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Abstract

This paper studies the impact of national and provincial budgets on the personal and regional distribution of income in Argentina using budget information for the year 2004, both at the aggregate (national) and disaggregate (provincial) levels. The aggregation of results hides inter-provincial effects because some province may be winner or loser in the regional distribution through the national budget and the revenue sharing regime and also because national and provincial governments use different instruments to redistribute income.

The main results of the paper are summarized as follows. The aggregate effect of the consolidated public budget is a positive impact on the personal income distribution, which results from a combination of progressive expenditures and slightly regressive taxes. The impact is different depending on the province and level of government that exerts the budget. The national budget redistributes income across regions (in eight provinces the difference between expenditures and taxes is negative –they are losers in the redistribution). In spite of that, the national budget improves the personal distribution of income in all provinces. Sub-national budgets have a positive distributive impact, mostly from progressive expenditures (the most important instrument for redistribution), but also from interacting with the revenue-sharing regime, which reinforces progressivity in net-receiving provinces but creates a trade-off between progressivity and (negative) regional transfer in net-financing ones. There is no incompatibility between the redistributive effects of national and provincial budgets.

Resumen

Este trabajo se estudia el impacto del presupuesto consolidado nación-provincias sobre la distribución personal y regional del ingreso en la Argentina en el año 2004, a nivel agregado (nacional) y desagregado (provincias). La agregación de resultados oculta las diferencias interprovinciales porque hay provincias ganadoras y perdedoras en la distribución territorial de los gastos e impuestos nacionales y del esquema de coparticipación de impuestos y también porque los diferentes niveles de gobierno utilizan distintos instrumentos para redistribuir ingresos.

Los principales resultados son que el presupuesto público consolidado tiene un efecto agregado positivo sobre la distribución personal del ingreso, que resulta de la combinación de gastos progresivos e impuestos levemente regresivos. Estos impactos son diferentes a nivel de provincias y del nivel de gobierno que ejecuta el presupuesto. El presupuesto nacional redistribuye ingreso entre provincias (por ejemplo, en ocho provincias la diferencia entre gastos e impuestos es negativa –son perdedoras en la redistribución). No obstante, en todas las provincias la distribución personal mejora. A nivel provincial el impacto distributivo es positivo (principalmente a través de la progresividad del gasto provincial), interactuando con las transferencias nacionales, de modo tal de reforzar la progresividad en las provincias receptoras netas y creando un “trade-off” entre progresividad y transferencia nacional negativa en las financiadoras netas. No hay incompatibilidad entre los efectos redistributivos de los presupuestos nacional y provinciales.

JEL Code: H7, I3

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PERSONAL AND REGIONAL REDISTRIBUTION THROUGH THE NATIONAL AND PROVINCIAL BUDGETS IN ARGENTINA. 2004.

1. Introduction

In a federal system, income distribution is affected by taxes, expenditures and intergovernmental transfers of national and sub-national governments.

Most research in this field focuses on the impact of public budget on either personal or regional distribution of income. Very few papers integrate both effects. This paper studies the impact of the national and provincial government budgets on the distribution of income using budget information for the year 2004, considering the allocation of expenditures, taxes and the national revenue sharing regime at regional (provinces) and personal (quintiles) levels.

The main results of the paper are summarized as follows. At the aggregate level, the national budget has positive impact on the personal income distribution. The positive impact results from a combination of progressive expenditures and regressive taxes. These impacts are different at the level of each province. In eight provinces the difference between expenditures and taxes is negative so that they are losers or net financiers in the geographic redistribution. The net effect of national budget on personal distribution, however, is positive for all the provinces. At the level of provincial budgets, the positive distributive impact of subnational expenditures and taxes interact with the revenue-sharing regime, reinforcing progressivity in net-receiving provinces but creating a trade-off between progressivity and (negative) regional transfer in net-financing ones (mainly the city of Buenos Aires and the province of Buenos Aires). In the latter jurisdictions, however, the net effect of provincial budgets on personal distribution is positive. The Atkinson index of welfare that weighs personal and regional redistribution (through national budget and revenue sharing) is positive, except for very Benthamian welfare functions in two of the net financing jurisdictions. Finally, we do not find incompatibility between the redistributive effects of national and provincial budgets.

The paper is organized as follows. In Section 2, we put the paper in context. In Section 3, we provide the basic definitions and the methodological framework. Section 4 presents the main results. Finally, Section 5 concludes.

2. Context

Income distribution has been, from both a theoretical and historical perspective, one of the most intense research areas in economics. Research has been divided in positive approach, i.e., the study of the laws of income distribution in a capitalist economy,¹ and normative approach, i.e., the study of the instruments to modify such distribution following some value judgment.

¹ Rigorous analysis of the first approach dates from the beginning of the XIX Century, with Ricardo (1817) for whom “the principal problem of political economy was the determination of the laws governing the distribution of national income among the classes of society” (p. 5). The Ricardian theory gave birth to two principles of income distribution: the “marginal principle” and the “surplus principle”. The first principle is adopted by the Neoclassic School (see Hicks, 1932), and the second is adopted by the Marxist School (see Dobb, 1972).

In the normative approach, the relevance of income distribution evolved along two variants (Musgrave, 1996).² In the “service state”, which establishes that the main role of the state is to allow the proper functioning of the market economy by providing a legal system, protection to society from foreign aggressions, public works that –because of size– cannot be provided by the private sector and the basic education to the poor, the tax principles according to benefits and ability to pay were assumed to coincide, so that the distributional impact of fiscal policy would be neutral. Instead, in the “welfare state”, one of the functions of the government is to correct the income distribution which results from market forces.

A first question regarded the level of government that should be responsible for the income distribution task in a federal (multilevel) public sector: national, provincial or local, or all of them, in which case a second question would be how to share this responsibility. The early answer to both questions was clear. Musgrave (1959) and Oates (1972) concluded that the central theme of fiscal federalism is found in the proposition that the provision of services should be assigned among the different levels of government, but the stabilization and distribution branches should be concentrated at the national level. According to this point of view allowing redistribution at sub-national level has two problems (Tresch, 2002). One arises from the mobility of people. Rich people have an incentive to move to other jurisdictions with lower taxes and poor people have an incentive to move to jurisdictions with higher benefits. These migrations tend to frustrate the redistribution at the cost of a lower per capita income (this is the “competition problem”). The other problem is the incompatibilities that can arise, even without mobility, when more than one level of government redistributes income (the “incompatibility problem”). “Suppose local government L wants to effect a redistribution from citizens in group A to citizens in group B, but the national government prefers a net redistribution from group B to group A. One can imagine an endless chain of redistributions as each government tries to have its way. Of course, this sort of game must be ruled out, and the most obvious way is to deny one government the right to redistribute” (Tresch, 2002, p. 842).

A third question regarded the relevant dimension of distribution: Should the aim of the public policy be the regional distribution of income, the personal distribution or both? The answer in this case was that personal distribution of income should be the matter of concern, because the arguments included in the welfare function are individuals’ utilities. Moreover, there was recognition of a possible failure in the regional distribution principle. In particular, it could be the case that regional redistribution could generate a result in which rich people from poor regions be subsidized by poor people from rich regions.

Empirical research followed these guidelines. The leading focus of such research was the impact of national or consolidated public budget on personal income distribution, while the regional dimension was relegated to play a supporting role. As a consequence, the analysis of the relationship between personal and regional dimensions of income distribution was even less explored.

The early propositions of allocating income distribution policy to the national government and focusing attention on personal distribution of income were both subject

² There is a third approach, that goes back to positive theory and considers a “flawed state”, which pursues the objective of bureaucrats and/or politicians that capture the fiscal apparatus fulfilling own goals rather than general interest (Brennan and Buchanan, 1977, 1978).

to challenges. First, the literature that followed recognized the existence of constraints for decentralized redistributive policies, because of mobility of goods and factors across regions (Oates, 1972, King, 1984, Brown and Oates, 1987). But, on the theoretical side, Pauly (1973) justified the sub-national government interventions under the assumption of altruistic rich households (i.e., their utility depends on both own and poor's disposable income). Wildasin (1992) analyzed the effect of the growing factor mobility as a restraining factor to local redistributive policy, not only among regions within a country but also among countries. As a result, rich households would accept to transfer part of their income to low-income neighbors. Bird (1995) raised another point concerning the functions of the different levels of government by stating that "A government, whether local or central, that is not concerned with distribution is less a government than simply one of the many alternative organizational structures that may be used to deliver certain services". Recently, Tresch (2002) set up a hierarchically nested structure of welfare functions to argue that "It is no longer true that redistributions among people at the national level are the 'preferred alternative', as Oates claimed. In the alternative model presented here, only the lowest level government redistributes among the people. The higher governments use grant-in-aid to other governments exclusively in their redistributions." (p. 851).

On the empirical side, the evidence points to the existence of a significant impact of sub-national governments' budget on regional distribution of income, especially due to revenue-sharing regimens. Moreover, country Constitutions and legal documents include dispositions that define regional distribution of income as an objective to fulfill.³ When both levels of government share the redistributive function the "incompatibility problem" must be empirically studied.

First efforts to measure the impact of fiscal policy on income distribution concentrated mainly on tax incidence (among others, Musgrave and Thin, 1948, and Musgrave, 1964). However, Musgrave (1964) acknowledged that "... any meaningful theory or policy of public finance must ultimately combine the issues posed by the two sides of the budget. This, indeed, is the cardinal principle of the economist's view of public finance. The distributional implications of expenditure policy, therefore, pose an important further problem."

Argentina has been a fruitful research field in the area of income distribution and the impact of public policy. Herschel (1963) is the first study that estimates regional and personal distribution of income and the impact of fiscal policy. Dieguez and Petrecola (1979) study in detail the determinants of income distribution in the Great Buenos Aires. Petrei (1989) analyzes the case of public expenditure in education, health, social security, housing and water and sewerage in five Latin-American countries (Argentina, Costa Rica, Chile, Dominican Republic and Uruguay). Dieguez, Llach and Petrecola (1991) estimate of the net subsidy associated to the Argentine social policy, disaggregating expenditure by the most relevant categories.

³ Some examples of Constitutions and legal documents that define the regional distribution of income are Canada ("Parliament and the Government of Canada are committed to the principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation", Constitutional Act, 1982) and Argentina ("The distribution between the Nation, the Provinces and the city of Buenos Aires, and among them [...], will be fair, solidary and will give priority to the achievement of an equivalent level of development, life standard and equal opportunities throughout the national territory" National Constitution of 1994, Art. 75° inc. 2). The regional cohesion policy, included in the Project of the European Constitution in 1994, is another case.

Several papers analyze in detail aspects of the impact of social expenditure on personal income distribution taking as a geographical unit Argentina or certain provinces (Ahumada *et al.*, 1994, Flood *et al.*, 1994, Gasparini and Porto, 1995, Gasparini *et al.*, 2001, Porto and Cont, 1998, Ministry of Economics (1999, 2002), Bertranou and Bonari, 2003, CEDLAS-DGSC, 2004, and Feldman and Filc, 2007), or concentrating on specific expenditures (Paqueo and Lee, 2000). Others study the existence of complementarities or trade-offs created by fiscal policy on personal and regional distribution of income in a federal system. For example, Porto (1990) and Porto and Sanguinetti (1993, 2001) find evidence of a strong regional redistribution throughout the revenue sharing regime. Porto (1990) and Artana and Lopez Murphy (1995) suggested opposite effects of government budgets on personal and regional distribution of income in Argentina. Porto and Cont (1998), Cont, Peluffo and Porto (2009) and Cont and Porto (2010) are antecedents of this paper.

Finally, we make a point brought by Padovano (2007). The scope of the “fiscal residuum” methodology –used in this and many other papers– only registers the “first round” of regional redistribution, but does not capture the successive rounds set in motion by the first. These successive rounds driven by market forces may be of greater magnitude than, and eventually of opposite sign to, the first round. For example, interregional transfers could affect the functioning of factor and product markets and, in this way, reverse the results of the first round. On the one hand, the transfers can increase the cost of labor in poor provinces affecting their relative competitiveness in the national market. If the effect of transfers on private demand of labor in these provinces is negative, they will become more and more transfer-dependent. On the other hand, as transfers subsidize income rather than production in poor provinces, firms in richer and more productive regions will see the demand for their products indirectly subsidized. See Capello *et al.* (2009) for an application to Argentina.

3. Methodology

We follow the traditional methodology of benefit-incidence analysis from, among others, Musgrave and Thin (1948), Musgrave (1964), and Reynolds-Smolensky (1977). We apply the methodology to consolidate –national and provincial– public budget in several steps. First, we must provide an ordering of individuals according to a measure of *ex ante* income distribution (that is, income before national and provincial fiscal policies). Second, we must identify and distribute both national and provincial expenditures and revenues to each individual or group of income in each province. In this step we distinguish between source and destination in the revenue sharing regime. Third, the *ex post* income is the initial income after adding expenditure benefits and deducting net taxes. The final step is the comparison between the *ex ante* and *ex post* distributions of income, i.e., those before and after fiscal policies of both levels of government, with some methodology. Given that the objective of this paper is to study the impact of fiscal policy on the regional and personal distribution of income, we use the Gini index of inequality, the Atkinson index of inequality, and the calculation of the welfare level in each province by using the Atkinson index of welfare.

3.1. Income and distribution of income

We present income distribution in each province by dividing households into five groups (quintiles) of population. We take the distribution of per capita household income from the Permanent Household Survey (*Encuesta Permanente de Hogares*), or PHS, published by the National Bureau of Statistics (INDEC) for year 2004 (average of for quarterly surveys), and expand the reported incomes by a factor such that the total

income from the PHS equals the Gross Domestic Product (GDP, which equals \$11,700, or approximately US\$3,900, per capita).⁴ We allocate the GDP by jurisdiction according to estimates by ECLAC, in order to determine total group income in each province. Finally, we divide the expanded income by group population to determine per capita income by quintiles in each province, which is the starting point to assess income distribution.⁵ Table A.1 in the Appendix presents the per capita income and income distribution in each province. Differently from the mainstream in income distribution analysis, we do not correct this income by equivalent adult. The main reason is the purpose of the study, which adds expenditures and taxes to get an ex post income.⁶

3.2. National and provincial budgets and their distribution

We study the impact of the national and provincial budgets on the distribution of income using budget information for year 2004,⁷ considering the allocation of expenditures, taxes and the national revenue sharing system at regional (provinces) and personal (quintiles) levels.

The national budget represents around 46% of nation-province consolidated public expenditures and 76% of taxes, excluding social security according to data from the Secretariat of Treasury.⁸ The national budget ended with a surplus in year 2004, and we made changes to make it balance, following a principle that current taxes will be spent in the future (distributed by categories as in the year under study) and that current deficits will be closed by future taxes (according to the same tax scheme as in the year under study).⁹ This assumption introduces a conflict in the interpretation of debt services as a public expenditure with distributional impact, and therefore it is also excluded from the analysis.¹⁰ The statistics for national and provincial revenues and

⁴ We report the information in domestic currency (argentine pesos). The exchange rate to the US dollar was around \$3/dollar in year 2004.

⁵ Throughout the paper we treat gross product and ex ante income as the same. There is a significant difference between them depending on the subject under study. In this case, we consider appropriate to use GDP as a measure of ex ante income because we deduct taxes and add expenditures to obtain ex post income. In others cases, it may be more appropriate to use a definition of household net income (that is, after taxes and subsidies).

⁶ This kind of correction may lead us to take many other factors into consideration, such as, for example, how to convert a peso spent in public administration or education by “equivalent beneficiary”, in addition to all the assumptions done to distribute such expenditures following a benefit principle.

⁷ We approximate the solution to the impact of national fiscal policy on income distribution as the estimation, for each income group, of the income before and after fiscal policy, both at the same existing equilibrium.

⁸ The reason to exclude the social security system is that these payments are, in a significant part, devolution of previous beneficiary contributions. Additionally, the location of the beneficiaries is not a policy variable. The redistributive impact of the system is beyond the scope of this paper.

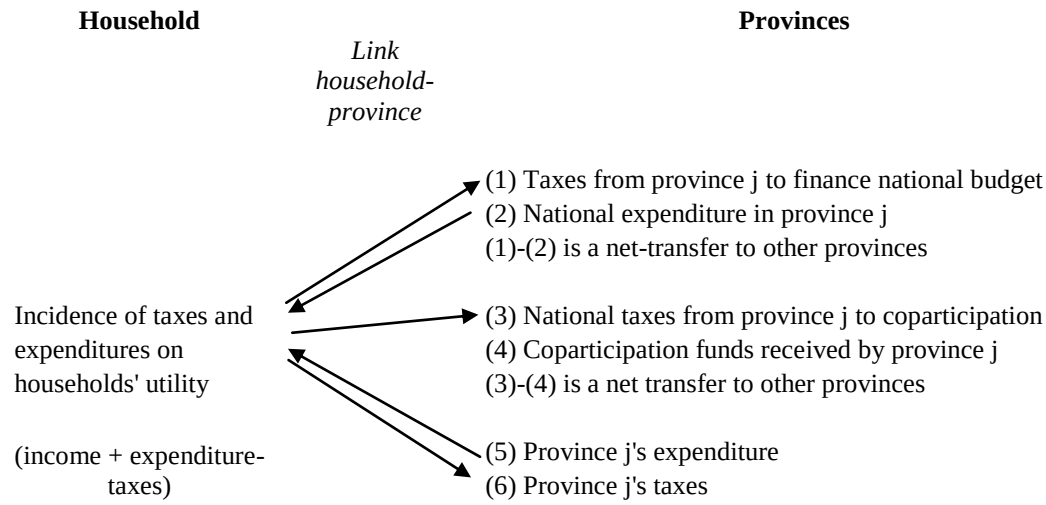
⁹ Specifically, in the case of the national budget we increased expenditure proportionally across provinces and categories. Provincial budgets ended with a surplus with the exception of two provinces. We made the following changes to make it balance. Since the surplus balance still held even excluding two provincial-revenue lines (revenues from asset sales and property income), we closed the balance, first, by deleting these two revenue lines, and second, by increasing provincial expenditure proportionally by categories. In two provinces, Formosa and Tucumán, we closed the deficit by increasing provincial taxes proportionally to close the gap (in those provinces, asset sales and property income were irrelevant).

¹⁰ There are two plausible reasons to exclude public debt services. The first one is that the concept of beneficiaries differs significantly from the other expenditure categories (receiver of a payment vs. receiver of a benefit). The second one is that, in case of considering the direct beneficiaries of debt interests, it is not clear whether they reside in the country or abroad. It must be recalled that, following the methodology of this paper, these services correspond to a certain debt issued in the past, which was used

expenditures are reported in Tables A.2, A.3 and A.4, and are explained in the Appendix.

Figure 1 may be helpful to understand the fiscal flows at the provincial level. The national government spends funds in, and collects taxes from, each province and household (flows (1) and (2) in the Figure), redistributing resources both at personal and geographical dimensions. The effect of provincial budgets on regional and personal income distribution arises through the interaction of (3) to (6) in Figure 1. By construction, total national transfers by source (3) equal total national transfers by destination (4), but some provinces are net receivers (that is, they receive in transfers more than they contribute through national taxes collected in their jurisdiction) and others are net financers.

Figure 1: Source and destination of funds in provincial budgets.



Note: surplus or deficits are assumed to be zero.

As a final step, we calculate an *ex post* income. By following the standard procedure, the allocation of expenditures and taxes among quintiles in a province exhaust the national and provincial budgets.

3.3. Conceptual framework for measurement¹¹

The measurement of the impact of fiscal policy on income distribution can be done as a standard comparative statics exercise between *ex ante* and *ex post* income distributions, where the *ex post* income is the *ex ante* income plus expenditure less taxes, for every household in each province. In this paper fiscal policy includes expenditures and taxes at the national and provincial levels of governments, which are inter-linked through the national revenue sharing regime.

Formally, consider a province n with i households (labeled $n=1, \dots, N$ and $i=1, \dots, I$, respectively). For simplicity, $I=5$ and $N=24$ reflect the case of quintiles in the Argentine provinces). The national government collects revenues from (c) taxes subject to sharing

to finance some particular expenditure, and that in the year under study additional taxes were collected to pay for such services.

¹¹ Part of this framework is adapted from Ahumada *et al.* (1996).

regimes (VAT, income taxes, excise taxes, etc.), labeled t_{cn} , of which retains a share β , and other (r) non-shared taxes (taxes on exports), indexed with the subscript t_{rn} , to finance national expenditure. National expenditures are allocated by categories (k) and provinces, i.e., g_{Nkn} . The contribution of the province n to the revenue sharing regime is $(1-\beta) \sum_c t_{c,n}$ and receives (d_n). Provincial governments receive these transfers (d_n) and also collect provincial taxes (t_{sn}) to finance provincial expenditures, also allocated in j categories, g_{Pjn} .

The national budget is

$$\sum_n \sum_k g_{Nkn} = \sum_n \left\{ \beta \sum_c t_{cn} + \sum_r t_{rn} \right\}$$

Province n 's budget is

$$\sum_j g_{Pjn} = \sum_s t_{sn} + d_n$$

Let m_{in} be the individual (quintil) income before national and provincial fiscal policies. The individual benefits from the national (provincial) budget depending on the distributional patterns of taxes and expenditures. Let national expenditure g_{Nkn} be distributed according to weights γ_{ikn} , provincial expenditure g_{Pjn} be distributed with weights γ_{ijn} , national taxes t_{cn} and t_{rn} be collected with weights τ_{icn} and τ_{irn} , and provincial taxes with weights τ_{isn} .¹² Finally, let c_{in} be the ex-post individual (quintil) income in province n , which, by construction is,

$$c_{in} = m_{in} + \sum_k \gamma_{ikn} \cdot g_{Nkn} + \sum_j \gamma_{ijn} \cdot g_{Pjn} - \sum_c \tau_{icn} \cdot t_{cn} - \sum_r \tau_{irn} \cdot t_{rn} - \sum_s \tau_{isn} \cdot t_{sn}$$

or put more simply,

$$c_{in} = m_{in} + g_{iNn} + g_{iPn} - t_{iNn} - t_{iPn} \quad (1)$$

Personal income distribution is altered if $c_{in} \neq m_{in}$. It is clear from the description here that both national and provincial governments, by choosing the levels and mix of taxes and expenditures, affect personal income, as it is summarized in (1).

Regional income distribution is altered through two channels. The first one comes from the tax-sharing regime associated to the provincial budgets. Provinces contribute to national taxes for an amount $a_n = (1-\beta) \sum_c t_{c,n}$, but receive d_n through the tax-sharing regime (cum discretionary national transfers). A province is a “net financier” or “loser” (“net receiver” or “winner”) in the revenue sharing system if $a_n > d_n$ ($a_n < d_n$), taking into account that $\sum_c a_n - \sum_c d_n = 0$. The second source of regional redistribution comes from the national budget. Taxes collected in a province are not necessarily spent in the same province. Therefore a province is a net financier (net receiver) in the national budget if

$$g_{Nn} < \beta \sum_c t_{cn} + \sum_r t_{rn} \quad (2)$$

The effects of national and provincial fiscal policies on income distribution are summarized as follow:

¹² The matrix T_{Nn} ($i \times c+r$) summarizes the national tax weights; the matrix B_{Nn} ($i \times k$) summarizes the national expenditures weights; the matrix T_{Pn} ($i \times s$) summarizes provincial tax weights and the matrix B_{Pn} ($i \times j$) summarizes provincial expenditures weights. In all the cases, the sum of the weights adds one.

(a) Level effects on income in each province (regional redistribution):

1. Redistribution through the revenue sharing system (a_n vs d_n);
2. Redistribution through the national budget (expression (2)).

(b) Effects on the personal distribution of income:

3. Distribution among quintiles i ($i = 1 \dots 5$) in province n of the benefits of national expenditures (g_{iNn}).
4. Distribution among quintiles i ($i = 1 \dots 5$) in province n of the benefits of provincial expenditures (g_{iPn}).
5. Incidence on quintil i in province n of national taxes (t_{iNn}).
6. Incidence on quintil i in province n of provincial taxes (t_{iPn}).

The household (quintil) i in province n benefits from fiscal policy (at both levels of government) if $c_{in} > m_{in}$, which results from the interaction of national and provincial expenditures and taxes, and the revenue sharing regime.

When analyzing income distribution, we will use taxes and expenditures incorporated in equation (1) to calculate Gini coefficients of income inequality. For a given jurisdiction (country or province), this coefficient is calculated as

$$G = 1 + \frac{1}{I} - 2 \sum_{i=1}^I \frac{(1-i) \bar{y}_i}{I^2 y^p} \quad (3)$$

where income groups are ranked from lowest ($i=1$) to highest ($i=5$). $I=5$, given that we work with quintiles, $y = m, c$ (that is, ex ante or ex post income), and y^p is the average income of the group under analysis. To assess the impact of fiscal policy on income distribution we use the indicator proposed by Reynolds and Smolensky (1977). The application of this indicator to a particular jurisdiction is

$$RSp = - \frac{1}{1 - t_N - t_P + g_N + g_P} \left(K_N Kt_N + t_P Kt_P + g_N Kg_N + g_P Kg_P \right) \quad (4)$$

where t_N (t_P) is national (provincial) tax effort, g_N (g_P) is national (provincial) expenditure, all relative to income, Kt_N (Kt_P) is the Kakwani index of national (provincial) taxes (equal to the difference between the concentration of taxes and (3)) and Kg_N (Kg_P) is the Kakwani index of national (provincial) expenditures (equal to the difference between (3) and the concentration of expenditures). For the aggregate of N jurisdictions the RSp is

$$RSp = - \left(K_N Kt_N + t_P Kt_P + g_N Kg_N + g_P Kg_P \right)$$

where, by construction, $t_N + t_P = g_N + g_P$.

We are also interested in the distinction between the regional and personal distribution of income. For that reason, we also calculate the (ex ante and ex post) Atkinson index and evaluate significant differences with the Gini coefficient. The Atkinson index is defined as

$$D = 1 - \frac{y^*}{y^p}, \quad \text{where } y^* = \left(\frac{1}{I} \sum_{i=1}^I y_i^\alpha \right)^{1/\alpha} \quad (5)$$

where α is the inequality aversion coefficient, which takes values less than or equal to 1 (with a corresponding transformation if $\alpha=0$). To focus on the welfare effect of fiscal policy, we calculate the net effect using a per-capita Atkinson-like welfare function.

$$W(y_1, \dots, y_n) = \left(\sum_{i=1}^n y_i^\alpha \right)^{1/\alpha} = \left(\sum_{i=1}^n y_i^p \right)^{1/p} \quad (6)$$

where $y=c, m$ and the sum of weighted incomes corresponds to households in a province or in a country.

Many issues arise from the effect of public policy on income (1) and its application to (2)-(6). First, they reveal the importance of considering the regional factor in an analysis of impact of fiscal policy on income distribution, not only because each region may have different ex ante income, but also because they may have their own incidence patterns for national taxes and expenditures, in addition to different level and mix of expenditures (g_{Nkn} and g_{Pjn}), taxes (t_{cn} , t_{rn} , and t_{sn}), and the position of net financier or net receiver through national budget (equation (2)) and the revenue sharing regime ($d_n < = > a_n$).

Second, a full analysis of equation (1) must include all expenditures and taxes to assess the impact of fiscal policy on income distribution. After the rupture of the principle of coincidence between benefit and ability to pay, both theoretical and empirical studies engaged in a first stage of partial analysis (biased to taxes), but later it was recognized that the tax and expenditure problems could not be treated separately. From the distributional standpoint, it is of little worth to count with a progressive expenditure if it is financed with very regressive taxes. Along the same lines, a social expenditure (the focus of many research papers on public policy and income distribution) may be progressive but total expenditure may be regressive, turning the partial analysis incomplete and misleading. In fact, the theory of state failure visualizes that expenditures, or a share of them, are tilted towards groups that take over the fiscal apparatus. Although it is difficult to quantify this effect beyond ad hoc assumptions on leakages, the inclusion of all expenditures –with their own distribution pattern– may help to understand the problem in a more complete way. For the same reasons it is necessary to include all taxes (legislated and non-legislated) since the tax structure (tax base, deductions, exemptions, and tax rates) are the result of a political-economics equilibrium. Then we must consider the *regional dimension*, because personal income, taxes and expenditures are not uniformly distributed across regions.

In sum, this paper estimates the impact of fiscal policy on income distribution following the standard literature, calculating some of the typical progressivity indexes for expenditures, taxes and distributional impact. Then, it advances in two directions, usually omitted by the standard literature: (i) the consideration of both sides of the budget –revenues and expenditures– for the two levels of government considered; (ii) the consideration of the regional impact of national budget and the revenue sharing system.

4. Results

4.1. Preliminaries

Tables A.1 and A.2 in the Appendix summarize average income, national and provincial expenditures and revenues (those necessary to finance national expenditure and the

revenue sharing system). Provinces in Argentina are different in many dimensions. For an average per capita income of \$11,710, the richest province's per capita income (Santa Cruz, with \$34,743) is almost eight times the poorest one (Formosa, with \$4,377).

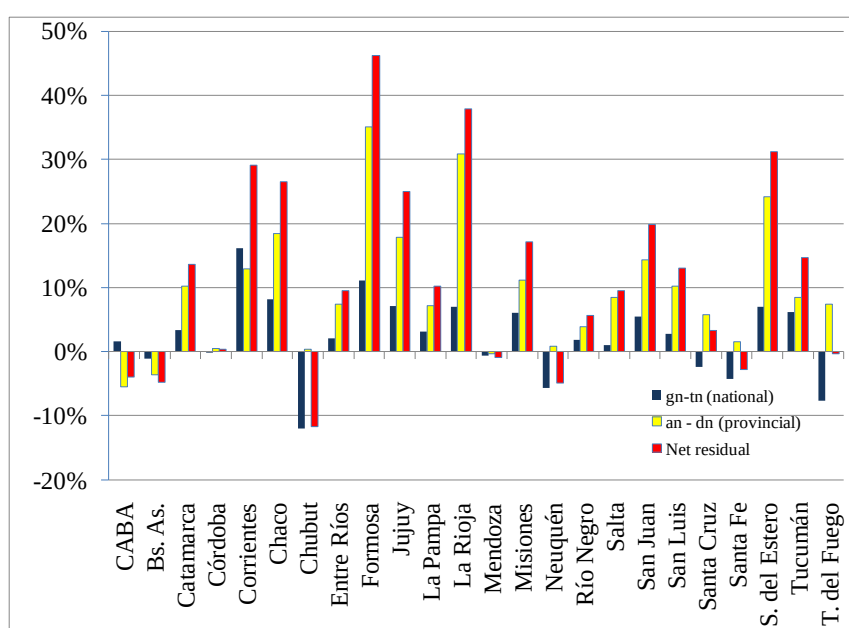
These differences are also present in expenditures and revenues. National expenditure allocated by province ranges from more than 20% of provincial income (in Corrientes and Formosa) to 5% of provincial income (in Tierra del Fuego and Neuquén). Provincial expenditures also show large differences among provinces. The consolidated expenditure averages 22% of income, ranging 14% of income in the City of Buenos Aires to more than 60% in Formosa y La Rioja.

From the revenue side, Chubut outstands with a national tax burden (a part of which finances national expenditure and the difference goes back to provinces through revenue sharing) of 25% of income, followed by San Juan, Salta and Santa Fe, with a burden of nearly 20% of income. In addition to national taxes, the provinces collect local taxes ranging from very low levels of nearly 3% (Corrientes and Córdoba) to over 11% (Santa Cruz and Neuquén). The consolidated revenues average 22%, but display less regional variance, ranging from 10% in Catamarca to 35% in Chubut.

4.2. Regional redistribution: The effects of national budget and the revenue sharing regime

Table A.3 shows regional transfers through national budget and the tax-sharing regime. Figure 2 summarizes regional differences due to these two mechanisms. In order to calculate the residuals, we decompose national revenues by source (reported in Table A.2) in those that finance national expenditure (column (5) in Table A.3) and those that revert to provinces through the revenue sharing system (column (2) in Table A.3)

Figure 2: Regional redistribution through the national budget and the revenue sharing regime (% of provincial income, 2004).



Seven jurisdictions are identified as net financers (see column (8) of Table A.3), from a combination of eight net financers from the national budget and three net financers from the tax sharing regime. The provinces of Buenos Aires and, to a little extent, Mendoza are losers at both levels of budget –national budget and revenue sharing– (this can be observed in columns (4) and (7) of Table A.3). In Chubut, Neuquén, Santa Fe and Tierra del Fuego, the regional deficit through national budget is not compensated by the regional surplus through the provincial budget, while the opposite case occurs in the city of Buenos Aires. On the other hand, two more cases (Córdoba and Santa Cruz) are net receivers, as the result of being losers in the national budget but winners through revenue sharing.

A new ranking of provinces emerges after the execution of national and provincial budgets (see columns (1) and (9) in Table A.3). Most remarkable changes are the relative improvement in Corrientes, Formosa (both in three positions) and Jujuy (two positions) and the relative worsening of Misiones, Tucuman (both in three positions) and Salta (two positions). Twelve provinces move in just one position.

4.3. Personal redistribution: The effects of national and provincial fiscal policies

Figure 3 reports ex ante and ex post values for income distribution and per capita income at the national level, while Tables A.4 and A.5 present the same information at the provincial level (Table A.5 also reports the distribution of revenues and expenditures by quintiles).

Figure 3: Argentina: Effects of national and provincial fiscal policies. Ex ante and ex post income distribution and per capita income (quintiles). Year 2004.

Income distribution (quintiles)	Quintil 1	Quintil 2	Quintil 3	Quintil 4	Quintil 5	Total
Income distribution (share per quintil)						
. ex ante	3.0	6.6	11.3	22.7	56.4	100
. ex post	5.5	8.6	12.6	23.0	50.2	100
- contrib. national budget	0.9	0.6	0.6	0.4	-2.4	
- contrib. provincial budget	1.7	1.3	0.7	0.0	-3.7	
Per capita income (pesos per quintil)						
. ex ante	1,780	4,043	6,816	12,363	32,764	11,710
. ex post	3,288	5,234	7,605	12,555	29,187	11,710
- contrib. national budget	520	371	349	191	-1,403	
- contrib. provincial budget	988	820	440	1	-2,174	

Source: own elaboration. The ex ante income distribution aggregates households from the nth quintil in Argentina (mixing different quintiles from different provinces). The ex post income distribution is calculated based on household income after having added expenditures and subtracted revenues from the jurisdiction in which the household resides.

At the aggregate level, the net effect of national and provincial budgets on income distribution is a clear shift of income-value from the highest-income quintil to the other lower-income quintiles. At the provincial level quintiles 1st to 3rd are better off in all provinces. The 4th quintil is worse off in six jurisdictions (city of Buenos Aires, Buenos Aires, Chubut, Neuquén, Río Negro and Tierra del Fuego). The 5th quintil is significantly better off in one province (Formosa) and slightly better off in other five provinces (Catamarca, Corrientes, Chaco, Jujuy and Santiago del Estero).

Given that a quintil in the national income distribution includes (not necessarily the same) quintiles of several provinces that are affected differently by the interaction of national and provincial budgets, we show in Figure 4 the reallocation of households across quintiles. The interpretation of the figures is similar to that of a transition matrix. In the case of households belonging to the poorest quintil before fiscal policy, 18% moves to quintil 2 and 82% remain in the same group. Similarly, in the case of households belonging to the second quintil, fiscal policy moves 4% to the next quintil and 8% to the lower quintil. No household belonging to the richest quintil descends a position, so the negative effect of consolidated budgets on their income is not enough to make high-income households move back in the income distribution.

Figure 4: Argentina: Transition of households across quintiles due to national and provincial fiscal policies. Year 2004.

	Quintil 1 (ep)	Quintil 2 (ep)	Quintil 3 (ep)	Quintil 4 (ep)	Quintil 5 (ep)
Quintil 1 (ea)	82%	18%			
Quintil 2 (ea)	8%	88%	4%		
Quintil 3 (ea)		5%	86%	10%	
Quintil 4 (ea)			4%	89%	7%
Quintil 5 (ea)					100%

Source: own elaboration, based on Table A.4.

By construction, taking quintiles in each jurisdiction as individual units (which makes 120 groups), the reordering is more remarkable: 10 groups rise more than 10 positions (with quintil 1 in La Rioja leading the change in 25 positions and quintil 1 in Tierra del Fuego ascending 21 positions), 8 groups ascend between 5 and 10 positions, 21 groups descend between 5 and 10 positions, and 4 groups drop more than 10 positions (quintiles 1 and 2 in Buenos Aires lead with 12 positions). Groups belonging to provincial quintil 5 ascend at most 1 position (Catamarca) and descend at most 5 positions (San Juan).

But there are no “absolute” filtrations in income distribution, i.e., it is not the case that poor households in rich provinces finance rich households in poor provinces. This effect is only relative. For example, the net effect of fiscal policy (“monetized” income increase) on the income of the richest quintil in Formosa (\$1,500) is less than the lowest effect on the poorest quintil in the group of 8 richest provinces (\$1,747 in quintil 1 of Mendoza), but more than the effect on the poorest quintil in middle-income provinces (\$937 in quintil 1 of Buenos Aires, \$1,392 in quintil 1 of Córdoba), despite the difference in the initial levels of income (\$12,000 vs. values near \$2,000). Moreover, it exceeds the income increase in quintil 2 of the City of Buenos Aires (\$1,283) and Mendoza (\$999). At the level of quintil 4 there are more relative changes: for example, this group from Formosa is better off by \$2,004 which exceeds the positive effect on quintil 1 of Mendoza (\$1,747) and quintiles 2 of the City of Buenos Aires, Mendoza and Chubut (\$1,557). Similar results can be obtained for quintil 4 of Jujuy, Santiago del Estero, Corrientes, Chaco and San Juan.

4.4. The effect of national and provincial fiscal policies on inequality and welfare

In this section we follow the standard methodology to assess the effect of national and provincial fiscal policies on inequality and welfare. Figure 5 summarizes the inequality coefficients for Argentina, and Tables A.6 and A.7 in the Appendix show the details at the jurisdiction level.

At the aggregate level, the fiscal policy of both levels of government is a progressive redistributive tool, under all coefficients of measurement considered (Gini or Atkinson). For example, the Gini coefficient indicates a reduction of 0.078 points out of an inequality value of 0.496.

The change in inequality measured by the Reynolds-Smolensky coefficient, is due to a strong effect from the expenditure side (high K_g in both levels of government), which more than overcomes the regressive effect of taxes (negative K_t also in both levels of government) collected to finance it.

Figure 5: Inequality, progressivity and income redistribution. Argentina 2004.

Inequality indexes, Gini and Atkinson		
	ex ante	ex post
Gini	0.496	0.418
Atkinson ($\alpha = 0,5$)	0.211	0.147
Atkinson ($\alpha = -1$)	0.600	0.423
Atkinson ($\alpha = -10$)	0.821	0.670
Reynolds-Smolensky coefficient, and Kakwani coefficients for expenditures and taxes		
	Value	Contribution to change in Gini
		<i>expenditure</i>
Kg_N	0.363	37%
$g_N/(1-t+g)$	0.096	
Kg_P	0.486	63%
$g_P/(1-t+g)$	0.123	
		<i>revenue</i>
Kt_N	-0.073	75%
$t_N/(1-t+g)$	0.165	
Kt_P	-0.076	25%
$t_P/(1-t+g)$	0.054	
RSp	-0.078	

The ex ante income distribution aggregates households from the n^{th} quintil in Argentina (mixing different quintiles from different provinces). The ex post income distribution is calculated based on household income after having added expenditures and subtracted revenues from the jurisdiction in which the household resides.

In section 2 we discussed the potential incompatibility of the policies of the two levels of government, as an argument for the centralization of the redistributive policy in the head of national government. Figure 5 indicates that both national and provincial fiscal policies go in the direction of improving the personal distribution of income. Provincial policy represents 63% of the impact of public expenditure on income distribution, while national policy represents 75% of the impact of taxes on income distribution. Moreover, the provincial budget (that is, provincial expenditures, provincial taxes and national

taxes to finance provincial expenditures) has more impact than national budget representing 64% of the change in the Gini coefficient (see Table A.8).

Given the relevance of progressivity in expenditures in the results, as shown by the Kakwani indexes K_{gN} and K_{gP} , Figure 6 reports the Kakwani index for several categories of expenditure. Two main results can be obtained from the Figure. First, there is no incompatibility between national and provincial expenditure policies, at least at this level of analysis (the same result holds for revenues). Second, provincial expenditure is more progressive than national expenditure, both at the aggregate level and at almost all categories (with the exception of Economic Services and Welfare Programs).

Figure 6: Kakwani progressivity index for expenditure categories.

Expenditure category	National government	Provincial government
General administration	0.374	0.435
Justice	0.045	0.288
Defense and Safety	0.195	0.294
Culture and Education	0.313	0.594
Health	0.252	0.590
Economic services	0.265	0.264
Welfare programs	0.831	0.699
Total expenditure	0.363	0.486

At the provincial level, the change in Gini coefficient ranges from -0.031 to -0.202. In the majority of cases, the progressive effect is the combination of progressive expenditures and regressive taxes (with some particular exceptions of progressive national taxes), as it can be observed in Tables A.7 and A.8. But even though the consolidated fiscal policy is progressive in all jurisdictions, there are significant changes in the ranking of provinces (taking the Gini index as reference). Some provinces scale up 10 or more positions (Corrientes, Formosa, Chaco, San Juan and Santiago del Estero) and others scale down 8 or more positions (Santa Cruz, Santa Fe, Mendoza, Córdoba, Buenos Aires and the City of Buenos Aires).

For those provinces that are net financiers in the public budget process. In such jurisdictions, there is a trade-off between the positive impact of fiscal budget on inequality and the negative “level effect” in average income. Figure 7 assesses the net effect of fiscal budget using the Atkinson index of welfare for several assumptions on inequality-aversion for selected jurisdictions (we add the index for Argentina), and Table A.9 presents the results for all jurisdictions.

The welfare index decreases with fiscal policy for high values of α in only two (city of Buenos Aires y Chubut) of those net-financing provinces with high negative residual (Chubut, Neuquén, Santa Fe y Tierra el Fuego). However, the loss in income is quickly overcome as inequality aversion becomes important.

Figure 7: Welfare assessment for selected jurisdictions.

Jurisdiction	Atkinson ($\alpha=0.5$)		Atkinson ($\alpha=-1$)		Atkinson ($\alpha=-10$)	
	ex ante	ex post	ex ante	ex post	ex ante	ex post
City Bs As (CABA)	26,370	26,115	14,659	17,441	6,685	9,841
Buenos Aires	8,776	8,810	4,970	6,159	2,221	3,321
Chubut	16,973	16,230	10,189	12,626	4,746	7,373
Mendoza	10,187	10,742	5,919	7,953	2,734	4,779
Neuquén	19,368	19,750	10,417	13,810	4,610	7,585
Santa Fe	9,940	10,327	5,847	7,846	2,635	4,541
Tierra del Fuego	23,015	24,974	13,918	20,535	6,542	14,236
Argentina	9,237	9,992	4,685	6,752	2,091	3,859

Source: own elaboration.

5. Conclusions and final comments

This paper studies the impact of national and provincial fiscal policies on income distribution. Two relevant dimensions of income distribution, personal and regional, are captured in the analysis at the provincial level.

At the aggregate level, the fiscal policy of both levels of government is a progressive redistributive tool, under all coefficients of measurement considered (Gini or Atkinson). For example, the Gini coefficient indicates a reduction of 0.078 points out of an inequality value of 0.496.

At the aggregate level, the national budget has positive impact on the personal income distribution and account for 36% of the change in the Gini coefficient. The positive impact results from a combination of progressive expenditures and slightly regressive taxes. These impacts are different at the level of each province. In eight provinces the difference between expenditures and taxes is negative so that they are losers or net financers in the geographic redistribution. The net effect of national budget on personal distribution, however, is positive for all the provinces.

At the level of provincial budgets, which account for 64% of the change in the Gini coefficient, the positive distributive impact of subnational expenditures and taxes interact with the revenue-sharing regime, reinforcing progressivity in net-receiving provinces but creating a trade-off between progressivity and (negative) regional transfer in net-financing ones. In the latter provinces, however, the net effect of provincial budget is also progressive.

After comparing the effects of national and provincial public budgets, we conclude that there is no incompatibility between the redistributive policies at both levels of government, with the most important impact coming from (i) provincial budgets and (ii) provincial and national expenditure.

Some final comments are in order. First, the basic data is scarce and in some cases not very reliable. In particular we use gross domestic product that in several provinces could have large differences with the disposable income. Second, the estimates of incidence weights of taxes and expenditures (the γ_{ikn} , γ_{ijn} , τ_{icn} , τ_{irn} and τ_{isn}) imply very strong assumptions –many of them taken from other papers– and therefore the effects of fiscal budget on regional and personal distribution of income should be taken carefully. Nevertheless, we believe that the magnitude of the estimated effects is a good approximation of the real effects. Third, it is very probable that the effects change every year because of different composition and distribution of some kind of expenditures

(e.g., capital expenditures) or taxes (e.g., export taxes on oil, gas, agricultural products and their manufactures). Fourth, we assumed the same equilibrium before and after fiscal policy. However, there are tax costs through excess burden and efficiency costs in the public provision of goods and services (e.g., spillovers or leakages), which we do not address here and leave open for future research.

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Appendix.

The dataset consist of gross geographical product (taken from ECLAC), distributed by quintiles using the ex ante distribution of income from CEDLAS-UNLP.

Information on the national public budget for the year 2004 is taken from the Secretariat of Treasury at the Ministry of Economics. The distribution of the national expenditures to the provinces is taken from the Ministry of Economics (1999, 2000, 2002). Information on provincial budgets for the year 2004 is taken from the National Bureau of Fiscal Coordination with Provinces, Secretariat of Treasury, at the Ministry of Economics.

In order to determine the impact of taxes on different groups of households (classified into five income categories, according to provincial per capita household income), we use the following assumptions:

Provincial taxes:

- Turnover, property and automobiles tax. We use the criteria presented in FIEL (1999), p. 361.
- Stamp taxes: 75% as property tax and 25% by population and income.
- Royalties: by population.

National taxes:

- Taxes included in the revenue sharing system are distributed among the provinces in order to reflect the source (incidence) of revenues. We use the assumptions made in FIEL (1999), p. 530. Then we assign taxes by quintiles using the criteria proposed by FIEL (1999), p. 361.
- Taxes on export are distributed following Gómez Sabaini and Rossignolo (2008) in the case of agricultural based manufactures. Taxes on export of petroleum products are assigned to the highest quintil.
- Other items (such as non-tax revenues, sales of state owned goods and services, leasing rents) are distributed on a per capita basis.
- Capital resources are distributed according to income.

For each category of expenditure we allocate the values based on different sources of information and assumptions (we distinguish between nation and provinces whenever it is necessary):

- General administration: per total expenditure.
- Justice: 50% per income and 50% per population.
- Transfers to municipal governments (provincial expenditure): 35% according to use of urban services, 18% per users of the Public Health System, 8% by the distribution of welfare and the remainder is distributed evenly between population and the result of the previous allocation.
- Defense and Safety: 50% per income and 50% per population.
- Education:
 - o National expenditure: basic education based on the number of pre-school, primary and high school students attending public institutions.
 - o Provincial expenditure: based on the number of students attending public schools.
- Culture, Science and Technology: per population.
- Health: based on the number of individuals who are not beneficiaries of a private health insurance program.
- Health Insurance programs – Attention and services (national expenditure): CEDLAS (2004), Table 6.25.
- INSSJyP – Attention and services (national expenditure): PAMI program
- Social security (provincial expenditure): per number of individuals that belong to the provincial social security system.
- Water and sewerage: 75% by users of the service and 25% by population.

- Housing: according to beneficiaries of loans for housing construction.
 - Welfare: according to the number of beneficiaries of different welfare programs (nutrition, clothing, etc.).
 - Work and unemployment (national expenditure): 50% per number of individuals unemployed and 50% per beneficiaries of *Jefas and Jefes* program.
 - Work (provinces): per number of individuals unemployed.
 - Other urban services: based on the use of urban services (paved roads, sewerage, public lighting and refuse collection).
 - Family allocations (national expenditure): CEDLAS (2004), Table 11.9.
 - Primary production: among land owners.
 - Energy, fuel and mining: according to consumption of energy and fuels.
 - Industry: according to consumption of industrial products.
 - Transport and communication services: 1/3 according to total consumption of goods, 1/3 according to expenditure on automobile and 1/3 according to tourism expenditures.
- The weight matrices B_{Nn} , B_{Pn} , T_{Nn} and T_{Pn} are available upon request.

Table A.1: Per capita income (gross geographical product) and income distribution, by province. Values in Argentine pesos. Year 2004.

Jurisdiction		Quintil 1		Quintil 2		Quintil 3		Quintil 4		Quintil 5		Total
		pc income	% of income	pc income	% of income	pc income	% of income	pc income	% of income	pc income	% of income	pc income
1	Ciudad Bs As	5,691	3.6%	12,798	8.0%	21,453	13.5%	34,761	21.9%	84,369	53.0%	31,817
2	Buenos Aires	1,891	3.6%	4,550	8.7%	7,473	14.3%	11,656	22.3%	26,585	51.0%	10,434
3	Catamarca	2,880	3.6%	6,218	7.8%	10,305	13.0%	16,193	20.4%	43,611	55.1%	15,852
4	Córdoba	2,195	3.9%	4,788	8.5%	7,875	14.0%	12,730	22.6%	28,721	51.0%	11,263
5	Corrientes	959	3.7%	2,016	7.7%	3,225	12.3%	5,609	21.4%	14,369	54.9%	5,237
6	Chaco	1,117	4.2%	2,142	8.2%	3,314	12.6%	5,397	20.5%	14,259	54.4%	5,251
7	Chubut	4,040	4.0%	9,235	9.3%	14,296	14.3%	22,300	22.2%	49,659	50.2%	19,966
8	Entre Ríos	1,384	3.7%	3,264	8.7%	5,391	14.4%	8,394	22.4%	19,057	50.8%	7,502
9	Formosa	799	3.6%	1,761	8.0%	2,924	13.4%	4,362	19.9%	12,022	55.0%	4,377
10	Jujuy	1,262	4.4%	2,424	8.5%	3,821	13.3%	6,095	21.3%	15,014	52.5%	5,725
11	La Pampa	2,303	3.5%	5,908	9.0%	9,972	15.2%	15,203	23.2%	31,977	49.0%	13,083
12	La Rioja	1,582	5.0%	2,878	9.1%	4,271	13.5%	6,845	21.5%	16,169	51.0%	6,353
13	Mendoza	2,328	3.9%	5,235	8.7%	8,497	14.1%	13,511	22.3%	30,853	51.1%	12,089
14	Misiones	1,273	4.7%	2,364	8.7%	3,918	14.4%	5,866	21.6%	13,708	50.5%	5,426
15	Neuquén	3,925	3.3%	9,299	7.9%	15,616	13.3%	26,718	22.7%	61,675	52.7%	23,469
16	Río Negro	2,164	4.2%	4,131	8.2%	6,401	12.6%	10,412	20.5%	27,627	54.4%	10,150
17	Salta	1,008	3.2%	2,023	6.5%	3,414	10.9%	6,189	19.8%	18,634	59.6%	6,257
18	San Juan	1,184	4.1%	2,487	8.6%	3,986	13.9%	5,889	20.4%	15,205	53.0%	5,756
19	San Luis	2,987	5.1%	5,475	9.4%	8,853	15.2%	13,467	23.1%	27,486	47.2%	11,656
20	Santa Cruz	7,302	4.2%	16,232	9.3%	27,559	15.9%	39,624	22.8%	82,918	47.8%	34,743
21	Santa Fe	2,243	3.9%	5,376	9.3%	8,740	15.1%	13,642	23.5%	28,066	48.3%	11,616
22	Santiago del Estero	723	3.0%	1,681	7.0%	3,003	12.5%	5,083	21.1%	13,555	56.5%	4,816
23	Tucumán	1,089	3.9%	2,351	8.5%	3,662	13.2%	5,869	21.1%	14,776	53.3%	5,555
24	Tierra del Fuego	5,570	4.1%	12,617	9.3%	19,235	14.3%	29,629	21.9%	67,995	50.4%	27,024
	Argentina	1,780	3.0%	4,043	6.6%	6,816	11.3%	12,363	22.7%	32,764	56.4%	11,710

Source: Own estimates based on INDEC, ECLAC and Secretary of Treasury, Ministry of Economics.

Table A.2: National and provincial expenditures and taxes, by province. Values in per capita Argentine pesos and as a percentage of provincial income. Year 2004.

Jurisdiction		National Expenditure		Provincial Expenditure		Consolidated (N+P) Expenditure		National Revenues (source)		Provincial Revenues (source)		Total Revenues (source)	
		\$ pc	% GGP	\$ pc	% GGP	\$ pc	% GGP	\$ pc	% GGP	\$ pc	% GGP	\$ pc	% GGP
1	City Bs As (CABA)	2,841	8.9%	1,651	5.2%	4,492	14.1%	4,303	13.5%	1,434	4.5%	5,737	18.0%
2	Buenos Aires	910	8.7%	1,028	9.9%	1,939	18.6%	1,861	17.8%	572	5.5%	2,433	23.3%
3	Catamarca	1,020	6.4%	2,777	17.5%	3,797	24.0%	934	5.9%	697	4.4%	1,632	10.3%
4	Córdoba	1,060	9.4%	1,237	11.0%	2,297	20.4%	1,852	16.4%	398	3.5%	2,251	20.0%
5	Corrientes	1,303	24.9%	1,245	23.8%	2,548	48.7%	848	16.2%	174	3.3%	1,022	19.5%
6	Chaco	875	16.7%	1,612	30.7%	2,488	47.4%	831	15.8%	262	5.0%	1,093	20.8%
7	Chubut	1,448	7.3%	3,195	16.0%	4,643	23.3%	4,944	24.8%	2,029	10.2%	6,973	34.9%
8	Entre Ríos	899	12.0%	1,600	21.3%	2,499	33.3%	1,377	18.4%	411	5.5%	1,788	23.8%
9	Formosa	893	20.4%	2,053	46.9%	2,946	67.3%	764	17.4%	162	3.7%	926	21.2%
10	Jujuy	924	16.1%	1,632	28.5%	2,556	44.6%	887	15.5%	238	4.2%	1,125	19.6%
11	La Pampa	1,212	9.3%	2,536	19.4%	3,748	28.7%	1,731	13.2%	681	5.2%	2,412	18.4%
12	La Rioja	1,131	17.8%	2,791	43.9%	3,921	61.7%	1,213	19.1%	300	4.7%	1,513	23.8%
13	Mendoza	968	8.0%	1,356	11.2%	2,324	19.2%	1,806	14.9%	631	5.2%	2,437	20.2%
14	Misiones	890	16.4%	1,355	25.0%	2,246	41.4%	994	18.3%	321	5.9%	1,314	24.2%
15	Neuquén	1,187	5.1%	4,220	18.0%	5,406	23.0%	3,398	14.5%	3,153	13.4%	6,551	27.9%
16	Río Negro	1,140	11.2%	1,951	19.2%	3,091	30.5%	1,808	17.8%	711	7.0%	2,519	24.8%
17	Salta	883	14.1%	1,232	19.7%	2,115	33.8%	1,232	19.7%	291	4.7%	1,523	24.3%
18	San Juan	980	17.0%	1,660	28.8%	2,640	45.9%	1,208	21.0%	293	5.1%	1,501	26.1%
19	San Luis	1,041	8.9%	2,242	19.2%	3,283	28.2%	1,253	10.7%	514	4.4%	1,766	15.2%
20	Santa Cruz	2,390	6.9%	7,130	20.5%	9,520	27.4%	4,315	12.4%	4,049	11.7%	8,365	24.1%
21	Santa Fe	999	8.6%	1,408	12.1%	2,407	20.7%	2,234	19.2%	493	4.2%	2,727	23.5%
22	Santiago del Estero	781	16.2%	1,626	33.8%	2,407	50.0%	723	15.0%	184	3.8%	906	18.8%
23	Tucumán	911	16.4%	1,438	25.9%	2,350	42.3%	1,056	19.0%	480	8.6%	1,537	27.7%
24	Tierra del Fuego	1,329	4.9%	6,033	22.3%	7,362	27.2%	4,780	17.7%	2,667	9.9%	7,447	27.6%
	Argentina	1,120	9.6%	1,443	12.3%	2,563	21.9%	1,930	16.5%	633	5.4%	2,563	21.9%
	Standard deviation	0.43	0.55	1.06	0.81	0.70	0.65	0.70	0.23	1.64	0.51	0.90	0.22
	Max/Min	3.6	5.1	6.9	9.0	4.9	4.8	6.8	4.2	25.0	4.0	9.2	3.4

Source: Own estimates based on INDEC and Secretary of Treasury, Ministry of Economics. Public budgets exclude national social security and debt services. Note: “pc” is per capita. “GGP” is gross geographic product, which is the measure of provincial income used in this document.

Table A.3: Regional impacts of the national budget and the revenue sharing regime, by province. Values in per capita Argentine pesos. Year 2004.

	Jurisdiction	Ex ante income	National revenues to provincial budgets (source)	National transfers (dest.)	Difference (provincial)	National revenues to national budget (source)	National Expenditure	Difference (national)	Difference (N+P)	Ex post income
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	City Bs As (CABA)	31,817	1,976	217	-1,758	2,327	2,841	514	-1,245	30,572
2	Buenos Aires	10,434	835	456	-378	1,027	910	-116	-494	9,939
3	Catamarca	15,852	455	2,080	1,625	480	1,020	540	2,165	18,018
4	Córdoba	11,263	778	838	60	1,074	1,060	-14	46	11,309
5	Corrientes	5,237	392	1,071	679	456	1,303	847	1,526	6,762
6	Chaco	5,251	381	1,350	969	450	875	426	1,395	6,646
7	Chubut	19,966	1,091	1,166	75	3,853	1,448	-2,405	-2,330	17,635
8	Entre Ríos	7,502	632	1,188	557	745	899	154	711	8,213
9	Formosa	4,377	356	1,891	1,535	408	893	485	2,020	6,397
10	Jujuy	5,725	371	1,394	1,023	515	924	408	1,431	7,156
11	La Pampa	13,083	924	1,855	932	807	1,212	405	1,336	14,419
12	La Rioja	6,353	529	2,490	1,961	683	1,131	447	2,408	8,761
13	Mendoza	12,089	768	725	-43	1,038	968	-70	-113	11,976
14	Misiones	5,426	431	1,035	604	563	890	327	931	6,358
15	Neuquén	23,469	876	1,067	191	2,522	1,187	-1,335	-1,144	22,325
16	Río Negro	10,150	850	1,240	390	959	1,140	182	572	10,722
17	Salta	6,257	413	941	528	820	883	63	592	6,848
18	San Juan	5,756	546	1,367	821	663	980	317	1,139	6,894
19	San Luis	11,656	532	1,729	1,197	720	1,041	320	1,517	13,173
20	Santa Cruz	34,743	1,090	3,080	1,990	3,225	2,390	-835	1,156	35,899
21	Santa Fe	11,616	740	915	175	1,495	999	-495	-320	11,296
22	Santiago del Estero	4,816	277	1,442	1,165	445	781	335	1,501	6,316
23	Tucumán	5,555	487	958	471	569	911	342	813	6,368
24	Tierra del Fuego	27,024	1,373	3,366	1,994	3,407	1,329	-2,078	-85	26,939
	Argentina	11,710	810	810	0	1,120	1,120	0	0	11,710
	Standard deviation		0.48	0.93		0.92	0.43			
	Max/Min		7.1	15.5		9.4	3.6			

Source: Own estimates based on INDEC and Secretary of Treasury, Ministry of Economics.

Table A.4: Per capita income (pre and post national and provincial budgets). Values in Argentine pesos. Year 2004.

Jurisdiction		Quintil 1		Quintil 2		Quintil 3		Quintil 4		Quintil 5	
		ex ante	ex post	ex ante	ex post	ex ante	ex post	ex ante	ex post	ex ante	ex post
1	City Bs As (CABA)	5,691	8,383	12,798	14,081	21,453	19,657	34,761	30,226	84,369	80,503
2	Buenos Aires	1,891	2,828	4,550	5,200	7,473	7,496	11,656	11,261	26,585	22,901
3	Catamarca	2,880	6,058	6,218	9,027	10,305	13,010	16,193	18,298	43,611	43,645
4	Córdoba	2,195	3,588	4,788	5,867	7,875	8,624	12,730	13,298	28,721	25,165
5	Corrientes	959	3,672	2,016	3,940	3,225	4,736	5,609	6,835	14,369	14,626
6	Chaco	1,117	3,177	2,142	4,238	3,314	4,917	5,397	6,607	14,259	14,268
7	Chubut	4,040	6,280	9,235	10,792	14,296	14,663	22,300	21,033	49,659	35,245
8	Entre Ríos	1,384	3,145	3,264	4,966	5,391	6,365	8,394	8,830	19,057	17,743
9	Formosa	799	2,884	1,761	4,008	2,924	5,184	4,362	6,366	12,022	13,527
10	Jujuy	1,262	3,360	2,424	4,391	3,821	5,462	6,095	7,451	15,014	15,110
11	La Pampa	2,303	5,533	5,908	8,481	9,972	12,131	15,203	16,288	31,977	29,622
12	La Rioja	1,582	5,469	2,878	6,227	4,271	7,129	6,845	9,113	16,169	15,854
13	Mendoza	2,328	4,075	5,235	6,234	8,497	8,921	13,511	13,549	30,853	27,084
14	Misiones	1,273	2,865	2,364	3,611	3,918	4,933	5,866	6,743	13,708	13,634
15	Neuquén	3,925	6,460	9,299	11,318	15,616	16,439	26,718	25,888	61,675	51,435
16	Río Negro	2,164	4,744	4,131	5,775	6,401	7,457	10,412	9,843	27,627	25,780
17	Salta	1,008	2,479	2,023	3,480	3,414	4,532	6,189	6,899	18,634	16,839
18	San Juan	1,184	3,379	2,487	4,147	3,986	5,413	5,889	7,022	15,205	14,489
19	San Luis	2,987	6,434	5,475	7,401	8,853	10,828	13,467	14,393	27,486	26,797
20	Santa Cruz	7,302	12,697	16,232	20,011	27,559	29,554	39,624	40,706	82,918	76,456
21	Santa Fe	2,243	3,868	5,376	6,506	8,740	9,153	13,642	13,773	28,066	23,172
22	Santiago del Estero	723	2,916	1,681	3,673	3,003	4,704	5,083	6,385	13,555	13,874
23	Tucumán	1,089	2,946	2,351	3,910	3,662	4,805	5,869	6,541	14,776	13,618
24	Tierra del Fuego	5,570	12,202	12,617	15,989	19,235	21,743	29,629	28,364	67,995	56,347
	Argentina	1,780	3,288	4,043	5,234	6,816	7,605	12,363	12,555	32,764	29,187

Source: own elaboration.

Table A.5: Distribution of income (pre and post national budget), revenue and expenditure, year 2004.

Jurisdiction	Quintil 1						Quintil 2						Quintil 3						Quintil 4						Quintil 5					
	ex ante	tax_N	tax_P	exp_N	exp_P	ex post	ex ante	tax_N	tax_P	exp_N	exp_P	ex post	ex ante	tax_N	tax_P	exp_N	exp_P	ex post	ex ante	tax_N	tax_P	exp_N	exp_P	ex post	ex ante	tax_N	tax_P	exp_N	exp_P	ex post
1 City Bs As (CABA)	3.6	7.9	6.2	17.5	28.5	5.5	8.0	11.8	11.0	17.8	25.3	9.2	13.5	21.5	21.9	19.4	20.0	12.9	21.9	29.1	30.4	19.3	14.2	19.8	53.0	29.6	30.6	26.0	12.0	52.7
2 Buenos Aires	3.6	7.9	6.3	17.9	20.2	5.7	8.7	10.9	10.3	17.4	22.7	10.5	14.3	14.5	15.3	17.9	19.3	15.1	22.3	18.2	20.4	21.4	17.7	22.7	51.0	48.5	47.8	25.5	20.1	46.1
3 Catamarca	3.6	8.8	8.5	16.7	21.8	6.7	7.8	10.8	11.1	18.6	19.8	10.0	13.0	14.1	15.1	20.0	20.7	14.5	20.4	18.2	20.3	20.8	18.7	20.3	55.1	48.0	45.1	24.0	18.9	48.5
4 Córdoba	3.9	7.6	6.5	17.8	20.8	6.3	8.5	10.4	10.5	18.0	21.0	10.4	14.0	13.5	14.7	20.6	19.4	15.3	22.6	17.2	19.8	24.6	20.2	23.5	51.0	51.3	48.5	19.0	18.6	44.5
5 Corrientes	3.7	10.4	7.4	29.7	20.6	10.9	7.7	10.4	8.9	18.1	20.2	11.6	12.3	14.2	13.7	16.4	18.7	14.0	21.4	18.3	20.5	16.4	17.9	20.2	54.9	46.6	49.5	19.4	22.5	43.3
6 Chaco	4.2	10.6	7.5	19.7	21.5	9.6	8.2	10.7	8.8	19.5	22.3	12.8	12.6	14.7	13.9	18.3	19.8	14.8	20.5	18.3	19.7	19.1	17.2	19.8	54.4	45.8	50.1	23.5	19.1	43.0
7 Chubut	4.0	4.4	15.4	18.7	22.0	7.1	9.3	6.1	16.8	20.4	20.6	12.2	14.3	7.7	18.1	16.9	18.1	16.6	22.2	14.0	22.8	21.0	18.7	23.7	50.2	67.9	26.9	23.0	20.6	40.4
8 Entre Ríos	3.7	8.4	7.4	17.9	21.0	7.6	8.7	10.7	10.8	20.3	21.8	12.1	14.4	14.1	15.8	18.9	17.8	15.6	22.4	18.4	21.9	19.8	15.8	21.5	50.8	48.4	44.1	23.1	23.6	43.2
9 Formosa	3.6	10.4	9.3	17.8	17.2	9.0	8.0	11.4	11.2	19.6	18.5	12.5	13.4	14.6	15.3	19.0	20.4	16.2	19.9	19.3	20.7	19.3	19.9	19.9	55.0	44.3	43.4	24.2	24.1	42.4
10 Jujuy	4.4	10.4	7.8	18.0	22.3	9.4	8.5	11.6	10.2	20.1	20.6	12.3	13.3	14.7	14.6	19.3	19.3	15.3	21.3	19.1	21.0	20.4	18.5	20.8	52.5	44.1	46.4	22.2	19.4	42.2
11 La Pampa	3.5	7.4	7.6	20.1	22.9	7.7	9.0	10.9	12.0	19.7	21.5	11.8	15.2	14.3	16.4	21.0	21.1	16.8	23.2	20.5	22.5	20.8	18.7	22.6	49.0	47.0	41.5	18.4	15.8	41.2
12 La Rioja	5.0	7.6	6.4	20.0	23.7	12.5	9.1	10.3	10.6	19.8	21.6	14.2	13.5	12.5	14.2	20.0	19.4	16.3	21.5	16.2	20.9	19.7	17.6	20.8	51.0	53.4	47.9	20.6	17.7	36.2
13 Mendoza	3.9	6.9	11.1	17.8	27.5	6.8	8.7	9.6	13.8	17.0	21.7	10.4	14.1	12.5	17.0	18.6	17.5	14.9	22.3	15.8	20.6	21.1	16.1	22.6	51.1	55.2	37.6	25.5	17.2	45.3
14 Misiones	4.7	9.0	7.7	20.8	18.2	9.0	8.7	10.7	10.3	17.8	17.0	11.4	14.4	13.9	14.8	18.2	16.7	15.5	21.6	18.0	20.7	18.6	18.8	21.2	50.5	48.4	46.5	24.7	29.2	42.9
15 Neuquén	3.3	4.5	16.3	20.5	22.1	5.8	7.9	5.9	17.3	18.3	22.1	10.1	13.3	7.8	18.4	18.5	18.7	14.7	22.7	13.3	21.6	19.6	17.4	23.1	52.7	68.4	26.4	23.1	19.6	46.2
16 Río Negro	4.2	7.2	10.9	20.1	25.3	8.8	8.2	10.6	14.0	18.9	20.8	10.8	12.6	13.8	16.8	17.8	19.3	13.9	20.5	26.7	25.9	19.5	17.0	18.4	54.4	41.6	32.4	23.7	17.6	48.1
17 Salta	3.2	7.5	8.3	16.5	21.5	7.2	6.5	8.3	9.8	18.6	20.9	10.2	10.9	11.0	13.8	19.2	18.6	13.2	19.8	15.4	20.4	20.0	17.4	20.2	59.6	57.8	47.8	25.7	21.5	49.2
18 San Juan	4.1	8.8	6.7	18.2	23.3	9.8	8.6	11.6	10.7	16.6	20.5	12.0	13.9	14.7	15.2	19.6	19.0	15.7	20.4	18.1	20.5	21.2	17.9	20.4	53.0	46.8	46.9	24.5	19.2	42.1
19 San Luis	5.1	8.8	7.3	19.2	28.4	9.8	9.4	11.7	11.6	17.2	18.4	11.2	15.2	14.9	16.3	19.3	20.7	16.4	23.1	18.7	22.1	21.1	14.0	21.9	47.2	45.9	42.7	23.2	18.5	40.7
20 Santa Cruz	4.2	4.6	14.6	17.8	20.2	7.1	9.3	6.5	16.2	19.4	17.2	11.1	15.9	9.7	18.9	18.5	16.0	16.5	22.8	16.3	23.9	21.8	19.2	22.7	47.8	62.9	26.3	22.5	27.4	42.6
21 Santa Fe	3.9	6.5	6.8	18.9	22.3	6.8	9.3	8.9	11.0	18.0	21.3	11.5	15.1	11.9	15.6	17.5	17.8	16.2	23.5	15.0	20.5	20.6	18.2	24.4	48.3	57.6	46.2	25.0	20.3	41.0
22 Santiago del Estero	3.0	10.3	7.8	21.5	22.1	9.2	7.0	10.9	9.0	18.5	21.5	11.6	12.5	14.4	13.6	19.3	19.6	14.9	21.1	19.3	20.3	18.2	18.1	20.2	56.5	45.0	49.3	22.5	18.7	44.1
23 Tucumán	3.9	9.2	6.4	17.7	23.5	9.2	8.5	11.3	9.9	18.4	21.6	12.3	13.2	13.9	13.9	18.2	19.2	15.1	21.1	18.6	21.0	20.6	16.9	20.5	53.3	47.0	48.8	25.0	18.8	42.9
24 Tierra del Fuego	4.1	4.9	12.3	23.5	26.0	9.0	9.3	7.1	15.0	19.6	19.1	11.9	14.3	8.4	16.4	17.4	18.4	16.2	21.9	17.4	26.7	19.6	17.1	21.0	50.4	62.2	29.7	19.8	19.4	41.9
Argentina	3.0	6.4	5.0	15.7	19.1	5.5	6.6	8.4	9.2	14.7	19.7	8.6	11.3	12.1	12.5	17.8	18.5	12.6	22.7	19.6	23.3	22.3	22.0	23.0	56.4	53.5	50.1	29.5	20.7	50.2

Source: own elaboration.

Table A.6: Gini and Atkinson coefficients of inequality. Year 2004.

Jurisdiction		Gini				Atkinson ($\alpha=0,5$)				Atkinson ($\alpha=-1$)				Atkinson ($\alpha=-10$)			
		ex ante	Rkg	ex post	Rkg	ex ante	Rkg	ex post	Rkg	ex ante	Rkg	ex post	Rkg	ex ante	Rkg	ex post	Rkg
1	City Bs As (CABA)	0.451	9	0.420	1	0.171	7	0.146	1	0.539	6	0.430	1	0.790	5	0.678	1
2	Buenos Aires	0.434	13	0.372	5	0.159	12	0.114	5	0.524	8	0.380	3	0.787	6	0.666	2
3	Catamarca	0.462	4	0.376	3	0.180	4	0.116	3	0.543	5	0.355	4	0.787	7	0.606	5
4	Córdoba	0.433	14	0.358	6	0.157	15	0.104	6	0.509	13	0.350	5	0.771	13	0.628	4
5	Corrientes	0.465	3	0.294	21	0.181	3	0.073	18	0.545	4	0.223	22	0.785	9	0.391	23
6	Chaco	0.451	7	0.296	19	0.170	8	0.074	17	0.504	14	0.229	20	0.750	19	0.442	20
7	Chubut	0.421	17	0.311	13	0.150	18	0.080	13	0.490	18	0.284	11	0.762	15	0.582	9
8	Entre Ríos	0.432	16	0.322	11	0.158	14	0.085	11	0.519	10	0.280	12	0.783	10	0.551	11
9	Formosa	0.459	5	0.296	20	0.178	5	0.073	20	0.538	7	0.234	18	0.786	8	0.473	15
10	Jujuy	0.436	12	0.297	18	0.158	13	0.072	21	0.485	19	0.231	19	0.741	21	0.453	19
11	La Pampa	0.421	18	0.311	14	0.151	17	0.078	14	0.523	9	0.272	13	0.793	4	0.550	12
12	La Rioja	0.418	21	0.216	24	0.144	22	0.039	24	0.446	23	0.131	24	0.708	23	0.288	24
13	Mendoza	0.433	15	0.357	7	0.157	16	0.103	7	0.510	12	0.336	7	0.774	11	0.601	6
14	Misiones	0.418	20	0.311	15	0.145	20	0.078	15	0.460	22	0.251	14	0.725	22	0.476	14
15	Neuquén	0.454	6	0.375	4	0.175	6	0.115	4	0.556	3	0.381	2	0.804	3	0.660	3
16	Río Negro	0.451	8	0.344	8	0.170	9	0.101	8	0.504	15	0.292	10	0.750	20	0.488	13
17	Salta	0.505	1	0.376	2	0.215	1	0.116	2	0.599	1	0.346	6	0.811	2	0.576	10
18	San Juan	0.438	11	0.292	22	0.161	11	0.070	22	0.499	16	0.223	23	0.758	16	0.432	22
19	San Luis	0.391	24	0.290	23	0.126	24	0.068	23	0.421	24	0.225	21	0.699	24	0.439	21
20	Santa Cruz	0.403	23	0.331	9	0.137	23	0.089	9	0.471	21	0.304	9	0.753	18	0.585	8
21	Santa Fe	0.413	22	0.325	10	0.144	21	0.086	10	0.497	17	0.305	8	0.773	12	0.598	7
22	Santiago del Estero	0.484	2	0.313	12	0.200	2	0.081	12	0.598	2	0.251	15	0.824	1	0.463	17
23	Tucumán	0.446	10	0.302	16	0.167	10	0.075	16	0.515	11	0.237	17	0.770	14	0.460	18
24	Tierra del Fuego	0.421	19	0.299	17	0.148	19	0.073	19	0.485	20	0.238	16	0.758	17	0.472	16
	Argentina	0.496		0.418		0.211		0.147		0.600		0.423		0.821		0.670	

Source: own elaboration.

Table A.7: Reynolds-Smolensky (RSp), Kakwani for expenditure (Kg) and revenues (Kt). Year 2004.

Jurisdiction		Kg _N	Rkg	g _N / (1-t+g)	Rkg	Kg _P	Rkg	g _P / (1-t+g)	Rkg	Kt _N	Rkg	t _N / (1-t+g)	Rkg	Kt _P	Rkg	t _P / (1-t+g)	Rkg	RSp	Rkg
1	City Bs As (CABA)	0.377	18	0.093	14	0.627	1	0.054	24	-0.208	24	0.141	14	-0.178	18	0.047	12	-0.031	24
2	Buenos Aires	0.357	20	0.092	15	0.454	17	0.103	23	-0.080	13	0.187	3	-0.061	4	0.058	7	-0.061	23
3	Catamarca	0.395	13	0.057	22	0.490	9	0.154	19	-0.119	18	0.052	24	-0.133	15	0.039	18	-0.087	18
4	Córdoba	0.397	12	0.094	13	0.454	18	0.109	22	-0.057	8	0.164	10	-0.060	3	0.035	19	-0.075	21
5	Corrientes	0.555	1	0.193	1	0.459	16	0.184	13	-0.143	21	0.125	16	-0.081	10	0.026	23	-0.171	3
6	Chaco	0.423	7	0.132	6	0.491	8	0.243	4	-0.139	20	0.125	17	-0.066	6	0.039	16	-0.155	5
7	Chubut	0.386	15	0.082	18	0.442	19	0.181	15	0.120	1	0.280	1	-0.307	23	0.115	2	-0.110	11
8	Entre Ríos	0.393	14	0.110	11	0.436	21	0.195	11	-0.081	14	0.168	8	-0.094	12	0.050	10	-0.110	12
9	Formosa	0.409	10	0.140	5	0.398	22	0.321	1	-0.156	22	0.119	21	-0.148	17	0.025	24	-0.162	4
10	Jujuy	0.401	11	0.129	7	0.468	15	0.228	6	-0.136	19	0.124	18	-0.084	11	0.033	21	-0.139	8
11	La Pampa	0.431	4	0.084	17	0.489	10	0.176	17	-0.065	9	0.120	20	-0.108	14	0.047	11	-0.109	13
12	La Rioja	0.414	9	0.129	8	0.483	12	0.319	2	-0.028	7	0.138	15	-0.045	1	0.034	20	-0.202	1
13	Mendoza	0.355	22	0.081	19	0.538	2	0.113	21	-0.022	6	0.151	13	-0.193	19	0.053	8	-0.076	20
14	Misiones	0.384	16	0.140	4	0.324	24	0.213	9	-0.074	11	0.156	11	-0.067	8	0.050	9	-0.108	14
15	Neuquén	0.428	5	0.053	23	0.493	7	0.189	12	0.087	3	0.152	12	-0.357	24	0.141	1	-0.079	19
16	Río Negro	0.420	8	0.106	12	0.529	3	0.182	14	-0.112	16	0.169	7	-0.232	20	0.066	6	-0.107	15
17	Salta	0.426	6	0.129	9	0.519	5	0.180	16	-0.074	12	0.180	4	-0.147	16	0.043	14	-0.129	9
18	San Juan	0.369	19	0.142	3	0.482	14	0.241	5	-0.108	15	0.175	6	-0.077	9	0.042	15	-0.146	6
19	San Luis	0.344	24	0.079	20	0.489	11	0.170	18	-0.066	10	0.095	23	-0.066	7	0.039	17	-0.101	16
20	Santa Cruz	0.356	21	0.067	21	0.338	23	0.199	10	0.103	2	0.120	19	-0.278	22	0.113	3	-0.072	22
21	Santa Fe	0.353	23	0.088	16	0.442	20	0.125	20	0.021	5	0.198	2	-0.060	2	0.044	13	-0.088	17
22	Santiago del Estero	0.478	2	0.124	10	0.526	4	0.257	3	-0.173	23	0.114	22	-0.108	13	0.029	22	-0.171	2
23	Tucumán	0.379	17	0.143	2	0.502	6	0.226	7	-0.114	17	0.166	9	-0.062	5	0.075	5	-0.144	7
24	Tierra del Fuego	0.451	3	0.049	24	0.483	13	0.224	8	0.080	4	0.177	5	-0.234	21	0.099	4	-0.121	10
	Argentina	0.363		0.096		0.486		0.123		-0.073		0.165		-0.076		0.054		-0.078	

Source: own elaboration. Note: $t = t_N + t_P$; $g = g_N + g_P$.

Table A.8: Decomposition matrix for Gini coefficient: National and Provincial Budgets. Year 2004.

Change in Gini due to		National Expenditure	% N+P Exp	Provincial Expenditure	% N+P Exp	National Revenues	% N+P Rev	Provincial Revenues	% N+P Rev	National Budget	% N+P Budget	Provincial Budget	% N+P Budget
1	City Bs As (CABA)	-0.033	49%	-0.034	51%	0.015	41%	0.022	59%	-0.018	59%	-0.012	41%
2	Buenos Aires	-0.032	40%	-0.046	60%	0.010	57%	0.008	43%	-0.021	35%	-0.039	65%
3	Catamarca	-0.025	24%	-0.078	76%	0.005	39%	0.007	61%	-0.020	22%	-0.071	78%
4	Córdoba	-0.037	43%	-0.050	57%	0.004	39%	0.007	61%	-0.033	44%	-0.043	56%
5	Corrientes	-0.119	55%	-0.097	45%	0.013	59%	0.009	41%	-0.106	55%	-0.087	45%
6	Chaco	-0.065	34%	-0.127	66%	0.011	51%	0.011	49%	-0.054	32%	-0.116	68%
7	Chubut	-0.032	31%	-0.070	69%	-0.040		0.036		-0.072	68%	-0.034	32%
8	Entre Ríos	-0.046	35%	-0.087	65%	0.011	56%	0.008	44%	-0.035	31%	-0.078	69%
9	Formosa	-0.075	35%	-0.138	65%	0.014	52%	0.013	48%	-0.061	33%	-0.125	67%
10	Jujuy	-0.060	35%	-0.113	65%	0.014	61%	0.009	39%	-0.047	31%	-0.105	69%
11	La Pampa	-0.039	30%	-0.089	70%	0.005	36%	0.009	64%	-0.034	30%	-0.080	70%
12	La Rioja	-0.069	30%	-0.162	70%	0.002	27%	0.004	73%	-0.067	30%	-0.158	70%
13	Mendoza	-0.029	32%	-0.061	68%	0.000	2%	0.013	98%	-0.028	37%	-0.047	63%
14	Misiones	-0.059	45%	-0.073	55%	0.007	46%	0.009	54%	-0.052	45%	-0.064	55%
15	Neuquén	-0.023	21%	-0.088	79%	-0.018		0.052		-0.041	53%	-0.036	47%
16	Río Negro	-0.046	32%	-0.098	68%	0.009	25%	0.026	75%	-0.038	35%	-0.072	65%
17	Salta	-0.059	39%	-0.094	61%	0.005	26%	0.015	74%	-0.054	41%	-0.079	59%
18	San Juan	-0.060	33%	-0.122	67%	0.015	60%	0.010	40%	-0.045	29%	-0.112	71%
19	San Luis	-0.030	26%	-0.085	74%	0.004	43%	0.005	57%	-0.026	24%	-0.080	76%
20	Santa Cruz	-0.025	28%	-0.066	72%	-0.017		0.034		-0.042	57%	-0.032	43%
21	Santa Fe	-0.032	38%	-0.053	62%	-0.008		0.006		-0.039	46%	-0.047	54%
22	Santiago del Estero	-0.072	34%	-0.143	66%	0.018	66%	0.009	34%	-0.055	29%	-0.134	71%
23	Tucumán	-0.059	33%	-0.120	67%	0.013	52%	0.012	48%	-0.045	30%	-0.108	70%
24	Tierra del Fuego	-0.024	19%	-0.100	81%	-0.022		0.027		-0.046	39%	-0.073	61%
	Argentina	-0.035	37%	-0.060	63%	0.007	41%	0.010	59%	-0.028	36%	-0.050	64%

Source: own elaboration. Note: “N+P” stands for national and provincial levels of government.

Table A.9: Welfare assessment for Argentine jurisdictions. Year 2004.

Jurisdiction	Atkinson ($\alpha=0.5$)		Atkinson ($\alpha=-1$)		Atkinson ($\alpha=-10$)	
	ex ante	ex post	ex ante	ex post	ex ante	ex post
1 City Bs As (CABA)	26,370	26,115	14,659	17,441	6,685	9,841
2 Buenos Aires	8,776	8,810	4,970	6,159	2,221	3,321
3 Catamarca	13,001	15,931	7,249	11,621	3,383	7,103
4 Córdoba	9,490	10,133	5,526	7,352	2,579	4,211
5 Corrientes	4,288	6,266	2,384	5,252	1,126	4,122
6 Chaco	4,360	6,157	2,605	5,126	1,311	3,707
7 Chubut	16,973	16,230	10,189	12,626	4,746	7,373
8 Entre Ríos	6,318	7,517	3,608	5,910	1,626	3,690
9 Formosa	3,600	5,932	2,021	4,901	938	3,375
10 Jujuy	4,821	6,638	2,946	5,501	1,482	3,917
11 La Pampa	11,102	13,287	6,244	10,499	2,706	6,490
12 La Rioja	5,437	8,415	3,517	7,616	1,858	6,234
13 Mendoza	10,187	10,742	5,919	7,953	2,734	4,779
14 Misiones	4,639	5,859	2,929	4,760	1,495	3,332
15 Neuquén	19,368	19,750	10,417	13,810	4,610	7,585
16 Río Negro	8,429	9,643	5,037	7,594	2,541	5,494
17 Salta	4,909	6,051	2,507	4,481	1,184	2,902
18 San Juan	4,829	6,409	2,885	5,358	1,390	3,918
19 San Luis	10,184	12,275	6,748	10,211	3,508	7,390
20 Santa Cruz	29,990	32,712	18,373	24,974	8,577	14,898
21 Santa Fe	9,940	10,327	5,847	7,846	2,635	4,541
22 Santiago del Estero	3,854	5,803	1,937	4,733	850	3,390
23 Tucumán	4,629	5,889	2,696	4,856	1,279	3,438
24 Tierra del Fuego	23,015	24,974	13,918	20,535	6,542	14,236
Argentina	9,237	9,992	4,685	6,752	2,091	3,859

Source: own elaboration.