relationship between social expenditures – the most important provincial expenditure, representing 60% of total expenditures - and openness and globalization (KOFA).

⁴ Table A in the Appendix shows the provincial public expenditures (as percentage of total expenditures) by function and the principal socioeconomic variables at sub-national level.

While social expenditures have decreased 8% since 1993, openness and globalization have increased from 5% and 30% in 1993 to 17% and 65% in 2010, respectively.⁵

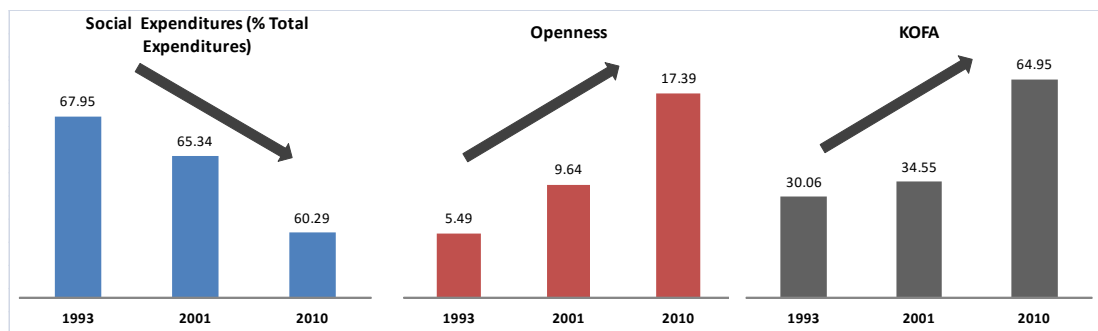


Figure 5. Openness, KOFA and social expenditures

Source: Own elaboration using data from Directorate for Analysis of Public Expenditure and Social Programs, Department of Economic Policy, Ministry of Economy

5. Methodology

This section reviews the econometric approach and the methodology used to estimate the effects of economic openness and globalization on the structure of provincial public expenditures in Argentina. A dynamic panel model is estimated for the 24 jurisdictions (provinces and Ciudad Autónoma de Buenos Aires) over the period 1993-2010, considering the Generalized Method of Moments (GMM) – both in Differences and in Systems.

5.1. Econometric Approach

The dynamic panel model specification takes the following form

$$g_{jit} = \alpha + \gamma g_{jit-1} + \theta O_{it} + \beta X_{it} + \varepsilon_i + \delta_t + \mu_{it} \tag{1}$$

where g_{jit} is the share of expenditure j of jurisdiction i in year t , O_{it} is the logarithmic of economic openness (*exports/GDP*) of jurisdiction i in year t (LA_{it}) or the logarithmic of Argentina Globalization Index (*KOFA*) of jurisdiction i in year t (LK_{it}), X_{it} is a vector that includes other determinants (as *GDP* or population), ε_i are the unobserved province effects, δ_t are the unobserved time effects and μ_{it} are the unobserved random terms. The presence of the lagged dependent variable (g_{jit-1}) is included in order to capture persistence.

According with this specification, it is possible that the shares of expenditures could be affected simultaneously by the same unobserved factors and, as a consequence, the error term could be contemporarily correlated across the equations and determined by the same independent variables. The Seemingly Unrelated Regressions Models (SUR) methodology takes into account this problem and estimates coefficients that are consistent and efficient. However, when the lagged dependent variable is included as an independent variable, it generates an endogeneity problem and the SUR estimation gives a biased result. To overcome this potential bias, Arellano and Bond (1991) derived

⁵ The partial coefficient of correlation between openness and social spending (without considering control variables) was calculated and it showed some bias in favor of the “efficiency” hypothesis (the coefficient is -0.11 and significant at 1%). The same results were obtained using the KOFA globalization index (coefficient -0.06 and significant at 5%).

a Difference GMM estimator to estimate a first-order dynamic panel data model. This method takes first differences to remove the fixed effects by provinces and, at the same time, uses the endogenous lagged variables as instruments. The approach assumes that there is no second-order autocorrelation in the first-differenced idiosyncratic errors. Tests for autocorrelation and Sargan test of over-identifying restrictions are used to determine if the specification is adequate.

Some authors have shown that Difference GMM estimators are biased in short samples in the presence of autocorrelation in the error terms and with many moment conditions (Kiviet, 1995; Blundell & Bond, 1998; Hsiao, Pesaran & Tahmiscioglu, 1999). Biased estimators are also present when the coefficient of the autoregressive variable is very close to 1 (when the series are highly persistent or when they are near to a unit root process), so that the parameter cannot be identified using the moment conditions for equations of first differences. In these cases, Blundell and Bond (1998) show that the estimator will be strongly biased, and particularly so when the period of time is short. If the explanatory variables are persistent over time, their lags in levels have a weak correlation with the first differences and therefore they fail as instruments and may lead to biased results. Arellano and Bover (1995) and Blundell and Bond (1998) propose an alternative estimator, System GMM, which avoids these issues. It combines, in a system, the regression in differences with the regression in levels. The instruments for the regression in differences are the lagged values of the dependent and other explanatory variables and the instruments for the regression in levels are the lagged differences of the explanatory variables.⁶

The advantage of Difference GMM and System GMM versus the usual method for dealing with problems of endogeneity (Instrumental Variables, IV) is that the instruments are endogenous and there is no necessity to find an external instrument. The difference respect to SUR is that the equations are estimated separately.

Considering the characteristics of the model for estimation, we can observe that since the panel is long enough (24 jurisdictions and 17 years) and the coefficients of the lagged variables are not close to one, Difference GMM performs well and can be considered as benchmark. However, estimations by System GMM are also presented as a part of the robustness analysis.

5.2. Openness, Globalization and Other Determinants

One contribution of this paper is the elaboration of a globalization index (KOFA) for the 24 jurisdictions of Argentina (23 provinces and Ciudad Autónoma de Buenos Aires) over the period 1993-2010. It follows the methodology of the well-known KOF index (Dreher, 2006), although the database is of own collection.⁷ Although the KOF index is available on a yearly basis for 207 countries from 1970-2012, there is no prior adaptation of the KOF index to the sub-national level in other countries.

The KOFA index, the same as KOF, considers three dimensions:

- 1- Economic globalization: composed of an openness ratio (provincial exports in relation to provincial GDP) and the stock of provincial foreign debt to provincial GDP;
- 2- Social globalization: represented by the percentage of households with a telephone and the percentage of households with internet;

⁶ Judson and Owen (1999) suggest that using the fixed effects estimator -when the time dimension is not too small relative to the cross dimension- is correct, arguing that the bias, in this case, is not significant. The Monte Carlo experiments in this regard suggest that even with approximately 30 temporal observations, the bias of the fixed effects estimator does not exceed 20% of the true value of the parameter in the worst case scenario (i.e., in the presence of a high autoregressive parameter).

⁷ More details of the methodological issues are available in <http://globalization.kof.ethz.ch/>.

- 3- Political globalization: measured by the number of international treaties signed by each jurisdiction and the number of consulates of foreign countries in each jurisdiction.

Table 4 shows the data sources of each variable and their corresponding weights in the KOFA index. In cases where some information was not available for a point of time, the weight of the remaining variables are reviewed and adjusted.⁸

Table 4. KOFA index: weights and data sources

Dimensions	Weights	Data Source
Economic globalization	36	
<i>Openness ratio- exports as share of GDP</i>	<i>18</i>	<i>INDEC- Provincial Ministries of Economy</i>
<i>Stock of foreign debt (% GDP)</i>	<i>18</i>	<i>DNCFP</i>
Social globalization	38	
<i>Percentage of households with a telephone</i>	<i>19</i>	<i>Census 2001, 2010- INDEC</i>
<i>Percentage of households with internet</i>	<i>19</i>	<i>Census 2001- INDEC</i>
Political globalization	26	
<i>Number of international treaties</i>	<i>13</i>	<i>Provinces Committee of the Argentine Council for International Relations (CARI)</i>
<i>Number of consulates</i>	<i>13</i>	<i>Argentina's Customs</i>

It is worth mentioning that economic openness is measured as exports in relation to provincial GDP while traditionally the literature uses the value of exports plus imports relative to GDP. In this sense, X/GDP is a partial measure of economic openness but it is the only information available at the provincial level.⁹ ¹⁰ Despite its limitations, this partial measure has previously been used as a proxy for economic openness (Li, Squire & Zou, 1998; Ravallion, 2001). In relation to the KOFA index, it includes fewer variables than the KOF index due to limitations in the availability of sub-national data.

The effects of economic openness and globalization on the structure of provincial expenditures are uncertain, depending on the “efficiency” and the “compensation” hypothesis. In some cases, these effects could compensate and neutralize each other.

The structure of provincial expenditures is also determined by other economic and social variables. In order to control for their effects, the specification includes the variables typically used in the literature. The population (POB), a variable which controls for the size of the province, will affect expenditures and its composition depending on the population elasticity resulting from factors such as economies of scale and the degree of congestion in the various types of expenditures. For this variable, Alesina and Wacziarg (1998) find a negative relationship at the country level.¹¹ Per capita provincial GDP (GDPpc) is a proxy for the level of development and wealth of each of the sub-national units. The impact of changes in the GDP depends on the income elasticity of each type

⁸ Table 4 follows the methodology proposed by Dreher (2006). An alternative KOFA index was built replacing the missing values for estimation of the variables according of their average change rate of the years available. The correlation coefficient between the two alternatives is positive and equal 0.77.

⁹ Argentina does not present official estimations of provincial imports (which would have been very relevant to this investigation). Existing import estimations are classified by the point of entry of goods, which differs markedly from their point of destination.

¹⁰ It is also possible to use, as a measure of trade openness, the effective rate of taxation (defined as the level of revenue from taxes on international trade in relation to the volume of international trade) or the evolution of average tariff rates. However, these types of data are not available at the sub-national level in Argentina.

¹¹ Estimates were run using density population instead of population. The main coefficients do not change.

of expenditure. *Ceteris paribus*, it is expected that the share of social expenditures will be higher in the regions of higher wealth.¹² The relationship between own taxes and total expenditures (fiscal correspondence, CORR) can affect the budget structure. In theory, a more cautious allocation of expenditures is expected if the government is financed by its own taxes (which generates political costs of collection) rather than if it is financed by transfers from the central level of government.

Traditionally, the theory of fiscal federalism has studied two types of fiscal interdependency between regions and countries: “tax competition” and “competitive emulation” of expenditures (Case, Rosen & Hines Jr., 1993; Besley & Case, 1995). The idea behind the latter is that governments emulate the size and the type of public spending conducted by their neighbors.¹³ To control for this effect, a variable measuring the structure of expenditures in other provinces is generated and added (IMITATION).¹⁴ A positive relationship between this variable and the expenditure structure of each province is expected.

The lagged dependent variable is included because the composition of the public expenditure only changes slowly over time and its coefficient (γ) must be interpreted as the speed of adjustment parameter. The reason for this inertia may be the costs of adjustment on the part of the private sector or constraints imposed by interest groups (Devereux & Griffith, 2003). As a result, the estimated coefficients of the remaining explanatory variables must be interpreted as a short-run effect. The long-run effect is given by the same coefficient divided by $(1 - \gamma)$ (Dreher *et al.*, 2006).

5.3. Results

Tables 5 and 6 present the estimates for the Difference GMM model and the System GMM model, respectively. The main interest of this work is the effects of economic openness and globalization on the share of social expenditures, but the impacts on the other types of expenditures are also presented. Specifications include, as controls, all the variables mentioned above.

A higher level of economic openness or globalization negatively impacts the share of social expenditures. The coefficients for economic openness and the KOFA index are negative and significant. These results are consistent with the hypothesis of “efficiency” and coincide with conclusions made by Rodrik (1997), Garrett and Mitchell (2001), Kaufman and Segura-Ubierno (2001), Breton and Ursprung (2002), Bretschger and Hettich (2002), Sinn (2004), Kittel and Winner (2005), among others, for developed and developing countries. The coefficient is higher for KOFA than for economic openness, which means that there are other aspects of globalization (social or political aspects) that induce changes in the structure of the expenditures.

¹² Several authors include, as an explanatory variable, the rate of growth of GDP instead of per capita GDP in order to capture the influence of the economic cycle, hoping to find that recessions are accompanied by higher social spending.

¹³ This approach is usual in the literature on competitive emulation of expenditures and tax competition. “State expenditures depend on the spending of similar situated states..... *for our purposes neighborliness does not necessarily connote geographical proximities*. States that are economically or demographically similar have more effect on each other than two dissimilar states” (Case *et al.*, 1993, pp.286-287).

¹⁴ The indicator *imitation* is calculated for the 24 sub-national jurisdictions using the methodology proposed below. The province k within one group of economic-social neighbors (advanced, intermediate, low density and lagged provinces) emulates the remaining provinces j of the group,

$$g_{ikt} = \text{as function of } \sum_{j=1}^n w_{jt} \cdot g_{ijt}$$

The share of expenditure i in the province k in the year t , g_{ikt} , is a function of the share of expenditure i in the remaining j provinces in the year t , g_{ijt} , weighting each by w_{jt} . The weights, w_{jt} , are calculated as the share of the GDP of province j in year t in the total GDP of the provinces belonging to the same group in year t .

Table 5. Openness, Globalization and Structure of Provincial Public Expenditures, Argentina 1993-2010. Difference-GMM

Variables	Model 1 (% Total Expenditure)				Model 2 (% Total Expenditure)			
	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures
G_{t-1}	0.410*** (0.0374)	0.114*** (0.0260)	0.320*** (0.0461)	0.417*** (0.0368)	0.404*** (0.0376)	0.107*** (0.0252)	0.325*** (0.0464)	0.408*** (0.0363)
POB	-0.531 (0.695)	0.984 (1.575)	-2.428** (1.123)	0.578 (0.403)	-0.109 (0.669)	1.110 (1.516)	-2.274** (1.081)	0.450 (0.392)
GDPpc	-2.86e-05 (2.96e-05)	2.27e-05 (6.91e-05)	5.53e-05 (4.71e-05)	-4.11e-05** (1.81e-05)	-2.24e-05 (2.95e-05)	5.87e-05 (6.89e-05)	5.75e-05 (4.69e-05)	-4.29e-05** (1.81e-05)
Log. Openness	0.677*** (0.216)	-1.488*** (0.515)	0.416 (0.347)	-0.352*** (0.133)	0.576** (0.258)	-2.141*** (0.462)	0.586 (0.414)	-0.280** (0.119)
CORR	0.0642* (0.0386)	0.146 (0.0909)	-0.153** (0.0622)	0.0276 (0.0237)	0.0820** (0.0378)	0.122 (0.0878)	-0.148** (0.0610)	0.0179 (0.0233)
IMITATION	0.00175 (0.0865)	0.326*** (0.0654)	0.132 (0.0882)	0.566*** (0.0452)	-0.00310 (0.0865)	0.248*** (0.0657)	0.135 (0.0884)	0.561*** (0.0455)
Observation	384	408	384	408	384	408	384	408
Number of id	24	24	24	24	24	24	24	24

Robust standards error in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.

All the estimations include control for regional dummies.

Table 6. Openness, Globalization and Structure of Provincial Public Expenditures, Argentina 1993-2010. System-GMM

Variables	Model 3 (% Total Expenditure)				Model 4 (% Total Expenditure)			
	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures
G_{t-1}	0.605*** (0.0330)	0.181*** (0.0243)	0.656*** (0.0376)	0.637*** (0.0309)	0.600*** (0.0335)	0.180*** (0.0238)	0.659*** (0.0378)	0.639*** (0.0312)
POB	-0.100* (0.0583)	0.296** (0.126)	-0.0861 (0.0989)	-0.00911 (0.0363)	-0.0828 (0.0580)	0.319*** (0.124)	-0.0892 (0.0979)	-0.0240 (0.0361)
GDPpc	-2.59e-05 (1.59e-05)	2.25e-05 (3.35e-05)	3.95e-05 (2.66e-05)	-4.36e-05*** (1.02e-05)	-2.90e-05* (1.62e-05)	5.27e-05 (3.39e-05)	3.63e-05 (2.69e-05)	-4.16e-05*** (1.05e-05)
Log. Openness	0.556*** (0.151)	-0.839** (0.329)	0.0766 (0.253)	-0.385*** (0.0935)	0.673*** (0.216)	-2.006*** (0.385)	0.305 (0.360)	-0.337*** (0.113)
CORR	-0.00694 (0.0171)	0.193*** (0.0387)	-0.0623** (0.0298)	-0.00401 (0.0110)	-0.0310** (0.0150)	0.203*** (0.0332)	-0.0620** (0.0261)	0.0137 (0.00959)
IMITATION	-0.173** (0.0711)	0.180*** (0.0579)	-0.0705 (0.0940)	0.365*** (0.0432)	-0.180** (0.0714)	0.123** (0.0579)	-0.0671 (0.0942)	0.357*** (0.0439)
Constant	12.04*** (1.984)	38.61*** (3.955)	5.087*** (1.513)	1.302*** (0.310)	12.62*** (1.970)	43.43*** (4.053)	4.731*** (1.525)	0.958*** (0.290)
Observation	408	432	408	432	408	432	408	432
Number of id	24	24	24	24	24	24	24	24

Robust standards error in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.

All the estimations include control for regional dummies.

It is illustrative to mention some examples of particular interest. Some jurisdictions are characterized by an exceptional growth of exports, particularly in the mining sector. In San Juan, where this was the case, openness rose from 1.8% to 63.3% and the KOFA from 1.4% to 56% between 1993 and 2010 while the share of social expenditures fell from 66.8% to 54%. In Catamarca, during the same period, openness increased from 1% to 51.4%, KOFA from 0.8% to 51% and the share of social expenditures decreased from 72.5% to 47.7%. In contrast, in Formosa, an openness index of 2.4% in 1993 dropped to 1.8% in 2010; KOFA rose from 3.1% in 1993 to 31.6% in 2010, and the share of social expenditures rose from 48.4% to 62.3%.

The coefficients of economic openness and KOFA for the expenditures in functioning of the state are positive indicating complementarity. For expenditures on economic services, mainly infrastructure, the sign is positive but not significant. The coefficient for debt services is negative and significant, meaning that higher economic openness and globalization allows higher access to credit markets and consequently decreases debt payments due to refinancing possibilities, lower interest rates, and extended terms.

The coefficient of population (POB) is negative and significant for expenditures on economic services suggesting economies of scale and positive and significant on social expenditures meaning that the elasticity population of the social expenditures is higher than the elasticity population of total expenditures. The fact that GDPpc has a negative effect on the share of public debt expenditures implies that a greater GDPpc generates a higher tax base, less need for credit and therefore a lower amount of debt services. For other expenditures, the coefficients are not significant. The CORR coefficient is positive for social expenditures and negative for economic services expenditures. A possible explanation is that when the participation of own taxes is higher in the financing of total expenditures, there is a better allocation of resources in terms of provision of social goods like education and health, because the expenditures in economic services (capital expenditures) may be affected by oversizing, poor programming and higher prices (Devarajan, Swaroop & Zou., 1996). In Grotz and Llach (2013) a measure related to CORR favors convergence among regions. The imitation effect is positive for all expenditures, favoring the hypothesis that the provinces emulate their neighbors' public expenditure structures.¹⁶ The coefficient of the lagged variable (G_{t-1}) is positive and significant, indicating persistence of the structure of provincial expenditures over time. Its effects are greater than the effects of openness and globalization. Social expenditures demonstrate the least dependence over time; as a result, the share of social expenditures in the provinces varies more from one year to the next as compared to other types of expenditures. Furthermore, the long term effects of all the variables are larger than their short term effects.

The results are robust to the estimation method used. In all cases, the coefficient of economic openness and globalization is negative and significant for the share of social spending, as suggested by the "efficiency" hypothesis.

5.3.1. *Effects on Expenditures in Terms of GDP*

The previous section analyzed the effects of economic openness and globalization on the share of social expenditures as a portion of total expenditures; however, it did not address their impact on the level of social expenditures measured as a proportion of GDP. Even when the relative importance of social expenditures on total expenditures decreases, the absolute value could increase. Tables 7 and 8 show the estimations by Difference GMM and System GMM, using the different categories of expenditures in relations to GDP as dependent variables.

¹⁶ The imitation variable was also built using as weights the share of the per capita GDP of province j in year t in the total per capita GDP of the provinces belonging to the same group in year t . The value, sign and significance of the coefficients are maintained in the estimates when this variable is used. The results are not shown in the paper but are available by request.

Table 7. Openness, Globalization and Size of Provincial Public Expenditures, Argentina 1993-2010. Difference-GMM

Variables	Model 1 (% GDP)					Model 2 (% GDP)				
	Total Expenditures	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures	Total Expenditures	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures
G_{t-1}	0.575*** (0.0272)	0.481*** (0.0352)	0.365*** (0.0267)	0.409*** (0.0400)	0.565*** (0.0402)	0.577*** (0.0286)	0.479*** (0.0355)	0.366*** (0.0274)	0.406*** (0.0402)	0.556*** (0.0402)
POB	2.053** (0.900)	0.296 (0.249)	1.614** (0.726)	-0.199 (0.356)	0.181 (0.180)	0.0576 (0.906)	0.113 (0.241)	0.333 (0.718)	-0.282 (0.342)	0.113 (0.176)
GDPpc	8.71e-05** (3.92e-05)	1.27e-05 (1.05e-05)	7.29e-05** (3.16e-05)	1.95e-05 (1.50e-05)	-1.53e-05* (7.96e-06)	5.81e-05 (4.07e-05)	8.91e-06 (1.05e-05)	5.83e-05* (3.22e-05)	1.81e-05 (1.50e-05)	-1.53e-05* (8.01e-06)
Log. Openness	-2.093*** (0.289)	-0.394*** (0.0774)	-1.796*** (0.233)	-0.143 (0.111)	-0.219*** (0.0583)	-0.180 (0.272)	-0.452*** (0.0921)	-0.700*** (0.215)	-0.136 (0.131)	-0.192*** (0.0523)
CORR	-23.02*** (5.342)	-2.902** (1.393)	-13.78*** (4.275)	-5.896*** (1.989)	-0.795 (1.051)	-31.60*** (5.423)	-3.720*** (1.371)	-20.40*** (4.247)	-6.264*** (1.945)	-1.443 (1.032)
Observation	407	383	407	383	407	407	383	407	383	407
Number of id	24	24	24	24	24	24	24	24	24	24

Robust standards error in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.

All the estimations include control for regional dummies.

Table 8. Openness, Globalization and Size of Provincial Public Expenditures, Argentina 1993-2010. System-GMM

Variables	Model 3 (% GDP)					Model 4 (% GDP)				
	Total Expenditures	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures	Total Expenditures	Functioning of the State	Social Expenditures	Expenditure on Economic Services	Public Debt Services Expenditures
G_{t-1}	0.785*** (0.0227)	0.809*** (0.0255)	0.560*** (0.0250)	0.639*** (0.0348)	0.678*** (0.0334)	0.822*** (0.0237)	0.825*** (0.0257)	0.590*** (0.0260)	0.645*** (0.0351)	0.696*** (0.0338)
POB	0.0887 (0.0822)	0.00998 (0.0225)	0.0857 (0.0654)	-0.00344 (0.0302)	0.00576 (0.0149)	0.00509 (0.0863)	0.000643 (0.0227)	0.0173 (0.0674)	-0.0133 (0.0301)	-0.00128 (0.0151)
GDPpc	9.52e-06 (2.18e-05)	3.05e-06 (5.98e-06)	-6.40e-06 (1.73e-05)	1.39e-05* (8.02e-06)	-6.83e-06* (4.02e-06)	7.44e-06 (2.34e-05)	4.57e-06 (6.14e-06)	-3.58e-06 (1.83e-05)	1.38e-05* (8.18e-06)	-5.06e-06 (4.17e-06)
Log. Openness	-1.704*** (0.216)	-0.278*** (0.0585)	-1.528*** (0.170)	-0.219*** (0.0783)	-0.210*** (0.0387)	-0.774*** (0.263)	-0.299*** (0.0824)	-1.016*** (0.206)	-0.169 (0.111)	-0.196*** (0.0458)
CORR	-17.91*** (2.561)	-3.458*** (0.685)	-15.41*** (1.985)	-3.697*** (0.918)	-1.253*** (0.444)	-8.078*** (2.304)	-2.179*** (0.601)	-7.571*** (1.779)	-2.612*** (0.805)	-0.339 (0.393)
Constant	4.931*** (0.904)	1.067*** (0.249)	6.610*** (0.663)	1.065*** (0.248)	0.0329 (0.116)	5.212*** (1.217)	0.651* (0.342)	6.411*** (0.886)	1.021*** (0.379)	-0.110 (0.161)
Observation	431	407	431	407	431	431	407	431	407	431
Number of id	24	24	24	24	24	24	24	24	24	24

Robust standards error in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.

All the estimations include control for regional dummies.

In Argentina, a more open and globalized economy induces provincial governments to reduce all types of expenditures. In Tables 7 and 8, the coefficients of economic openness and KOFA index on social expenditures are negative and significant. The long term coefficients are larger than the short term coefficients. Again, there is evidence in favor to the hypothesis of “efficiency”. The results are robust to the estimation method.

6. Discussion

This paper studies the effects of economic openness and globalization on the structure of provincial expenditures in Argentina. In line with existing literature, two effects are distinguished: “efficiency” and “compensation”; the former increases the marginal cost of public funds and the latter increases the marginal benefit of social expenditures. A novel contribution of this work is that it estimates these effects for the sub-national public sector in Argentina, using an adaptation of the Dreher’s KOF measure of globalization. A dynamic panel data model is estimated for 24 sub-national jurisdictions in Argentina for the period 1993-2010 using GMM – both in Difference and in Systems. Estimates are made for four types of expenditure (functioning of the state, social services, economic services and debt), but the central interest of the work concerns the concept of social expenditures as an expression of the welfare state.

The central conclusion of this paper is that economic openness and globalization negatively affect the share of social expenditures in the budget. Temporal persistence and emulation have a considerable positive impact. In addition to impacting the structure of expenditures, economic openness and globalization also decrease the quantity of the all types of expenditures in terms of GDP evidence in favor of the predominance of the “efficiency” hypothesis.

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Appendix

Table A. Provincial public expenditure and economic variables, Argentina 2010

Province	Area (Km ²)	Population (million), 2010	GDP pc, 2010	Openness, 2010	KOFA Index, 2010	Functioning of the state (% Total Expenditures)		Social Expenditures (% Total Expenditures)		Expenditures on Economic Services (% Total Expenditures)		Public Debt Services Expenditures (% Total Expenditures)	
						Value	% Change 2010-1993	Value	% Change 2010-1993	Value	% Change 2010-1993	Value	% Change 2010-1993
Argentina	3,745,997	40.52	22,411.26	17.39	64.95	29.96	42.58	60.29	-11.28	8.21	-13.10	1.54	-2.82
<i>Ciudad Autónoma de Buenos Aires</i>	200	3.06	68,342.96	0.44	39.21	15.77	-23.82	77.09	7.93	6.03	-4.81	1.11	-28.16
<i>Buenos Aires</i>	307,571	15.32	21,141.74	17.39	42.52	31.07	146.94	62.74	-25.56	3.54	40.62	2.66	327.35
<i>Santa Fe</i>	133,007	3.29	24,930.82	44.62	50.16	30.09	35.26	65.21	-5.39	4.57	-33.01	0.13	-93.64
<i>Córdoba</i>	165,321	3.40	19,507.77	30.85	45.91	31.11	17.21	60.16	-11.52	7.14	31.59	1.59	3625.25
<i>Mendoza</i>	148,827	1.77	17,282.13	13.68	40.55	38.16	78.53	44.80	-36.81	14.98	221.52	2.05	-32.97
<i>Chubut</i>	224,686	0.47	30,896.82	55.96	55.34	25.88	28.30	59.80	-1.92	13.84	-24.15	0.47	-24.15
<i>Santa Cruz</i>	243,943	0.23	39,979.78	42.53	51.08	29.41	45.26	53.20	-10.31	15.55	-12.80	1.84	-30.20
<i>La Pampa</i>	143,440	0.34	13,261.99	15.61	40.06	24.69	17.17	60.77	3.75	14.32	-13.79	0.20	-94.44
<i>Río Negro</i>	203,013	0.60	19,710.24	10.22	38.70	32.31	40.94	57.27	-2.86	8.12	-55.22	2.28	-
<i>Neuquén</i>	94,078	0.57	34,197.14	4.18	36.27	28.34	36.41	58.02	-6.59	11.96	-27.27	1.65	282.21
<i>Tierra del Fuego</i>	21,263	0.13	47,409.38	15.17	43.26	42.07	164.05	55.18	2.61	2.44	-89.74	0.31	-95.24
<i>San Juan</i>	89,651	0.72	11,439.59	63.31	56.26	32.31	51.20	54.05	-13.38	13.01	-15.03	0.63	-39.09
<i>San Luis</i>	76,748	0.46	16,425.58	17.68	40.28	26.18	5.14	51.72	-21.82	22.07	146.63	0.05	-
<i>Entre Ríos</i>	78,781	1.28	15,233.78	19.62	40.21	27.56	43.61	61.71	-11.07	9.61	-11.54	1.13	102.87
<i>Tucumán</i>	22,524	1.51	7,358.99	20.25	39.64	35.71	69.14	57.63	-13.73	5.70	-49.34	0.95	13.99
<i>Salta</i>	155,488	1.27	9,813.40	20.04	39.22	39.03	121.53	49.81	-21.90	9.45	-49.88	1.69	-
<i>La Rioja</i>	89,680	0.36	10,666.95	17.84	38.88	36.07	93.37	52.31	-28.23	10.35	30.78	1.27	248.31
<i>Catamarca</i>	102,602	0.40	19,993.02	51.37	51.01	40.98	122.74	47.47	-35.19	10.69	37.30	0.86	51.57
<i>Corrientes</i>	88,199	1.04	10,216.34	3.61	34.23	33.53	69.21	59.73	-8.97	5.78	-57.99	0.94	15.66
<i>Jujuy</i>	53,219	0.70	10,986.62	12.04	34.74	43.35	81.14	49.16	-20.04	5.49	-56.90	2.00	9.54
<i>Misiones</i>	29,801	1.11	16,545.71	7.07	34.87	22.26	-21.70	52.56	-9.16	24.09	78.31	1.09	442.30
<i>Chaco</i>	99,633	1.07	9,550.50	8.98	35.65	26.22	65.96	63.63	-12.24	9.10	-19.11	1.04	140.42
<i>Santiago del Estero</i>	136,351	0.88	9,392.89	13.80	36.27	26.95	-2.62	44.91	-31.42	28.09	503.19	0.05	-97.62
<i>Formosa</i>	72,066	0.56	8,578.80	1.85	31.64	27.34	38.43	62.30	11.34	9.57	-53.77	0.79	-78.89
Sd	73,433	2.98	14,259.68	17.28	6.63	6.52	48.09	7.17	12.77	6.33	121.25	0.72	775.82
Mean	115,837	1.69	20,535.95	21.17	41.50	31.10	55.14	56.72	-12.60	11.06	21.48	1.12	221.19
CV	0.634	1.77	0.69	0.82	0.16	0.21	0.87	0.13	-1.01	0.57	5.64	0.64	3.51

Source: Own elaboration using data from Directorate for Analysis of Public Expenditure and Social Programs, Department of Economic Policy, DNCFP and INDEC, Ministry of Economy.

Note: Ciudad Autónoma de Buenos Aires exhibits very unique characteristics as compared to the other jurisdictions (provinces). It is the capital city of the country with a surface of 200 square kilometers and very few exports.