

Documento de Trabajo N° 109

**SUB-NATIONAL REVENUE
MOBILIZATION IN LATIN AMERICA
AND CARIBBEAN COUNTRIES. THE
CASE OF ARGENTINA ^{1/}**

**D. Artana, S. Auguste, M. Cristini, C.
Moskovits and I. Templado**



Fundación de
I nvestigaciones
Económicas
L atinoamericanas

Buenos Aires, enero 2012

^{1/} This paper is part of the IADB Project on Sub-national Revenue Mobilization in Latin American and Caribbean countries. We thank comments received from participants of two seminars held in Washington DC on December 2010 and April 2011 and from the coordinators of the study. We also want to recognize the contribution of various institutions and professionals that provided valuable information and helped us with the survey on Sub-national Taxes and Compliance Costs. They are: the Entrepreneurial Councils of Mendoza and Entre Ríos (CEM and CEER); ACARA (Argentine Car Dealers Association); Fundación Libertad (Santa Fe); Exchange Board of Córdoba, Professional Council of Economic Sciences of Salta, Price Waterhouse and Coopers Arg (PWC); Estudio Bottino y Asoc.; Tucumán Foundation; fiscal experts of the Unión Industrial Argentina. We held interviews with various subnational fiscal authorities among them: AGIP (Buenos Aires City); ARBA (province of Buenos Aires) Ministry of Economics of province of Buenos Aires, Mendoza and Santa Fe and Municipal Fiscal Authorities of Rosario City. Finally, Javier Cao and Ezequiel García Lembergman were very efficient research assistants.

QUÉ ES FIEL?

La Fundación de Investigaciones Económicas Latinoamericanas, FIEL, es un organismo de investigación privado, independiente, apolítico y sin fines de lucro, dedicado al análisis de los problemas económicos de la Argentina y América Latina.

Fue fundada en 1964 por las organizaciones empresarias más importantes y representativas de la Argentina, a saber: la Bolsa de Comercio de Buenos Aires, la Cámara Argentina de Comercio, la Sociedad Rural Argentina y la Unión Industrial Argentina.

FIEL concentra sus estudios en la realización de investigaciones en economía aplicada, basadas en muchos casos en el procesamiento de la estadística económica que elabora directamente la institución.

Estas investigaciones abarcan áreas diversas, tales como economía internacional, mercado de trabajo, crecimiento económico, organización industrial, mercados agropecuarios, economía del sector público, mercados financieros. En los últimos años la Fundación ha concentrado sus esfuerzos en diversas líneas de investigación relacionadas con el sector público y su intervención en la economía, trabajos que han hecho de FIEL la institución local con mayor experiencia en este área. Dentro de esta temática, ocupa un lugar destacado el estudio y la propuesta de soluciones económicas para los problemas sociales (educación, salud, pobreza, justicia, previsión social). Recientemente se han incorporado nuevas áreas de investigación, tales como economía de la energía, medioambiente, economía del transporte y descentralización fiscal.

El espíritu crítico, la independencia y el trabajo reflexivo son los atributos principales de las actividades de investigación de FIEL.

Por la tarea desarrollada en sus años de existencia, FIEL ha recibido la "Mención de Honor" otorgada a las mejores figuras en la historia de las Instituciones-Comunidad-Empresas Argentinas, y el premio "Konex de Platino" como máximo exponente en la historia de las "Fundaciones Educativas y de Investigación" otorgado por la Fundación Konex.

La dirección de FIEL es ejercida por un Consejo Directivo compuesto por los presidentes de las entidades fundadoras y otros dirigentes empresarios. Dicho órgano es asistido en la definición de los programas anuales de trabajo por un Consejo Consultivo integrado por miembros representativos de los diferentes sectores de la actividad económica del país, que aportan a FIEL los principales requerimientos de investigación desde el punto de vista de la actividad empresarial. Un Consejo Académico asesora en materia de programas de investigación de mediano y largo plazo. Los estudios y las investigaciones son llevados a cabo por el Cuerpo Técnico, cuya dirección está a cargo de tres economistas jefes, secundados por un equipo de investigadores permanentes y especialistas contratados para estudios específicos.

AV. CORDOBA 637-4° PISO- (C1054AAF) BUENOS AIRES-ARGENTINA

TEL. (5411) 4314-1990-FAX (5411) 4314-8648

POSTMASTER@FIEL.ORG.AR

WWW.FIEL.ORG

CONSEJO DIRECTIVO

Presidente: Dr. Juan P. Munro
Vicepresidentes: Ing. Víctor L. Savanti
Ing. Juan C. Masjoan
Ing. Manuel Sacerdote
Secretario: Ing. Franco Livini
Prosecretario: Sr. Alberto L. Grimoldi
Tesorero: Dr. Mario E. Vázquez
Protesorero: Dr. Alberto Schuster

Vocales: Guillermo E. Alchourón, Juan Aranguren, Gerardo Beramendi, Hugo Biolcati (Presidente de la Sociedad Rural Argentina), Matías Brea, Alejandro Bulgheroni, José M. Dagnino Pastore, Carlos de la Vega (Presidente de la Cámara Argentina de Comercio), Jorge Ferioli, Carlos Franck, Adelmo Gabbi (Presidente de la Bolsa de Comercio de Buenos Aires), Enrique Humanes, Hugo Krajnc, Alberto J. Martínez, Daniel Pelegrina (Sociedad Rural Argentina), Pablo Pérez Marexiano, Luis Ribaya, Rodolfo Roggio, Luis Sas.

CONSEJO CONSULTIVO

Luis Blasco Bosqued, Martín Carignani, Ernesto J. Crinigan, Horacio Cristiani, Enrique Cristofani, Carlos Alberto de la Vega, Martín del Nido, Horacio Delorenzi, Ciro Di Cecio, Daniel Di Salvo, François Eyraud, Jorge Goulu, Jorge A. Irigoín, Eduardo Mignaqué, Juan Luis Mingo, Javier Ortiz, Gustavo Ariel Perosio, Mario Quintana, Osvaldo J. Schütz, Juan Pedro Thibaud, Horacio Turri, Amadeo Vázquez, José María Vázquez, Gonzalo Verdomar Weiss, Gustavo Verna.

CONSEJO ACADEMICO

Miguel Kiguel, Manuel Solanet, Mario Teijeiro

CUERPO TÉCNICO

Economistas Jefe: Daniel Artana, Juan Luis Bour (Director), Fernando Navajas, Santiago Urbiztondo

Economistas Asociados: Sebastián Auguste, Walter Cont.

Economistas Senior: Marcela Cristini, Cynthia Moskovits, Ramiro A. Moya, Mónica Panadeiros, Abel Viglione.

Economistas: Guillermo Bermudez, Nuria Susmel, Ivana Templado.

Investigadores Visitantes: Enrique Bour, Marcelo Catena, Diego Jorrat, Alfonso Martínez, Oscar Natale.

Asistentes de Estadísticas: J. Cao, M. Cherkasky, J. Christensen, A. Davidovich, I. Horovitz, E. García Lembergman, J. Tavani, F. Velisone.

Entidad independiente, apolítica sin fines de lucro, consagrada al análisis de los problemas económicos y latinoamericanos. Fue creada el 7 de febrero de 1964. -FIEL, está asociada al IFO Institut Für Wirtschaftsforschung München e integra la red de institutos corresponsales del CINDE, Centro Internacional para el Desarrollo Económico. Constituye además la secretaría permanente de la Asociación Argentina de Economía Política.

Index

1. INTRODUCTION	1
2. ARGENTINA'S TAX SYSTEM AND ITS RECENT EVOLUTION	4
2.A. TAXES COLLECTED BY THE FEDERAL GOVERNMENT.....	11
2.B. TAXES COLLECTED BY PROVINCES AND LOCAL GOVERNMENTS	12
<i>i. The turnover tax (Ingresos Brutos).....</i>	<i>14</i>
<i>ii. Occupational Health and Safety Fee (Tasa de Seguridad e Higiene)</i>	<i>19</i>
<i>iii. Taxes on urban and rural real estate.....</i>	<i>19</i>
<i>iv. Taxes on motor vehicles.....</i>	<i>21</i>
<i>v. Stamp tax on some contracts.....</i>	<i>23</i>
<i>vi. Other revenues</i>	<i>24</i>
3. THE IMPACT OF THE 2001-2002 CRISIS ON THE LEVEL AND COMPOSITION OF PROVINCIAL REVENUES.....	25
3.A. ESTIMATES OF THE REVENUE ELASTICITY	28
3.B. THE IMPACT OF FEDERAL TRANSFERS ON PROVINCIAL TAXES.....	32
3.C. THE EFFECT OF FEDERAL TRANSFERS ON PROVINCIAL EXPENDITURES	38
3.D. ARE PROVINCES EXPLOITING THEIR TAX BASES?	41
4. SUB-NATIONAL TAXATION AND THE POLITICAL ECONOMY GAME.....	44
4.A. INTRODUCTION.....	44
4.B. THE ARGENTINE CASE	45
5. PRIORITIES FOR REFORM.....	48
5.A. SUB-NATIONAL OWN-REVENUE ASSIGNMENT.....	48
5.B. TAX ADMINISTRATION AND COMPLIANCE COSTS	51
5.C. PROPOSALS.....	52
APPENDIX 1. TAX ADMINISTRATION COSTS.....	59
PROVINCIAL TAX OFFICES IN ARGENTINA: PERFORMANCE ASSESSMENT	59
THE INTERNATIONAL EVIDENCE	61
THE DATA ENVELOPMENT ANALYSIS (DEA).....	64
A DRAFT CALCULATION FOR A SUB-SAMPLE OF PROVINCIAL TAX COLLECTION OFFICES	66
APPENDIX 2: AN ESTIMATE OF THE EFFECTIVE TAX RATE OF <i>INGRESOS BRUTOS</i>	72
COMPUTING THE CASCADE OF THE TURNOVER TAX RATE.....	72
ESTIMATE OF THE TURNOVER EFFECTIVE TAX ON CONSUMPTION	74
THE CASE OF THE PROVINCE OF BUENOS AIRES.....	76
REFERENCES	80

Esta investigación es parte del Programa de Estudios de FIEL, aprobado por su Consejo Directivo, aunque no refleja necesariamente la opinión individual de sus miembros ni de las Entidades Fundadoras o Empresas Patrocinantes.

1. INTRODUCTION

Argentina is a federal country where sub-national governments account for a relatively large fraction of government revenues and expenditures. Considering only those revenues defined and collected under full sub-national autonomy,¹ in 2009 the 24 Argentine provinces and the about 2200 municipalities collected about 6.4% of GDP or one fifth of the revenues and spent about one half of the expenditures of the Consolidated Government.² It follows that there is a vertical imbalance that is higher for provinces than for local governments and tends to be higher for small and poorer provinces. This gap is filled by an automatic revenue sharing system of federal taxes that, in turn, most provinces share with their own local governments, and by discretionary transfers.³

Argentina's federalism has been criticized for the existence of soft-budget constraints combined with periodic bail outs from the federal government to the provinces,⁴ and the lack of transparent criteria for the secondary distribution of federal taxes among provinces.⁵ Moreover, institutional pitfalls led Argentina's federalism into two extremes: too much rigidity or too loose framework, given the lack of incentives of the political actors to strike cooperative agreements and the inability of the federal government to make credible commitments. As a consequence, sub-national governments focused on continuous bids for additional resources instead of focusing on developing managerial efforts or improving their own-source revenues.⁶

Many studies have shown that the vertical imbalance of Argentine provinces is associated with higher per capita expenditures and a weaker fiscal performance.⁷ Only a few studies tried

¹ *Sub-national governments obtain revenues from different sources. In many cases they face constraints to define the tax rate or the tax base which distorts the incentives and the citizens' perceptions about them. Therefore it is better to count as own-source revenues only those with substantial autonomy from the upper levels of government. See Ambrosiano and Bordignon (2006). Joumard and Kongsrud (2003), Blöchliger and King (2006) and Blöchliger and Rabesona (2009) show that in many OECD countries there is an important difference between revenues with substantial sub-national autonomy and the figures obtained from the OECD or GFS databases.*

² *See Artana (2007) for an explanation of the problems of using GFS data for Argentina. Provinces accounted for about two thirds of the sub-national revenues (with autonomy) and for about 80% of the sub-national expenses.*

³ *Local governments also receive a fraction of their province own-source tax revenues. See López Murphy and Moskovits (1998) and Sanguinetti et al (2001) for an analysis of the provincial revenue sharing schemes.*

⁴ *See for example FIEL (1993, 2003), Fedelino and Ter-Minassian (2009), Weingast (2006), Nicolini et al (2002), Ahmad and Brosio (2008).*

⁵ *See for example, FIEL (1993) and Tommasi (2002).*

⁶ *See for example Saiegh and Tommasi (1999) and Tommasi (2002).*

⁷ *See for example FIEL (1993) or Jones et al (1997).*

to estimate the impact of high vertical imbalances on own-revenue efforts.⁸ Moreover, the incentives of local politicians to deliver better public services and sound fiscal policies may be undermined not only by the size of the vertical imbalance but also by its composition (i.e. unlike automatic transfers, discretionary transfers provide the federal government with an instrument to influence sub-national decisions). And the composition of sub-national revenues matters too. Property taxes and user fees are more visible than other sources of local financing, such as the turnover sales tax.

During the last decade other important changes took place. First, the country suffered a large economic crisis and an important rebound with six consecutive years of high growth (from 2003 to 2008), a novelty in a country with volatile growth. During this period, Argentina's fiscal federalism suffered many changes that are necessary to explore to make proposals that may help to improve sub-national revenue mobilization in the future.

Revenues became more centralized as a consequence of changes in the tax mix that favored the federal government,⁹ and every year since 2003 the Federal Executive was able to pass a budget with an underestimation of revenues. With the use of emergency powers that were delegated by Congress to the Executive in 2002 (and renewed every year until 2010) the president was able to allocate the excess revenues at will. Therefore, discretionary transfers, that were 0.5% of GDP at the end of the 1990's increased to an average of 1.7% of GDP in more recent years.

There were also important changes in the revenues collected directly by the provinces. Resource-rich provinces enjoyed a windfall on the royalties they collect from domestic producers. In spite of government controls on the domestic price of petroleum and natural gas, royalties doubled in a decade (from 0.3% in 1997-99 to 0.6% of GDP in 2007-09).

⁸ For example Jones et al (1999) found some evidence that provinces improved their collection of own-source revenues during the 1990's when they realized that the federal government had a tighter budget constraint imposed by the Currency Board. Baldrich (2010) estimated a two-period panel (1998 and 2002) with data of 22 Argentine provinces. His dependent variable are provincial own-source revenues (in absolute values and per capita terms) and his explanatory variables are the ratio of Central Government transfers to Own-source Revenue, the GINI coefficient, the provincial GDP as a proxy of the provincial tax base and the size of each province (measured by their population). He found that own-source revenues increase when provinces have: a) a better distribution of income, b) a bigger GDP, c) more population, d) less dependence from Central Government grants.

Most provinces changed their own-source tax mix, reducing the taxation on property and increasing the revenues obtained from a turnover sales tax (even increasing tax rates in spite of the extra revenues that a booming economy produced). This may be a consequence of the difficulties to maintain the tax base of the real estate tax in real terms because of money illusion, or simply because they have other less-visible opportunities.

In spite of soaring revenues most provinces benefited from new bailouts:¹⁰ a) the underestimation of the official inflation since 2007 reduced the purchasing value of the provinces debt with the federal government; and b) in 2009 the federal government replaced the inflation-linked debt of some provinces by long-term loans with a grace period and a 6% annual nominal interest that imply an important haircut in net present value taking into consideration the high inflation.

Tax revenues of the General Government are high in Argentina, not only compared with the average Latin-American country but also compared with its potential tax base.¹¹ However, most revenues are collected by the federal government creating a high vertical imbalance that may discourage revenue effort at the sub-national level and increases the odds of federal bailouts.¹² Mobilizing sub-national revenues would allow maintaining the same overall revenue effort but at the same time it would improve the provinces' incentives to deliver better services and reduce the odds of future bail outs. Therefore, reforms should focus more on efficiency and income distribution rather than on raising more revenues.

This paper is organized as follows. In Section 2 we show the recent evolution of government revenues in Argentina and the vertical imbalance. Then we analyze from an economic perspective the most important taxes collected by the three levels of government. In section 3 we look at the determinants of sub-national revenues and explore the impact of the 2001-2002 crisis and of higher federal transfers on the size and composition of the provincial own-source revenues. We found that automatic transfers improve the collections of the cascade sales tax

⁹ *During the 2001-2002 macroeconomic crisis a tax on financial transactions and export taxes were reintroduced. Taxes on exports were not shared with the provinces until 2008 when a minor fraction of the collection from export of soybeans was distributed among the provinces. The federal government also receives a larger fraction of tax on financial transactions than from other taxes (about 70% compared to about 50%).*

¹⁰ *In 2002, amidst a severe shortage of revenues, the federal government (the provinces' most important creditor) replaced dollar-denominated provincial liabilities with inflation-linked bonds with a low real interest rate.*

¹¹ *See Artana and Templado (2010).*

¹² *See Eichengreen and Von Hagen (1996).*

and the property tax by enlarging the disposable income of the private and public sector of the provinces favored by the regional redistribution of income, but discretionary transfers have a different impact: they reduce own-source revenue effort and encourage more public investment. This is consistent with the permanent income hypothesis and also with the attempt to protect the governor if the Federal government decides to cut the money transferred to the province.¹³ In Section 4 we analyze the political economy issues most related to a reform of sub-national taxes and conclude that tax reforms are very politically sensitive in Argentina. Finally, in Section 5 we analyze different options to improve sub-national revenue mobilization in Argentina and we make some proposals to improve it with a special focus on alternatives to improve on the cascade provincial sales tax. In the Appendixes we summarize our findings of a data envelope analysis of the relative efficiency of provincial tax agencies and some methodological issues and more details about our estimate of the effective tax rate of the cascade provincial tax.

2. ARGENTINA'S TAX SYSTEM AND ITS RECENT EVOLUTION

Table 1 shows the evolution of revenues and expenditures of the General Government, broken down by levels of government as estimated by the Ministry of Economy.¹⁴ The data shows the large increase in the state participation in the economy (about 12% of GDP in the last decade) and some decentralization of expenses from the federal government to subnational governments: for example the share of the Federal government in total primary outlays declined from 56% in 2000 to 51% in 2009, that of the provinces increased from 36% to 39% and that of local governments increased from 9% to 10%.

Official figures of revenues and expenditures have some shortcomings:

- Some expenditures are not included. One notorious example is the provincial pension systems. Provinces include in current transfers the amount of money transferred to

¹³ From a political point of view, capital outlays are easier to reduce than current expenditures. It is also easier to raise own-source revenues rather than cutting the public sector wage bill if discretionary federal transfers are reduced.

¹⁴ Data for local governments is available until 2006. We projected the figures for 2009 assuming a similar growth rate of that observed between 2006 and 2009 for a provincial variable that tracks better what happened at the local level. For example: i) we use the evolution of the collection of the provincial tax on vehicles to estimate municipal own-source taxes because it accounts for the largest share of what is included as local government taxes; ii) non-tax revenues and figurative contributions were assumed to follow the same path than provincial transfers to local governments; iii) expenses were projected using the evolution of the similar expense at the provincial level (e.g. salaries were projected with the same growth rate observed in the provincial wage bill).

their pension systems to pay for their deficits, but do not show on a regular basis the total amounts spent in pensions and administrative expenses. Therefore, both revenues and expenditures are underestimated by an amount equal to the employer's and employees' contributions to the provincial pension systems. For 2009 these were 1.80% of GDP. Therefore, total provincial revenues were 13.32% of GDP instead of the 11.52% of GDP reported in Table 1 and total expenditures were 15.93% of GDP instead of 14.13% of GDP (the deficit of 0.3% of GDP is included in current transfers). Note that for the Federal public system there is not such a problem because all expenses are shown in the line of Social Security.

- Provincial and municipal taxes include the automatic transfers that the provinces and local government receive out of the revenue-sharing systems. For the purpose of our study it is necessary to show them separate of own-source taxes. This correction is done in Table 2 for the provinces.
- Own-source municipal taxes are included in non-tax revenues because they are named "user fees".

Table 1 : Argentina: General Government (% of GDP)

	1993				2000			
	National Public Sector	Provinces and Buenos Aires City	Local Governments	TOTAL	National Public Sector	Provinces and Buenos Aires City	Local Governments	TOTAL
CURRENT REVENUES	15.25%	7.64%	2.43%	25.33%	15.04%	8.51%	2.42%	25.97%
Tax Revenues	13.64%	6.79%	1.19%	21.62%	12.94%	7.46%	1.07%	21.48%
Non Tax Revenues	1.57%	0.85%	1.25%	3.66%	2.10%	1.05%	1.34%	4.49%
Public Companies' Operating Surplus	0.04%	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%
CURRENT EXPENDITURE	12.83%	8.54%	2.37%	23.74%	15.38%	10.00%	2.47%	27.84%
Consumption	3.33%	7.18%	2.27%	12.77%	3.25%	7.84%	2.33%	13.42%
Interest Payments	1.23%	0.20%	0.01%	1.44%	3.40%	0.66%	0.04%	4.10%
Social Security	5.99%	0.00%	0.00%	5.99%	6.16%	0.00%	0.00%	6.16%
Current Transfers	2.04%	1.17%	0.09%	3.30%	2.42%	1.49%	0.10%	4.02%
Other	0.23%	0.00%	0.00%	0.23%	0.14%	0.00%	0.00%	0.14%
Public Utilities' Operating Deficit	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.01%
CAPITAL REVENUES	1.24%	0.25%	0.04%	1.53%	0.16%	0.19%	0.03%	0.38%
CAPITAL EXPENDITURE	1.19%	1.60%	0.46%	3.26%	0.31%	1.25%	0.32%	1.88%
TOTAL REVENUES	16.49%	7.89%	2.48%	26.85%	15.21%	8.70%	2.44%	26.35%
TOTAL EXPENDITURE	14.03%	10.15%	2.83%	27.00%	15.69%	11.25%	2.79%	29.72%
Figurative Contributions	0.00%	1.74%	0.22%	1.96%	0.04%	1.70%	0.28%	2.02%
Figurative Expenditure	1.74%	0.22%	0.00%	1.96%	1.70%	0.32%	0.00%	2.02%
GLOBAL RESULT	0.73%	-0.74%	-0.13%	-0.15%	-2.14%	-1.17%	-0.07%	-3.37%
PRIMARY RESULT	1.96%	-0.54%	-0.12%	1.30%	1.27%	-0.51%	-0.04%	0.72%

	2004				2009			
	National Public Sector	Provinces and Buenos Aires City	Local Governments	TOTAL	National Public Sector	Provinces and Buenos Aires City	Local Governments	TOTAL
CURRENT REVENUES	18.03%	9.23%	2.23%	29.49%	23.52%	11.35%	2.68%	37.55%
Tax Revenues	16.48%	8.07%	1.13%	25.68%	13.58%	10.08%	1.50%	25.16%
Non Tax Revenues	1.55%	1.16%	1.10%	3.81%	9.94%	1.27%	1.18%	12.39%
Public Companies' Operating Surplus	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CURRENT EXPENDITURE	12.30%	8.73%	2.11%	23.13%	20.40%	11.78%	2.77%	34.95%
Consumption	2.99%	6.64%	1.94%	11.57%	4.19%	9.69%	2.57%	16.45%
Interest Payments	1.29%	0.37%	0.01%	1.67%	2.44%	0.30%	0.01%	2.75%
Social Security	4.80%	0.00%	0.00%	4.80%	7.48%	0.00%	0.00%	7.48%
Current Transfers	3.18%	1.72%	0.15%	5.05%	5.84%	1.79%	0.19%	7.82%
Other	0.03%	0.00%	0.00%	0.03%	0.26%	0.00%	0.00%	0.26%
Public Utilities' Operating Deficit	0.00%	0.00%	0.00%	0.00%	0.19%	0.00%	0.00%	0.19%
CAPITAL REVENUES	0.05%	0.22%	0.01%	0.28%	0.13%	0.17%	0.10%	0.40%
CAPITAL EXPENDITURE	0.93%	1.80%	0.33%	3.05%	2.39%	2.35%	0.69%	5.43%
TOTAL REVENUES	18.08%	9.45%	2.24%	29.77%	23.65%	11.52%	2.78%	37.95%
TOTAL EXPENDITURE	13.22%	10.53%	2.44%	26.19%	22.79%	14.13%	3.46%	40.38%
Figurative Contributions	0.05%	2.30%	0.24%	2.58%	0.02%	2.13%	0.51%	2.66%
Figurative Expenditure	2.30%	0.28%	0.00%	2.58%	2.13%	0.53%	0.00%	2.66%
GLOBAL RESULT	2.60%	0.94%	0.04%	3.58%	-1.25%	-1.02%	-0.17%	-2.43%
PRIMARY RESULT	3.89%	1.31%	0.05%	5.25%	1.19%	-0.72%	-0.15%	0.32%

Source: Based on MECON Investment and Saving Account of the General Government and Own Estimates for Local Governments and GDP for 2009.

Notes: 1/ Figurative expenditures are transfers from one level of government to finance expenses of another level. They are registered as figurative contributions in the recipient government.

According to the Argentine Constitution, the federal government establishes and receives the revenues from taxes on trade (both on imports and on exports); the provinces collect direct taxes while indirect taxes are shared between both levels of government. However, the provinces may delegate the collection of direct taxes to the federal government, as has been the norm for many decades, and share the proceeds from direct and indirect taxes through a

revenue sharing agreement. Each province is responsible for ensuring adequate revenue sources to its municipalities.

In practice, the federal government collects a large share of total taxes and then transfers a fraction of this collection to provinces that, in turn, transfer money to their local governments. In any case, in 2009, provinces and municipalities had own-sources of revenues for about 6.5% of GDP, out of total revenues of about 37.6% of GDP (see Table 2).¹⁵

As in most countries, tax revenues are the bulk of government revenues. During the 1990's tax revenues averaged about 22% of GDP. In 2009 they were 50% higher. Most of this change was obtained at the federal level by a combination of new taxes and increases in the effective tax rates. Provinces increased their collections of a turnover tax, but only to offset declining revenues from property taxes (Table 3).¹⁶

	1993	2000	2004	2009 3/	Variation 1993-2009	Contribution to the total variation 1993- 2009
Taxes on Income, Profits, & Capital Gains	2.03%	3.98%	5.26%	5.24%	3.21%	27%
Taxes on Property	1.41%	1.62%	1.46%	1.36%	-0.05%	0%
Taxes on Goods and Services 1/	10.77%	11.16%	13.01%	15.27%	4.50%	37%
Taxes on International Trade	1.07%	0.73%	3.05%	3.68%	2.62%	22%
<i>of which import duties</i>	1.03%	0.70%	0.73%	0.71%	-0.32%	-3%
<i>of which taxes on exports</i>	0.01%	0.01%	2.29%	2.95%	2.94%	24%
Other Taxes	0.78%	0.59%	0.54%	0.48%	-0.30%	-2%
Total Taxes	16.05%	18.08%	23.32%	26.03%	9.98%	83%
Social Contributions to Public System	5.58%	3.40%	3.04%	7.11%	1.54%	13%
Social Contributions to Private pension funds	0.00%	1.48%	0.93%	0.00%	0.00%	0%
Total Taxes and Social Contributions	21.63%	22.97%	27.29%	33.14%	11.51%	96%
Other Revenues 2/	3.92%	4.63%	4.26%	4.45%	0.53%	4%
Total Government Revenues	25.55%	27.59%	31.54%	37.59%	12.05%	100%
Collected by:						
Federal Government	70%	64%	71%	75%	10.40%	86%
Provinces	15%	14%	13%	13%	1.11%	9%
Municipalities	5%	5%	4%	4%	0.09%	1%
Private Pension Funds	0%	5%	3%	0%	0.00%	0%
Other agencies	10%	12%	10%	8%	0.44%	4%
Notes: 1/ Revenues net of tax reimburses to exporters. Includes VAT, Excises, 100% of tax on financial transactions and provincial turnover tax						
2/ Includes Grants and municipal revenues.						
3/ 2009 Nominal GDP estimated by FIEL						
Source: Authors' calculations based on DNIAF-MECON and FIEL.						

¹⁵ Data on the composition of government revenues is not totally consistent with the data of Table 1, although the sources of information are different agencies of MECON.

¹⁶ We show averages of three years to reduce the impact of one-off events. During 1997, 1998, 2007 and 2008 the economy was growing, while in 1999 and 2009 there was a recession.

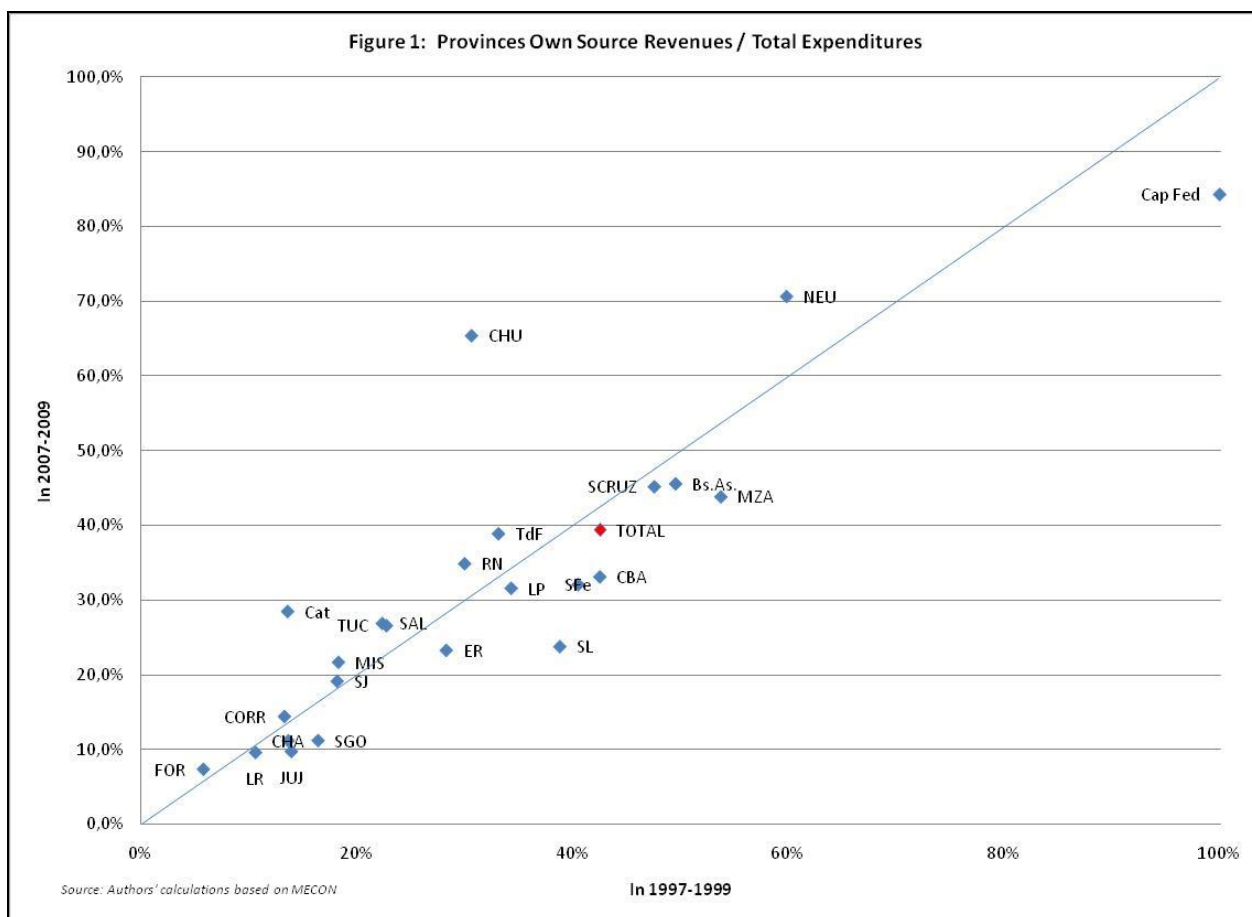
Table 3: Federal and Provincial Taxes (% of GDP)

	Average 1997-99	Average 2007-09
Federal	17.10%	26.38%
VAT	6.66%	7.56%
Excises	2.03%	1.66%
Personal assets	0.21%	0.33%
Income tax	3.22%	5.30%
Social Security	3.67%	5.53%
Export taxes	0.01%	2.97%
Taxes on imports	0.90%	0.81%
Financial Transactions	0.00%	1.87%
Other	0.40%	0.33%
Provinces	3.87%	4.48%
Turnover sales	2.18%	3.24%
Real State	0.63%	0.38%
Automobiles	0.31%	0.26%
Other	0.75%	0.60%
Other Provincial Revenues		
Shared Federal Taxes	5.73%	6.79%
Federal transfers	0.50%	1.69%
Other Provincial Own Source Revenues	0.74%	1.03%
Royalties	0.29%	0.59%
Memo items		
Provinces Total Revenues	10.84%	13.99%
Provincial Expenditures	11.91%	14.92%
Provinces Deficit	1.07%	0.93%
Source: Author's calculations based on MECON		

Revenue collections became more centralized, with the federal government increasing its share from 69-70% in 1993 or 2000 to 75% in 2009.¹⁷ Provinces reduced their deficits but did not eliminate them in spite of the expansion of the economy. The average deficit that was 9% of expenditures at the end of the 1990's was cut to 6% in 2007-2009, but some provinces had a deficit higher than the average, notably the emblematic Province of Buenos Aires with a deficit that averaged 10% of its expenditures during 2007-2009.

The vertical imbalances increased modestly, but with important differences across provinces (see Figure 1). For example, some oil-producing provinces that collect royalties reduced the vertical imbalance given the increase in the domestic prices of crude oil and natural gas at the producer level, while the five advanced provinces increased (modestly) their dependence from federal transfers.

¹⁷ Mandatory contributions to private pension funds were added to allow for a consistent comparison. Most workers opted to make contribution to private pension funds from mid 1994 to the end of 2008 when the government decided to nationalize them and forced all workers to contribute to the public pay-as-you-go system.



The composition of provincial taxes changed with an important increase of the collections from the turnover sales tax and a reduction of taxes on property.¹⁸ Although the tax bases are not the same, it is interesting to note that the collection of the provincial turnover tax as a share of the collection of the federal VAT increased from 33% in 1997/99 to 43% in 2007-09 at the same time that the provincial collection of taxes on property (real estate plus automobiles) was reduced from 307% as a share of the collection of the federal tax on personal assets in 1997/99 to 114% in 2007/09. This suggests that the change in the composition of provincial own-source taxes was a political decision rather than a consequence of alterations in the tax bases.

Provinces received more automatic transfers from the federal government through the different tax sharing agreements, but discretionary transfers multiplied by three (measured as

% of GDP). Provinces have no important restrictions to spend the revenues obtained from tax sharing,¹⁹ although there are some restrictions on the money received through discretionary transfers.

Unfortunately data for local governments is not updated.²⁰ The last available year with a complete data set is 2000 and only a few municipalities provide updated information in their web pages. Sanguinetti et al (2001) showed that there is an important diversity among the 23 provinces²¹ in the share of local governments in the consolidated sub-national expenditures (from 8% to 32%). Their econometric analysis focused on the determinants of the large variation in per capita municipal expenditures. The main results were: a) higher transfers per capita lead to higher expenditures per capita (similarly to what was found in studies about the Argentine provinces), b) political variables had an impact (more decentralization of the local power reduces per capita expenditures), and c) the size of the local government, the economic activity or poverty had no impact on expenditures per capita. The authors did not explore the impact on own-source revenues.

The changes in federal and provincial revenues took place in a changing environment. The implosion of economic activity that followed after the default of the federal public debt, the

¹⁸ A few small provinces transferred in the early 1990s the collection of taxes on real estate and automobiles to their municipalities.

¹⁹ One exemption is the transfers for education and health that accompanied the second stage of decentralization of these services that took place in the early 1990's. However, as their value was fixed in nominal terms it has eroded substantially in real terms.

²⁰ Data for the municipalities of the Province of Buenos Aires (see Table below) show that between 1997 and 2007 the collections of the provincial property tax increased 83% compared to a 71% increase for the property tax collected by local governments. In the same period, collections of the cascade sales tax soared at the provincial level and also at the municipal level (although not all municipalities use sales as the tax base of their taxes on business).

In Arg\$ million	1997	2007	% change
Province of Buenos Aires Own-source tax revenues			
Total Tax Revenues	4.510.174	13.029.150	189%
Cascade Sales Tax	2.113.650	8.506.267	302%
Property tax	667.295	1.224.293	83%
Automobiles	484.631	804.095	66%
Other	1.244.598	2.494.495	100%
Municipalities of the Prov of Buenos Aires Own-Source Tax revenues			
Total Tax Revenues	1.744.141	3.716.093	113%
Cascade Sales Tax	323.770	1.007.760	211%
Property tax	878.815	1.504.162	71%
Other	541.556	1.204.171	122%

²¹ The City of Buenos Aires has no local governments.

large depreciation of the peso and the financial crisis of 2001-2002 encouraged the government to adopt emergency measures that increased centralization.²² Centralization may have afforded an “insecure” political regime with leverage over sub-national governments.²³ Large exogenous shocks may change the relative bargaining power of the different levels of government and may change tax policies.²⁴ The 2001-2002 Argentine crisis is an example. It created a political vacuum that the 2003 presidential election could not fill immediately given that the elected president obtained only 22% of the votes. The economic recovery, the possibility to adopt emergency measures without Congress approval and the use of discretionary transfers allowed the government to gain political muscle later.

The 2001-2002 macroeconomic crisis also brought to an end several fiscal agreements that had been signed between the federal government and the provinces. In particular, provinces regained freedom to set the tax rates and tax bases of the turnover sales tax and abandoned the path of gradual reduction of tax rates on primary production and manufacturing that had been agreed in the early 1990’s to reduce the cascade effect.²⁵

2.a. Taxes collected by the federal government

The federal government is de facto responsible for collecting most taxes in Argentina. The taxation on consumption includes: a) a VAT of the consumption type at a general rate of 21% although some utilities are taxed at a higher rate of 27% for their sales to firms to piggy back on their collection effort, and some foods are taxed at 10.5%. Financial services are exempt as is customary in most countries; and b) special excises on the consumption of fuels, tobacco and beverages, most of them ad-valorem. The taxation of income flows and assets includes: a) a personal income tax on labor and capital income at a progressive rate (the top marginal rate is 35%). The minimum exempt level is about twice the per capita income which, unlike developed countries, takes the low medium-income families out of the income tax net; b) labor income is also taxed with social contributions that return some services to formal workers although most

²² *Oates (1978) provided some evidence that in deep crises there is a tendency to centralize government responsibilities.*

²³ *Weingast (2006).*

²⁴ *Ambrosiano and Bordignon (2006).*

²⁵ *The federal financial transaction tax that was reintroduced in 2001 falls on a similar tax base than the provincial cascade tax. This is an example of a tax externality not properly coordinated between the different levels of government.*

benefits are not a direct function of the tax paid by employers and employees. Therefore, they are a tax on labor income at a proportional rate; c) firms' profits are taxed at a 35% flat rate and dividends are exempt. There is no indexation for inflation. There is a 1% tax on business assets that is integrated to the business income tax (firms can credit it against their liabilities in the income tax). It acts as a minimum tax on income. There is a similar tax for individuals on their properties and some financial assets (*Impuesto a los Bienes Personales*), but it is a final tax that cannot be credited against the personal income tax. The rate structure for this tax on personal wealth is progressive and the marginal rate is 0.75%. Only mortgages are allowed to be deducted from assets.

Other taxes with important contributions to federal revenues are: a) a tax on financial transactions at a combined rate of 1.2%, with an exemption for deposits used to pay monthly salaries.²⁶ This tax is similar to a turnover tax. It distorts relative prices and penalizes domestic producers that cannot shift it to international prices; b) imports pay duties according to the common external tariff agreed on Mercosur. All exports pay taxes, but at different rates that go from 4.8% for manufacturing to 37.5% for soybeans. Exports taxes are a tax on production and a subsidy to local consumption.

With the exception of import duties and social security contributions, all revenues are shared with the provincial governments, but the primary distribution is different across taxes. It is lower for taxes on exports (only revenues received from exports of soybeans are shared with the provinces), and for the tax on financial transactions.

2.b. Taxes collected by Provinces and Local Governments

As founders of the federal government, provinces delegated the collection of some taxes but retained taxing power. Municipalities collect taxes and user fees, but most "fees" are hidden taxes because they are not related to the services provided. Most revenues are obtained from a tax on sales (that mimics in most cases the provincial tax) and from taxes on real estate (that mimic the provincial one).

²⁶ *Both debits and credits into bank accounts are taxed at 0.6%. One third of the rate on bank credits can be used as a tax credit for income tax purposes.*

Each province and most local governments have their own tax administration department or agency (either centralized or decentralized). Some provinces agree to share information with the federal tax agency, but there are no joint audits.

Table 4 shows the composition of provincial revenues in 2009, but expressed as a fraction of the local GDPs.²⁷ Data for the provinces are also grouped according to their level of development and their population density. The importance of the state participation in the economy is negatively correlated with development and with population density. This is a consequence of the high regional distributional component of federal transfers that favors the poor and sparsely populated provinces. For example the automatic federal transfers averaged only 3.8% of the GDP of the advanced and populated provinces, but jumped to 26.52% of GDP for the poorest provinces with low density (column 12). On one extreme there was the City of Buenos Aires with total revenues of 6% of its GDP and on the other was Formosa with 59% of its GDP.²⁸

There is much less variation in the collection of Own-source tax revenues (from 3.8% of GDP to 4.9% for the averages of the 4 groups). This is especially the case for the most important tax of the provincial governments, *Ingresos Brutos* (the cascade sales tax, with revenues that average 2.9% in the group of poor and sparsely populated provinces to 3.7% of GDP in the richer and highly populated provinces) and also for the stamp tax (with revenues of about 0.4% of the local GDPs in the four groups). Real Estate tax collections expressed as a fraction of the provincial GDPs are higher for provinces with high population density, suggesting that urban properties account for most of the collections of this tax.

²⁷ *The weighted average is estimated as the total collection in pesos of the 24 provinces divided by the nominal National GDP. The sum of the 24 provincial GDPs has minor differences with the estimate of the National GDP.*

²⁸ *Estimates of provincial GDPs are not as reliable as the estimate of the Federal GDP.*

SUB-NATIONAL REVENUE MOBILIZATION IN LATIN AMERICA AND CARIBBEAN COUNTRIES. THE CASE OF ARGENTINA

Table 4: Provincial Revenues as % of Provincial GDP as of 2009

	Cascade Tax	Real State Tax	Tax on Motor Vehicles	Stamp Tax	Other taxes	Total Own-Source Taxes	Royalties	Other Non-tax revenues	Total Non-tax revenues	Capital revenues and other	Total Own-source Revenues	Automatic Transfers	Discretionary Transfers	Total Federal Transfers	Total Provincial Revenues
	1	2	3	4	5	6 = 1+2+3+4+5	7	8	9 = 7+8	10	11 = 6+9+10	12	13	14 = 12+13	15 = 11+14
Ciudad de Buenos Aires	3.55%	0.56%	0.43%	0.31%	0.06%	4.90%	0.00%	0.24%	0.24%	0.06%	5.20%	0.57%	0.12%	0.69%	5.89%
Buenos Aires	3.91%	0.36%	0.35%	0.34%	0.36%	5.32%	0.00%	0.21%	0.21%	0.10%	5.63%	3.80%	1.66%	5.45%	11.09%
Catamarca	1.75%	0.10%	0.16%	0.19%	0.00%	2.20%	0.68%	2.32%	3.01%	0.43%	5.64%	18.96%	1.51%	20.47%	26.11%
Córdoba	3.72%	0.43%	0.21%	0.24%	0.00%	4.59%	0.00%	0.71%	0.71%	0.27%	5.58%	7.80%	2.00%	9.80%	15.38%
Corrientes	1.59%	0.11%	0.00%	0.25%	0.00%	1.96%	0.10%	0.11%	0.21%	0.32%	2.49%	14.31%	1.49%	15.80%	18.30%
Chaco	3.08%	0.03%	0.00%	0.41%	0.69%	4.21%	0.00%	0.42%	0.42%	0.40%	5.03%	29.56%	11.98%	41.54%	46.57%
Chubut	2.74%	0.00%	0.00%	0.35%	0.09%	3.19%	6.49%	1.72%	8.21%	0.70%	12.10%	6.01%	1.81%	7.81%	19.91%
Entre Ríos	2.55%	0.64%	0.42%	0.38%	0.48%	4.47%	0.88%	0.25%	1.12%	0.46%	6.06%	15.32%	4.49%	19.81%	25.87%
Formosa	2.47%	0.04%	0.00%	0.33%	0.15%	2.99%	0.27%	0.70%	0.98%	0.30%	4.26%	45.75%	9.29%	55.04%	59.31%
Jujuy	2.40%	0.12%	0.00%	0.30%	0.21%	3.03%	0.02%	0.34%	0.36%	0.32%	3.70%	22.39%	11.44%	33.84%	37.54%
La Pampa	3.77%	0.99%	0.56%	1.03%	0.09%	6.45%	1.13%	0.64%	1.77%	2.37%	10.59%	19.67%	3.99%	23.66%	34.25%
La Rioja	2.10%	0.07%	0.27%	0.07%	0.00%	2.51%	0.00%	0.19%	0.19%	1.75%	4.44%	29.42%	15.90%	45.32%	49.76%
Mendoza	3.08%	0.37%	0.43%	0.48%	0.03%	4.38%	2.05%	0.86%	2.92%	0.50%	7.80%	8.57%	1.95%	10.52%	18.32%
Misiones	2.80%	0.14%	0.04%	0.26%	0.02%	3.25%	0.46%	0.25%	0.71%	0.40%	4.36%	11.98%	4.14%	16.12%	20.49%
Neuquén	3.24%	0.21%	0.00%	0.39%	0.00%	3.83%	7.37%	5.05%	12.42%	1.43%	17.68%	5.30%	1.24%	6.54%	24.22%
Río Negro	3.22%	0.24%	0.46%	0.36%	0.01%	4.29%	2.28%	0.90%	3.19%	0.33%	7.81%	12.20%	2.55%	14.75%	22.56%
Salta	4.65%	0.05%	0.00%	0.63%	0.33%	5.67%	2.93%	0.60%	3.52%	0.59%	9.78%	21.59%	4.86%	26.44%	36.23%
San Juan	2.80%	0.31%	0.40%	0.31%	0.64%	4.46%	0.60%	0.63%	1.22%	1.19%	6.88%	24.46%	4.89%	29.35%	36.23%
San Luis	3.94%	0.27%	0.20%	0.41%	0.03%	4.85%	0.00%	0.35%	0.35%	0.64%	5.85%	18.32%	1.80%	20.13%	25.98%
Santa Cruz	3.97%	0.01%	0.00%	0.57%	0.00%	4.55%	8.78%	1.71%	10.49%	7.54%	22.59%	10.75%	11.29%	22.04%	44.63%
Santa Fe	2.92%	0.32%	0.00%	0.48%	0.02%	3.74%	0.00%	0.12%	0.12%	0.30%	4.16%	7.35%	1.29%	8.64%	12.80%
Santiago del Estero	2.38%	0.20%	0.10%	0.37%	0.53%	3.58%	0.02%	0.32%	0.33%	0.59%	4.51%	30.40%	9.17%	39.57%	44.08%
Tierra del Fuego	3.39%	0.00%	0.00%	0.15%	0.84%	4.39%	3.15%	1.70%	4.85%	0.72%	9.96%	11.94%	3.17%	15.11%	25.08%
Tucumán	7.05%	0.89%	0.39%	0.92%	0.20%	9.43%	0.00%	0.97%	0.97%	0.68%	11.08%	25.85%	7.71%	33.57%	44.64%
High Development and High Population Density	3.65%	0.42%	0.33%	0.34%	0.19%	4.92%	0.09%	0.29%	0.37%	0.14%	5.44%	3.80%	1.21%	5.01%	10.45%
High Development and Low Population Density	3.33%	0.19%	0.13%	0.43%	0.10%	4.18%	5.06%	2.25%	7.31%	1.76%	13.26%	10.00%	3.17%	13.16%	26.42%
Low Development and High Population Density	3.08%	0.34%	0.16%	0.40%	0.25%	4.22%	0.33%	0.35%	0.67%	0.43%	5.33%	18.29%	5.85%	24.14%	29.47%
Low Development and Low Population Density	2.88%	0.14%	0.15%	0.36%	0.31%	3.83%	0.99%	0.85%	1.84%	0.75%	6.41%	26.52%	6.52%	33.04%	39.45%
Weighted average	3.53%	0.38%	0.29%	0.35%	0.19%	4.74%	0.59%	0.49%	1.08%	0.34%	6.16%	6.767%	2.06%	8.83%	14.99%
Simple average	3.21%	0.27%	0.18%	0.40%	0.20%	4.26%	1.55%	0.89%	2.44%	0.93%	7.63%	16.76%	4.99%	21.75%	29.38%
Coefficient of variation	0.344	1.004	1.068	0.547	1.290	0.361	1.630	1.202	1.384	1.615	0.612	0.633	0.866	0.642	0.469
Minimum	1.59%	0.00%	0.00%	0.07%	0.00%	1.96%	0.00%	0.11%	0.12%	0.06%	2.49%	0.57%	0.12%	0.69%	5.89%
Maximum	7.05%	0.99%	0.56%	1.03%	0.84%	9.43%	8.78%	5.05%	12.42%	7.54%	22.59%	45.75%	15.90%	55.04%	59.31%

High Development and High Population Density are: City of Buenos Aires, Buenos Aires, Córdoba, Mendoza and Santa Fe. High Development and Low Population Density: Chubut, La Pampa, Neuquén, Río Negro, San Luis, Santa Cruz and Tierra del Fuego. Low Development and High Population Density are: Corrientes, Chaco, Entre Ríos, Jujuy, Misiones and Tucumán. Low Development and Low Density are: Catamarca, Formosa, La Rioja, Salta, San Juan and Santiago del Estero.

Source: Authors' calculations based on Mecon and provincial Bureau of Statistics

i. The turnover tax (*Ingresos Brutos*)²⁹

The Argentine provinces had used a tax on gross sales for years (*Impuesto a las Actividades Lucrativas*). When the VAT was introduced in 1975 at the Federal level they agreed to eliminate the tax and this enabled them to receive a fraction of the collections of the VAT. However, under a new name (*Ingresos Brutos*) the cascade tax was reintroduced probably as a response to the high deficits that were pervasive at that time at all levels of government. In the early 1980's there was one failed attempt to reduce the cascade of the tax and in the early 1990's the Federal government provided some incentives to provinces to reduce the cascade under the umbrella of two Fiscal Agreements (1992 and 1993). Provinces were supposed to exempt primary activities, manufacturing, construction and financial services. About 60% of the

²⁹ This section is a summary of Artana et al (2011).

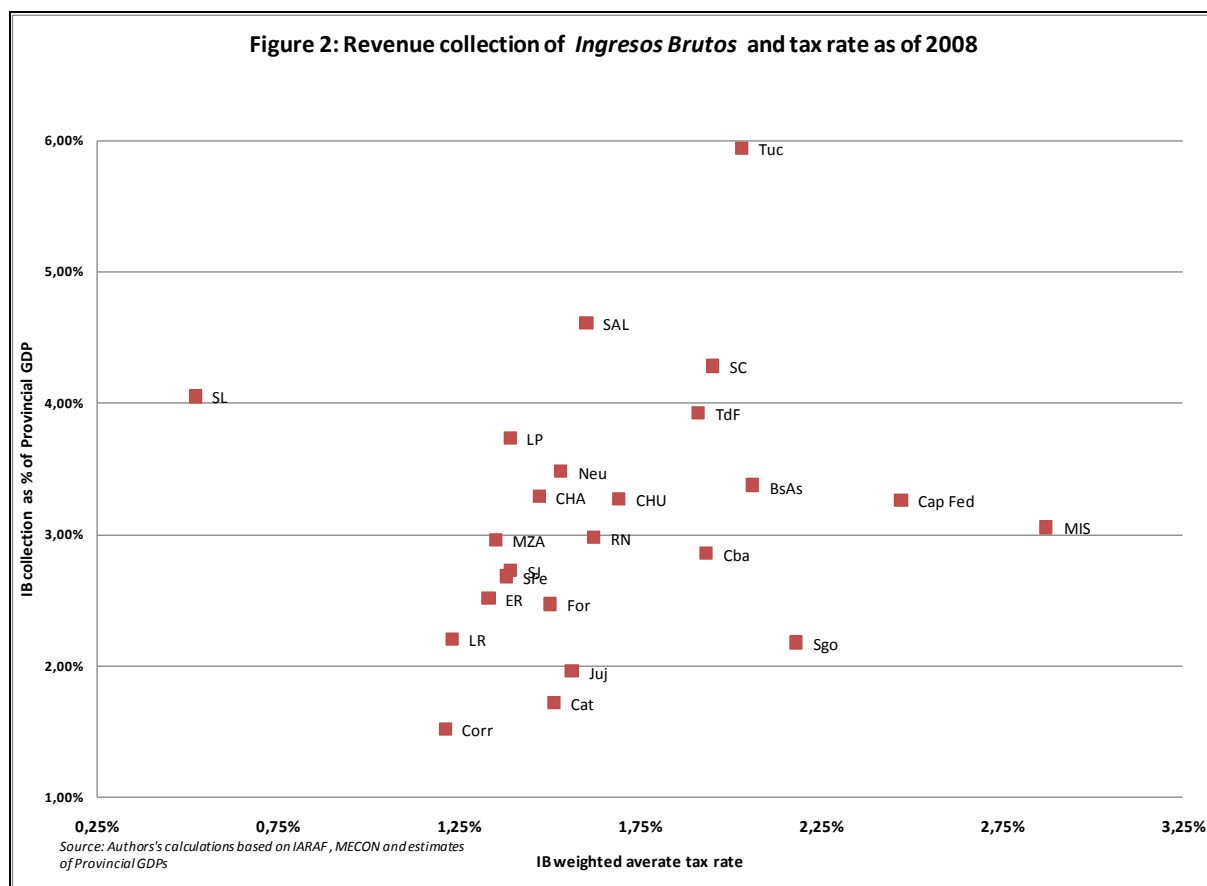
provinces complied with the exemptions on primary activities, manufacturing and construction but only a few extended the exemptions to financial services. During the 2000's the Fiscal Agreements were abandoned and most provinces taxed those activities again.

Some provinces reduce the rates for small firms and grant other exemptions either for development reasons (e.g. manufacturing located in industrial zones) or for distributional purposes (e.g. lower rates on some foods, transport and medicines). The fiscal loss for these special regimes is substantial (e.g. about 23% of collections in 2010 in the Province of Buenos Aires).³⁰

The weighted average tax rate³¹ increased from 1.60% in 2002 to 1.68% in 2010. Figure 1 shows the collections obtained by each province in 2008 expressed as a percentage of the provincial GDP and the weighted average tax rate estimated by IARAF for that year. It follows that there is a positive relationship between the rate and the collections, but there are important differences in collections for relatively similar rates. This may respond to different exemptions that were not considered in the estimate of the weighted average tax rate or to differences in the enforcement of the tax (either differences in evasion or different contributions from the easier-to-collect sources like the money obtained from large taxpayers or from withholdings). The recent evolution of collections differed from one province to another. On one extreme, there is a group of 7 provinces (Buenos Aires, Chubut, La Pampa, Neuquen, San Luis, Santa Cruz and Tucuman) with large increases between 1993 and 2009 (over 90% of the growth observed in their GDPs), and on the other extreme, there are two provinces (City of Buenos Aires and Mendoza) with increase of less than 30% over GDP growth.

³⁰ *The province of Buenos Aires estimates the fiscal loss of tax exemptions and reduced rates in own-source taxes. For 2010 in Ingresos Brutos 65% of the estimated loss came from the exemption granted to small and medium size firms and 35% from reduced rates and exemptions.*

³¹ *The average rate for each province is estimated using the shares of each economic sector in the provincial Gross Domestic Product and taking into consideration the general exemptions (but not those exemptions granted to specific firms like those located in industrial parks). Therefore, the rates shown in Table 5 may overstate the rates charged in practice.*



More recently, the distortions became even worse. For example:

- The dispersion in legal tax rates for the same economic activity among different provinces is important. Table 5 summarizes the findings of IERAL and IARAF, two institutions that estimate the effective legal tax rates of taxes on gross sales for the 24 provinces and a sample of municipalities.³² It follows that there is a high dispersion across provinces of the rates for primary activities, manufacturing and construction in the provincial tax on gross sales. For utilities, commerce and financial intermediation the dispersion is lower, but average rates are higher.

³² These institutions follow since 2002 a sample of 100 municipalities that represent 60% of the population of the 23 provinces with local governments. Seventy percent of these municipalities have a tax on gross sales similar to the provincial tax. The other 30% uses the number of employees, the size of the shop or other criteria to calculate the tax.

Table 5: Dispersion of Tax Rates in Provincial and Municipal Cascade Sales Taxes. By Economic Activity and Province in 2006

	Primary		Manufacturing & Construction Located in Same Province		Utilities		Commerce, Restaurants & Hotels		Financial Intermediation	
	Provincial Turnover Tax	Municipal Tax	Provincial Turnover Tax	Municipal Tax	Provincial Turnover Tax	Municipal Tax	Provincial Turnover Tax	Municipal Tax	Provincial Turnover Tax	Municipal Tax
	Average rate in 24 provinces	0.49%	0.47%	0.78%	0.39%	2.38%	0.69%	2.67%	0.90%	2.69%
Minimum rate	0.00%	0.00%	0.00%	0.10%	0.60%	0.05%	1.60%	0.25%	0.00%	0.05%
Maximum rate	2.00%	3.40%	2.30%	1.40%	3.40%	2.60%	4.40%	2.10%	4.40%	3.00%
Coefficient of variation	1.27	1.54	0.97	0.77	0.31	0.88	0.22	0.48	0.39	0.85

Source: Authors' calculations based on IARAF (2009) and IERAL (2006).

- By increasing the tax burden on primary, manufacturing, construction and financial services that are used as inputs in other economic activities the cascade has surely increased. For example, the average rate on primary activities increased from 33% of the average rate of *Ingresos Brutos* in 2003 to 36% in 2010, and for manufacturing it rose from 50% of the average in 2003 to 60% in 2010.
- 21 of the 24 provinces have a higher tax on manufacturers that are located in other provinces than in manufacturers located on their territory. The difference in rates is substantial. For example in the Province of Buenos Aires is 3% compared with 0,57%, in Cordoba 3,50% compared with 0,46%, in the City of Buenos Aires 3% compared with 0.63% and in Santa Fe 1,35% compared with 0%.³³ Provinces can enforce this through the *Convenio Multilateral* that distributes among provinces the collections of large taxpayers that have sales in more than one jurisdiction. The difference in rates increases the cost for a firm located in the province that purchases inputs in other provinces, and is a sort of internal barrier to trade because a firm “saves” in taxes by purchasing from local manufacturers.
- Withholdings became more pervasive.³⁴ There are over 60 different regimes for withholdings in the 24 provinces. The most important in the case of the most developed provinces are: a) credit card companies withhold 3% of the payments made to retailers

³³ See IARAF (2010 a) that estimates that the weighted average tax rate for the 24 provinces for manufacturers located in other provinces more than doubles the rate for manufacturers located in the province.

³⁴ In 2010 withholdings accounted for 54% of total collections of *Ingresos Brutos* in the City of Buenos Aires and for 83% in the province of Buenos Aires. Firms paying through the Multilateral Agreement contributed with 38% in the City and 13% in the province of Buenos Aires. Local taxpayers contribute with less than 10% of total revenues suggesting that most are small firms.

(in some provinces this is similar than the rate charged to retailing); b) suppliers must withhold a percentage of the net of tax sale if the buyer is registered as a taxpayer in the province. The withholding acts as an advance of the tax that the buyer has to pay on its sales;³⁵ c) most provinces have an agreement with the Federal Customs to withhold 1.5% of imports; d) financial institutions are obliged by the provinces to withhold a percentage of bank deposits made by firms if they presume that the deposit was related to sales. In this case the withholding is made on sales including VAT, when the tax base of the cascade tax is net of VAT. As these four withholdings are additive there is a non-negligible probability of suffering chronic excess withholdings that provinces are reluctant to reimburse. Moreover, as the regional distribution of purchases is likely to be different from the regional distribution of sales, many firms may have a credit with some provinces although on the aggregate they may have a balanced position. Only a few provinces permit the transfer of excess withholdings to other taxpayers.

The fraction of provincial and municipal sales taxes that falls on the producers of tradables is better thought as a tax on production given that Argentina is a price-taker in world markets. Therefore this fraction of the tax is likely to fall on income of labor and capital (including land). The tax that falls on the non-traded part of goods and services sold in the domestic market is a tax on consumption at variable rates that depend on the cascade and the value added by the different stages on non-tradable production. With information of collections by sector of some of the large provinces, it can be concluded that on one extreme retail activities (including services) with no cascade effect may account for about 30% of total revenues, on the other extreme primary activities and manufacturing with maximum cascade effect may account for about 20%, and the remaining 50% is obtained from services (financial, transport) or construction that have a mix of final sales and intermediate sales. Therefore, the cascade is a problem in the tax as most of its revenues are obtained from activities that are inputs of other activities.

³⁵ *At least six provinces, Buenos Aires, Cordoba, Corrientes, Misiones, Santa Fe and Tucuman, extend the withholding also to buyers who have no tax base in the province. In this case, the problem of "excess" taxation is more likely.*

ii. *Occupational Health and Safety Fee (Tasa de Seguridad e Higiene)*

Most municipalities have a tax on gross sales that mimics the provincial turnover tax, although at lower rates (see Table 5). However, the dispersion in rates for the same economic activity is usually higher for the municipal tax than for the provincial tax.³⁶

When municipalities opt to use another base³⁷ the tax (expressed as a percentage of sales) is usually lower. Average estimates from IARAF (2010) are 0.23% of sales compared to 0.67% for the 70% municipalities that tax gross sales. Each municipality decides on the base to use. For example, 39 out of 43 municipalities of the Province of Buenos Aires in the sample use gross sales, in Cordoba and Santa Fe the ratio is 7 out of 7, in Mendoza is 5 out of 7, while in Corrientes, San Luis, San Juan, Santa Cruz and Tierra del Fuego no one of the 2 local governments in the sample of each province use gross sales as the base.

The weighted average tax rate for the municipalities that hit gross sales also increased from 0.58% of sales in 2003 to the above mentioned 0.67% in 2010.³⁸

The economic analysis for the most frequent tax base is similar to the provincial tax on gross sales. When they opt to tax employment the analysis is similar to a tax on labor (likely to reduce formal employment and labor income in an open economy), and when they opt to use the size of the shop it looks similar to a tax on real estate (see below).

iii. *Taxes on urban and rural real estate*

During the 1980's and 1990's some provinces shifted the collection on urban real estate and on automobiles to their local governments. All provinces calculate the tax on the assessed value of properties. In building the cadastre provinces usually rely on the characteristics of the property and their value. However, the valuation of old properties is not updated regularly, with the exception of their most visible characteristics.³⁹ Table 6 shows for selected provinces that the "typical" structure of the tax is: a) progressive rates for urban properties; b) unused

³⁶ But there is more uniformity across sectors e.g., the average tax rate for commerce is twice the rate of primary activities, while in Ingresos Brutos it is 5.4 times bigger.

³⁷ Generally number of employees or size of the shop where the activity takes place.

³⁸ The increase may be overstated because the figures for 2003 published by IERAL (2004) apparently bundle together all municipalities and it is likely that those using other bases than sales also had a lower rate at that time.

³⁹ A Federal Law (26209/07) was enacted creating the Cadastre Federal Council integrated by all the provincial cadastres (i.e. a single Cadastre for all the country), but no advancement was achieved yet.

urban land is taxed at higher rates; and c) tax rates on rural land are proportional in some provinces and progressive in others. There are subjective exemptions and also variations according to the location of the property. The tax on real estate in the most developed provinces is about 0.5% of market values.

Table 6: Structure of the Tax on Real Estate in Selected Provinces

	Urban properties with construction			Urban land			Rural land		
	Minimum rate on assessed value	Maximum rate on assessed value	Difference by zone (either by rate or valuation)	Minimum rate on assessed value	Maximum rate on assessed value	Difference by zone (either by rate or valuation)	Minimum rate on assessed value	Maximum rate on assessed value	Difference by zone (either by rate or valuation)
City of Buenos Aires /1	0.58%	2.16%	Yes	5.58%	10.58%	Yes	No rural land		
Province of Buenos Aires /2	0.38%	1.62%	Yes	0.38%	1.69%	Yes	1.01%	2.51%	Yes
Córdoba - Río Tercero /3 /4 /5	0.48%	0.94%	Yes	0.74%	1.32%	Yes	1.20%	1.20%	Yes
La Pampa /4 /5 /6	0.50%	1.40%	No	2.00%	2.00%	Yes	1.20%	1.20%	Yes
Neuquén /4	0.55%	1.62%	No	2.80%	2.80%	No	1.20%	2.50%	Yes
Santa Fe /4	0.49%	1.22%	Yes	na	na	na	0.65%	2.35%	Yes
Entre Ríos	0.60%	2.80%	No	3.80%	5.50%	No	0.80%	2.30%	No
San Luis /7 /8	0.60%	1.20%	Yes	1.80%	1.80%	No	0.90%	1.50%	No
La Rioja /5 /9	0.20%	0.70%	No	1.50%	1.50%	No	1.00%	1.00%	No
Misiones /4	0.60%	1.20%	Yes	1.50%	1.50%	Yes	1.20%	1.20%	Yes
Chubut /10	0.40%	0.40%	Yes	0.42%	0.48%	Yes	1.20%	4.80%	No
Río Negro /4 /11	0.51%	1.00%	No	1.01%	2.00%	No	0.51%	1.00%	No
San Juan /4	0.47%	0.75%	No	2.55%	3.00%	No	2.55%	3.00%	No

1/ Includes all contributions on real state: for street cleaning and public lighting, for repairing of streets and to expand the subway network. The combined rate cannot exceed 1% of market value.

2/ In order to establish the taxable base for Urban property tax, it should be applied the coefficient of 0.9 on the assigned fiscal value.

3/ Córdoba establishes two separate property taxes, collected by the province and the municipalities. In Río Tercero, properties located in corners contribute an extra 20%, considering the shorter frontage.

4/ For Urban properties with construction and Urban land, it has been set an annual minimum tax in La Pampa (\$21), Neuquén (\$25), Santa Fe (\$10), Misiones (\$5.5), Río Negro (\$37.5), San Juan (\$25), Córdoba (\$20) and Río Tercero, Córdoba (between \$17 and \$

5/ For Urban properties with construction, it has been set a fixed additional amount in La Rioja (between \$13 and \$69) and Río Tercero, Córdoba (between \$ 3.5 and \$11.5 for each frontside metre long). For Urban land, in La Rioja (between \$13 and \$87.5) an

6/ Awards for good contributor: deductions in between 5 and 10%, according to the number of years without breaches.

7/ Awards for good contributor: deductions in between 10 and 20%, according to the number of years without breaches.

8/ When improvements in properties, the rates on the increased tax base will be applied in 60% (urban land) and 80% (rural land).

9/ Properties with no fiscal valuation pay a flat tax of \$37.5

10/ Taxing on rural land is power of the provincial government, and on urban land of the municipalities. A third category of land, denominated "urban enlarging and valleys", provides aliquots of between 0.01 and 1.50%.

11/ A surcharge of 50% has been set on properties with absent owners.

Source: author's calculations based on provincial taxcodes

As happens in other Latin-American countries the collection of taxes on property is lower than the bills issued.⁴⁰

Property may be taxed directly or indirectly through taxes on the income generated by it. In Argentina the imputed income from own houses is not taxed with the income tax. Therefore, taxing the stock of real estate may correct for this bias. Moreover, as the property

⁴⁰ See De Cesare and Lazo Martin (2008) for a review of property taxes in Latin America.

tax usually falls on the value of the assets it is neutral with regards to the source of financing while the income tax has a bias towards debt.⁴¹ However, as the property tax also falls on houses for rental and on business real estate there is no correction of the distortions. The Federal tax on personal assets also falls on the value of these properties and the transaction of properties is usually taxed with the stamp tax. Table 7 summarizes the taxation on property in Argentina.

Therefore, the justification for the property tax⁴² does not lie in a correction (albeit imperfect) of distortions in the taxation of property income. For an efficiency point of view, with the tax at the provincial level (with few exceptions) there is not much justification as a user fee either, at least for the large provinces.

Table 7: Taxation of property assets and their income in Argentina

	Taxation of assets 1/		Taxation of income flow		Taxation of capital gains		Taxation of transactions	
	Debt-Financed	Equity-Financed	Debt-Financed	Equity-Financed	Debt-Financed	Equity-Financed	Debt-Financed	Equity-Financed
Own House	Tp + Tpf	Tp + Tpf	Subsidy with ceiling	No tax	Exempt	Exempt	Ts	Ts
			Subsidy with no ceiling because of inflation	> Ty because of depreciation at historical cost				
House for Rental	Tp + Tpf	Tp + Tpf			Exempt	Exempt	Ts	Ts
			Subsidy with no ceiling because of inflation	> Ty because of depreciation at historical cost	Ty on nominal change in value	Ty on nominal change in value	Ts	Ts
Business real state	Tp + Taf	Tp + Taf						
			Subsidy with no ceiling because of inflation	> Ty because of depreciation at historical cost	Ty on nominal change in value	Ty on nominal change in value	Ts	Ts
Agricultural land	Tp + Taf	Tp + Taf						

Notes: Tp: Provincial Tax on on urban land and buildings. Tpl: Provincial tax on rural land. Ts. Provincial Stamp tax. Ty: Federal Income tax. Tpf: Federal tax on Personal Assets. Taf: Federal Tax on Business Assets

1/ The Tax on Business Assets is creditable with the tax on business income.

Source: Authors's estimates

The generalized use of a progressive-rate structure suggests the search for equity and fairness. However, by taxing only real estate assets and with different criteria by province, it is not evident that vertical and horizontal equity concerns are correctly addressed.

iv. *Taxes on motor vehicles*

Many countries tax the purchase of a motor vehicle, its registration and its use. A possible explanation for this combination of taxes is the attempt to mitigate the risk of climate change.

⁴¹ In Argentina equity is taxed once and debt is virtually tax free because the returns of most forms of savings are not taxed at the savers level. In fact, as there is inflation of 20-25% debt-financed assets are de facto subsidized. See Atkinson and Stiglitz (1980) for a proof. Families can also deduct the interest paid on mortgages up to Arg\$ 20.000 a year (about US\$ 5.000).

⁴² Sepulveda and Martinez-Vazquez (2009) make a comparative analysis of the advantages of collecting a property tax at the sub-national or at the national level of government.

In fact, European countries are moving towards differentiating the rates of tax according to carbon emissions⁴³ in order to encourage consumers to purchase more efficient vehicles.⁴⁴ For example, in Germany passengers cars registered after July 1, 2009 pay an annual tax of Euros 1.84 per every 25 cm³ of cylinder capacity, while cars registered before that date run by gasoline pay a tax of Euros 6.75 to 25.36 per 100 cm³ (those running on diesel pay about 100% more). In other European countries they either use a registration tax based on fuel consumption or cylinder capacity or on estimates of CO₂ emissions. Only five countries use the price as the base of the tax (Denmark, Finland, Malta, the Netherlands and Slovenia), but in four of them it is combined with some other of the criteria mentioned before. Taxes on ownership are usually based on cylinder capacity, CO₂ emissions or the weight of the vehicle (especially for commercial vehicles).

In Argentina, the tax on automobiles may reach almost 4% of the value of the car in the richer provinces (see Table 8), plus 1% for registration fee.⁴⁵ Some provinces charge a proportional tax on the value of the car and others have a progressive rate structure. Commercial vehicles are usually taxed at lower rates. Many provinces exempt old cars for equity reasons even though that contradicts fuel efficiency and environmental objectives.

The taxation of vehicles in Argentina has several problems. Taxing according to the value of the car is difficult to justify from an environmental point of view. Price is unlikely to be correlated with CO₂ emissions or fuel consumption, and while the size of the engine is likely to lead to a higher price, there are many other attributes that will be taxed by using the value of the car as the tax base. In fact, a higher price is usually associated with improvements in the quality of the car (e.g. safety); therefore, the Argentine tax will end being a tax on quality.

⁴³ For a summary of car taxation in the EU see ACEA (2010).

⁴⁴ Fullerton and West (2002) proved that a single tax on gasoline use combined with a single tax per unit of engine size and a single subsidy to pollution control equipment are a first best policy if consumers are homogeneous. When consumers have different tastes (e.g. about engine size or driven miles) one would need a different tax rate for each consumer (which is not possible). In a second-best framework they prove that under plausible assumptions the tax on gasoline should increase and the tax on engines should decrease if consumers preferences for "miles" (i.e. driving more) are positively correlated with their preference for engine size (i.e. larger engines), which is likely to be the case.

⁴⁵ Argentina has a centralized Register at the federal government that serves all provinces. For registration of a new vehicle the owner has to pay a fee of 1% of the market value of the car plus some lump-sum fees for the emission of the certificate that validates the ownership. The value of cars is updated regularly and is similar to the market price. When an old car is sold, the Register charges another 1% of the value of the car for the transfer of ownership.

For the same reasons mentioned in the discussion about the real estate tax, using a tax on vehicles as an instrument to achieve an improvement in the distribution of income is questionable. A tax on all the taxpayers' assets (like the federal tax on personal assets) is surely better. Even worse, as the tax rates are different across provinces this creates another obstacle to horizontal equity.⁴⁶

The lower taxation on commercial vehicles is difficult to justify for environmental reasons or for equity reasons, although it may have a rationale to avoid additional efficiency costs since commercial vehicles are an input of production. However, in the case of buses and trucks it adds to subsidized prices on urban transport that are pervasive in most Argentine cities.

Table 8: Structure of the Tax on Motor Vehicles in Selected Provinces (% of Market Values)

	Taxation of Passenger Cars			Taxation of Commercial Vehicles		
	Minimum Rate	Maximum Rate	Exemption for Old Cars	Taxis and Vans	Trucks	Buses
City of Buenos Aires 1/	3.52%	3.52%	Yes more than 12 years	2.53%	1.38%	1.27%
Province of Buenos Aires	3.00%	3.90%	Transferred to municipalities	3.00%	1.50%	1.50%
Cordoba	1.20%	1.50%	Yes, before 1998	1.20%	1.07%	1.07%
Mendoza	2.30%	2.90%	Pay minimum fee of US\$ 12			
San Luis	2.50%	2.50%	Pay minimum fee according to weight	2.50%	1.25%	1.25%
Santa Fe	2.00%	2.00%	Pay minimum fee of US\$ 3	0.50%	1.50%	0.50%
Tucuman	2.00%	2.00%		2.00%	1.00%	
La Pampa	2.00%	3.00%	Yes, before 1990	2.30%	1.25%	2.10%
Catamarca	2.00%	2.00%	Pay minimum fee of US\$ 10	2.00%	1.50%	1.50%
Jujuy	1.00%	1.00%	Pay minimum fee of US\$ 7	1.00%	1.00%	1.00%
Neuquén -San Martín de los Andes-	3.50%	3.50%	Yes, more than 20 years	2.30%	1.60%	1.60%
Entre Ríos	1.80%	2.30%	Pay minimum fee of US\$ 7	2.00%	1.50%	0.50%
Misiones	2.00%	2.00%	Older than 16 years pay a minimum fee of US\$ 5		0.80%	0.80%

1/ Includes a surcharge of 10% for the expansion of the subway network.

2/ Market values are estimated by the National Register based on information provided by insurance companies and car manufacturers.

Source: Authors' calculations based on provincial tax codes.

v. Stamp tax on some contracts

This is a cascade tax on some contracts that differs from one province to another. The City of Buenos Aires reintroduced the tax that it had abolished during the 1990's. In many provinces most revenues are obtained from real estate transactions and from financial and insurance contracts.

⁴⁶ Some variation in rates may be accepted so that the sub-national governments have autonomy, but the differences that

The 24 provinces collected in 2009 0.36% of the country's GDP, but in some provinces the collections (expressed as % of the local GDP) are much higher. For example, it was 1.03% in La Pampa, 0.9% in Tucuman and about 0.6% in Salta and Santa Cruz.

vi. *Other revenues*

Some provinces also tax labor or utilities' sales and the twelve provinces that did not transfer their pay-as-you go pension system collect labor taxes on public employees. All provinces and municipalities collect user fees, although it is not clear whether they are set on a cost-recovery basis. User fees are related to different services like the use of public cemeteries, court fees, road levies, driver licenses, traffic violations, and etcetera.

Resource-rich provinces collect royalties from mining, electricity and the production of crude oil and natural gas.⁴⁷ Most revenues from royalties are obtained from the production of crude oil and natural gas. The rate used to be 12% on the value of production, but recently some provinces agreed on different rates in bilateral negotiations with private firms to extend the concessions. In mining, the royalty is usually 3%.

The collection of royalties should have minimum administration costs because it is relatively easy to monitor output while the incentives to underestimate prices at the well can be controlled by the provinces by looking at market prices. However, there have been some problems with the estimate of the price discount that lower-quality petroleum carries in the market. More recently, provinces have relied on private firms to audit the price and quantity declared by oil and natural gas companies.

Most provinces share the revenues obtained from royalties with their local governments with some regional distribution objective by allocating a fraction of revenues even to the municipalities that have no production.

exist in Argentina on a mobile tax base like cars are relatively large.

⁴⁷ *Mc Lure (2003) argues that there are good economic reasons for oil revenues to be centralized: the tax base is volatile and usually concentrated in a few regions of the country, there might be a temptation to reduce other local taxes or to undertake unprofitable public investment, and the compensation of losses for dry holes is not easy at the local level. See also, Fidelino and Ter-Minassian (2009).*

Provinces and municipalities where oil and natural gas production takes place, also include oil companies into the net of their cascade sales taxes and the base is usually the same used for the computation of royalties.

3. THE IMPACT OF THE 2001-2002 CRISIS ON THE LEVEL AND COMPOSITION OF PROVINCIAL REVENUES

Previous studies⁴⁸ have found that the provincial cascade sales tax is more pro-cyclical than federal transfers. It is important to validate this result because it suggests that the problem of procyclical revenues may have aggravated in recent years due to the increase in the collections of this tax. If this were the case, a reform of own-source revenues or proposals to reduce the vertical imbalance would need to include tax bases less sensitive to the economic cycle, or to be tied with credible fiscal responsibility laws.

Own-source provincial revenues and its composition changed during the last decade. It is necessary to understand the main explanations for these changes to make proposals of reform. Provincial revenues depend on: a) local variables such as the evolution of the provincial economic activity and its structure, the degree of informality, poverty and income distribution; b) exogenous variables for the province such as the prices of natural resources (oil and natural gas, electricity), or automatic federal transfers that are calculated using a formula introduced in 1988 and that was never changed since then; c) political economy variables that influence the distribution of discretionary transfers among provinces, and d) local decisions, e.g changes in tax rates or the decision not to use the same effort to collect a tax.

For example, in the case of the property tax, in an inflationary context it is necessary to update the values (tax base) of the different properties to avoid a deterioration of revenues in real terms. This indexation of the tax base is automatic in other taxes, such as the cascade sales tax and the automobile tax. The adjustment might be costly (as in the “menu cost” literature) or it might be politically exhausting. For taxpayers, in general the property tax is more visible than the cascade sales tax; in addition changes in the property value have tax externalities, since the valuation is the basis for the tax on wealth at the national level; and finally, there might be

⁴⁸ See Sturzenegger and Werner (2006).

political economy issues in provinces where property tax is shared with the municipal governments (i.e. the provincial government has to pay the political cost of changing the property value, but it will not appropriate all the benefits). In this context, governors and provincial congress might have opted not to make these “visible” changes and rely more on federal transfers or on “less-visible” taxes such as the cascade sales tax that is automatically linked to inflation and economic activity.

Another factor that might have affected the own-source revenue effort and the sub-national tax structure is the growing importance of discretionary transfers and the increase (in real terms) in royalties and automatic transfers. On the one hand, the increase in transfers increases sub-national government tax revenue as a share of local GDP for some provinces, because it allows the province to consume more (i.e. the provincial GNI is above its GDP) increasing the tax base for several taxes (such as cascade sales tax, automobile tax, real estate tax). Also important might be the nature of the transfer, whether it is automatic or discretionary, and whether it is interpreted as temporary or permanent.

On the other hand, transfers might distort the incentives of local governments to collect their own taxes, reducing their tax effort, particularly those that are more visible for the taxpayers and this can be interpreted as a variant of the flypaper effect,⁴⁹ but related to the revenue effort, i.e., on the revenue side.

As regards the expenditure of sub-national governments, there is a vast literature analyzing the flypaper effect. This effect results when a dollar of exogenous grants-in-aid leads to significantly greater public spending than an equivalent dollar of citizen income (i.e. money sticks where it hits), Inman (2008). There has been a discussion in the literature whether this anomaly is due to econometric problems. The main concern is the misclassification of grants as exogenous aid (endogeneity of grants), that may produce biased estimators. The empirical literature on the flypaper effect is large, and in general when endogeneity issues are controlled for, the result holds, suggesting that the flypaper effect appears to be a real phenomenon.⁵⁰ The natural explanation of this effect is political economy or the recognition that own-source

⁴⁹ Baldrich (2010) provides some evidence that this is the case in Argentina.

⁵⁰ For example, Dahlberg et al (2006) use a discontinuous element in one grant in Sweden to address the endogeneity problem and find evidence that there is a flypaper effect on the expenditure side but not on sub-national taxation. Acosta (2010) finds evidence of a flypaper effect in municipalities of the province of Buenos Aires, but the effect is lower when he takes into consideration the impact on the neighbor's decision.

revenues create distortions and federal transfers do not (at least from the recipient government's point of view, Vegh and Vuletin, 2010).⁵¹ Some authors argue that the effect could be a result of voters' asymmetric information or fiscal illusion (see for instance Courant, Gramlich and Rubinfeld (1979), Oates (1999), Filimon, Romer and Rosenthal (1982) and Hines and Thaler (1995)). Inman (2008) suggests that rather than an anomaly, the flypaper effect is best seen as an outcome of political institutions and the associated incentives of elected officials.

Following the analysis of Vegh and Vuletin (2010) as it is logical for sub-national governments to spend more from grants than from additional distortionary own-source revenues, it is also logical that some provinces may opt to use the transfers to finance a reduction of their own taxes to reduce distortions or political costs.⁵²

Summing up, revenues and their composition may be affected by the size of federal transfers, by asymmetric responses to external shocks and political factors,⁵³ or by the need to reduce deficits.

The econometric analysis has to deal with the problem of endogeneity of the intergovernmental transfers. There is no such a problem with automatic transfers in Argentina because they are calculated using formulas that have no relationship with any economic variable and they are applied to revenues collected by the federal government from VAT, income taxes, excises and other taxes whose evolution has little to do with any provincial decision.⁵⁴ But there is a problem with discretionary transfers⁵⁵ that might depend on the bargaining power of the different levels of government.

51 With data from Argentine provinces, and Brazilian and US states, Vegh and Vuletin (2010) provide some empirical evidence that there is no puzzle when one considers that raising local taxes is socially costly. It makes sense to spend more from intergovernmental transfers that have no efficiency cost than from local taxes. Their empirical evidence suggests that the flypaper effect is larger when local tax rates are higher.

52 The Second Generation Fiscal Federalism stresses the importance of the incentives faced by local policymakers. See Weingast (2006).

53 Rattsö and Tovmö (2002) find evidence for Denmark that local governments have asymmetric responses to shocks by raising personal income tax rates when there are negative shocks (but they find no similar effect on property tax rates). They also find some evidence that socialist local governments rely more on property taxes than center-right local governments. Higher vertical imbalances may also provide more incentives to engage in corruption, and the composition of own-source revenues also matters. For example, Schleifer and Vishny (1998) conclude that local governments in Poland are more supportive of business and growth than in Russia because they rely more on revenues from property taxes, local taxes and fees more related to the growth rate of the region and this provides incentives for local policymakers to foster growth instead of rent-seeking.

54 Artana (et al) 2010 provide some evidence that the improvement in the terms of trade and the increase of the Brazilian economy in US\$ accounted for 50% to 75% of growth experienced in Argentina from 2003 to 2008. External factors had a key role in the growth performance of the country during this period.

55 *Discretionary transfers are not new in Argentina's federalism. Nicolini et al (2002) found evidence that the ATN (Aportes del Tesoro Nacional) acted as an insurance to shocks during the period 1983-1997.*

Provincial characteristics differ in Argentina and this may affect their potential tax bases. For example, more developed provinces or high-growth provinces should be able to collect more revenue from taxes on property and also from the cascade sales tax; more transparency should reduce evasion in local taxes⁵⁶; provinces differ in their economic structure with sectors that are more difficult to tax than others; income distribution and informality also differ across regions, etcetera. It is interesting to estimate whether each province is using most of its potential to collect its taxes.⁵⁷

3.a. Estimates of the revenue elasticity

Sturzenegger and Werner (2006) argue that the elasticities of sub-national tax revenues to provincial GDP are very high in Argentina, higher than those of central government transfers. If this were the case, decentralization of tax revenues might increase revenue volatility. In particular, they find that sub-national revenues are strongly procyclical, where the tax component is uniformly more procyclical than the resources obtained from national sources (transfers). Among the taxes it is *ingresos brutos* the one with the highest degree of procyclicality, while property taxes, as expected, have very little relation with the business cycle. Their estimations are based on a provincial panel for the period 1992-2002.

Following a similar approach to Sturzenegger and Werner (2006) we estimate Income Elasticities of Revenues as:

$$(1) \quad \log(y_{it}) = \beta_0 + \beta_1 \log(GDP_{it}) + u_i + \varepsilon_{it} \quad i=1\dots N \quad t=1\dots T$$

where y are different measures of provincial revenues, GDP is the provincial GDP (both measured in real terms) and u is a (provincial level) fixed effect. The fixed effect captures average differences between provinces. We are interested in the size of β_1 , what we called the revenue elasticities. These are not exactly income elasticities, because revenues are affected by the multiple changes in tax rates and tax bases. To control for the changes is complex, because

⁵⁶ Govinda Rao (2006) argues that many poor countries lack clear property rights and this reduces the potential revenues of the “prime candidate” for sub-national taxation. It is possible that delays in the distribution of property titles have affected the collection of property taxes in some Argentine provinces.

⁵⁷ For a discussion of what explain the cross country variation in revenues see Artana and Templado (2010). Gordon and Li (2009) and Keen and Simone (2004) provide some theoretical insights of why revenues and their composition differ across countries. Kenney and Winner (2006) provide an insight from a political economy point of view.

there have been many changes in the 20 year time-window we analyze, some of them difficult to identify empirically (such as administrative changes with impact on revenues).

Table 9 shows the results for the period 1993-2009. The first regression in column (1) considers Total Provincial Revenues as the dependent variable and includes sub-national taxes, transfers from Central Government and Non-tax revenues (of which, the most important are royalties) as explanatory variables. The second column removes royalties from the explanation, showing that the procyclical behavior of revenues is not related to this component. Column (3) takes into account only sub-national tax revenues, and column (4) only the Central Government Transfers, showing that both dependent variables have similar elasticities (own-tax revenues have a slightly higher elasticity but it is not significantly different from the elasticity for transfers). Column (5) and (6) break own-tax revenue of provinces in the cascade sales tax (5) and other taxes (6) showing that pro-cyclicality comes from the cascade sales tax.

Table 9. Income Elasticities of provincial revenues
(Provincial) Fixed Effect Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
	Provincial Total Revenues	Provincial Own Tax Revenue+ Transfers	Provincial Own Tax Revenues	Total Transfers	Cascade sales Tax Revenue	Other (than Cascade sales) Provincial Tax Revenue
Log(GDP)	1.387*** (34.89)	1.334*** (31.16)	1.405*** (27.53)	1.373*** (27.86)	1.738*** (31.05)	0.768*** (8.32)
Constant	-4.922*** (-14.64)	-4.553*** (-12.57)	-6.861*** (-15.90)	-5.207*** (-12.49)	10.09*** (-21.32)	-2.676*** (-3.43)
Observations	408	408	408	408	408	408
R-squared	0.761	0.717	0.664	0.67	0.716	0.153
F	1217.2	970.8	758	776.1	964.4	69.29

Notes:

t statistics in
parentheses

* p<0.10, **

p<0.05, ***

p<0.01

Table 10 computes GDP elasticities for each of the main components of local tax revenues and for central government transfers. As in Sturzenegger and Werner (2006) we find a very low elasticity for property tax and a high elasticity for cascade sale tax. Unlike Sturzenegger and Werner, we open the elasticity for Central Government transfers in the two main components, finding a coefficient close to 1 for automatic transfers and a very high elasticity for discretionary transfers.

Elasticities might have changed in the 2000s compared to the 1990s. Simple scatter diagrams show clear differences only for Property Tax and Discretionary Transfers. To test whether the differences are statistically significant we estimate the same fixed effect model but including slope and constant dummies to distinguish the 1990s from the 2000s (dummy taking 1 for the period of Convertibility 1993-2001). The coefficient for slope dummy can be interpreted as the increment (or decrease if negative) in the elasticity value for the 1990s compared to the 2000s. Table 11 presents the results for these elasticities. The results are consistent with the scatter diagrams: overall provincial revenue elasticity (including or excluding royalties) has not changed significantly. The income elasticity of Central Government Transfers has increased and the elasticity of Provincial Own-tax Revenue has decreased in the 2000s compared to the 1990s, reversing the result found by Sturzenegger and Werner: in the 2000s transfer elasticities have become more elastic than own-tax revenue. The decline in the elasticity of Provincial Tax Revenues is explained by property tax and the stamp tax, since for the cascade sales tax there is not a significant change in the elasticity. For central government transfers, the increase is significant for both, automatic and discretionary transfers, although the largest change is clearly in the discretionary transfers.⁵⁸

⁵⁸ *The constant dummy we include in each regression captures the average change in the tax burden in the 1990s compared to the 2000s. The main changes are in discretionary transfers and property tax revenues*

Table 10. Income Elasticities of provincial taxes
(Provincial) Fixed Effect Estimation

	(1)	(2)	(3)	(4)	(5)
	Sub-national Main Taxes			Transfers	
	Stamp Tax	Property Tax	Cascade sales Tax	Discretionary	Automatic
Log(GDP)	0.805*** (6.47)	0.199*** (2.76)	1.738*** (31.05)	3.057*** (16.46)	1.205*** (27.34)
Constant	-4.053*** (-3.87)	1.414** (-2.27)	-10.09*** (-21.32)	-21.82*** (-13.89)	-3.930*** (-10.54)
Observations	379	306	408	408	408
R-squared	0.106	0.026	0.716	0.414	0.661
F	41.91	7.633	964.4	270.9	747.5

Notes:
t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Finally, if we include in the analysis a dummy for the year 2002, which was the year of the structural break (exit of Convertibility and large economic crisis) all the estimated elasticities are lower and the 2002 dummy is significant in all the regressions, indicating that revenues decrease more than usual in that year. For example, for total transfers the elasticity is reduced from 1.382 to 1.151 and for the cascade sales tax, from 1.53 to 1.249.⁵⁹

Summing up, the empirical evidence suggests that the cascade sales tax is pro-cyclical, but the elasticity using the entire period, or the one found by Sturzenegger and Werner that uses the period 1992-2002, is upward biased due to the structural break. Controlling for the break tends to reduce the estimated elasticity. Also important is the fact that sub-national tax revenues are not more pro-cyclical than central government transfers (they were in the 1990s, although the differences were not statistically significant, and the situation is reversed in the 2000s).

⁵⁹ Results are available from the authors.

Table 11.A. Income Elasticities of provincial revenues. 1990s vs 2000s
(Provincial) Fixed Effect Estimation

	Provincial Total Revenues	Provincial Own Tax Revenue+ Transfers	Provincial Own Tax Revenues	Total Transfers	Cascade sales Tax Revenue	Other (than Cascade sales) Provincial Tax Revenue
Entire Period	1.387	1.334	1.405	1.373	1.738	0.768
2000s	1.274	1.312	1.297	1.382	1.530	0.822
1990s	1.263	1.291	1.338	1.292	1.532	0.932
Significance of the difference			**	***		***

Table 11.B. Income Elasticities of provincial taxes. 1990s vs 2000s

(Provincial) Fixed Effect Estimation

	Sub-national Taxes			Transfers	
	Stamp Tax	Property Tax	Cascade sales Tax	Discretionary	Automatic
Entire Period	0.805	0.199	1.738	3.057	1.205
2000s	1.251	0.390	1.530	2.530	1.280
1990s	1.361	0.454	1.532	2.069	1.227
	**	***		***	***

Notes: * p<0.10, ** p<0.05, *** p<0.01. Different elasticities for the subperiods are obtained though slope dummies.

3.b. The impact of federal transfers on provincial taxes

In this section we explore the determinants of the tax structure, and in particular we are interested in the role of federal government transfers. The stylized fact we want to explain is the change in the tax structure at provincial level observed in Argentina in the 2000s, where cascade taxes have gained weight and other taxes (particularly property taxes) have lost, at the same time that central government transfers became more discretionary. Two hypotheses consistent with this structural change are: i) sub-national governments reduced tax pressure

on more visible taxes (property tax) and/or ii) inflation (inexistent in the 1990s) has favored taxes that are automatically indexed to inflation. Critical to the argument is the role of central government transfers; if they affect the local government own-source revenue effort, there is a sort of flypaper effect. If transfers distort local incentives, we should observe that provinces with larger increase in transfers distort their behavior the most.

The econometric model is:

$$(2) \quad y_{it} = x_{it}\beta_k + \delta_{it} + u_i + \varepsilon_{it} \quad i=1\dots N \quad t=1\dots T$$

where y_{it} is either a measure of sub-national government effort (tax pressure) or a measure of tax structure, x_{it} is a vector of provincial characteristics, t_{it} are central government transfers and u_i are provincial specific effect (uncorrelated with ε_{it} , but could be correlated with x_{it} or t_{it}). Central Government transfers in Argentina comprise two elements: automatic transfers, which are exogenous (determined by rules not linked to the cycle), and discretionary transfers, which are endogenous. Endogeneity contaminates the estimation of the parameters in the fixed effect OLS estimation. An alternative is to use Instrumental Variables which requires valid instruments.⁶⁰ We propose two instruments, related with political economy issues: (i) Deputies' overrepresentation and (ii) Senators' overrepresentation (defined as ratio of the number of national deputies/senators to the provincial population).^{61 62}

First we analyze the tax structure, where our dependent variable is the share of the turnover tax (CT) and the share of property taxes (PT) on sub-national tax revenues. The CT is the most important tax for most of the provinces, representing on average 67% of the own-

⁶⁰ *The two conditions for a valid instrument z are: it has to be correlated with the endogenous variable and it has to be a valid exclusion in the original equation (i.e. not affecting the variable y directly). A special concern when using instrumental variables is the presence of weak instruments (low partial correlation of z with x); therefore, as suggested in the literature, we will pay special attention to the first stage, and check robustness with alternative methods to the IV estimators (such as Limited Information Maximum Likelihood (LIML) estimators, which are more robust to weak instruments).*

⁶¹ We explored a third instrument: Color of Party, defined as the coincidence or not of the provincial government party with the national government (classification done based on the opinion of political experts consulted) but it fails as an instrument.

⁶² Our two instruments do have variation on time, although most of the explanatory power comes from the cross section variation. The province with the largest increase in overrepresentation shows a change between 2009 and 1993 of 21%, whereas the highest decrease is -27.7%. The two instruments explain between 20 and 35% of the cross section variation between provinces in discretionary transfers (OLS regression year by year). In a fixed effect model for the entire period, the overall R2 is 0.27, with 0.43 for the R2 between variation and 0.12 for the R2 within variation.

source taxes; PT, on the other hand, represents on average just 10% of tax collection, the rest is explained by the stamp tax, automobile tax and other minor taxes.

Table 12 presents the results for the estimation of equation (2) by fixed effect. There is clearly a pattern: the fall in property tax share is associated to an increase in the central government transfers (as a share of local GDP), and to an increase in the inflation rate. Royalties have not a significant effect on tax structure. It is interesting to note that discretionary and automatic transfers tend to have the same sign. Table 13 reports the Instrumental Variable (IV) Fixed Effect Model estimations with similar qualitative results (although some parameters become not significant).

Table 12: Tax Structure. Fixed Effect Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
	PT Share	CT Share	PT Share	CT Share	PT Share	CT Share
log(DT/GDP)	-0.0163*** (-8.36)	0.0404*** (9.16)	0.00916*** (-4.56)	0.0228*** (5.12)	0.00587*** (-2.88)	0.0127*** (2.87)
log(AT/GDP)	-0.0369*** (-3.99)	0.0133 -0.64	-0.0270*** (-3.14)	-0.0109 (-0.57)	-0.0253*** (-3.02)	-0.00951 (-0.52)
log(Roy/GDP)	0.00707*** (-2.87)	0.0130** (2.34)	0.0000421 (-0.02)	-0.00423 (-0.78)	0.0000593 (0.03)	-0.00508 (-1.01)
Log(GDP)			-0.0709*** (-8.19)	0.173*** (9.03)	-0.0341*** (-3.37)	0.0763*** (3.47)
Provincial Inflation Rate					-0.0160*** (-5.22)	0.0339*** (5.07)
Dum90s					0.00048 (0.12)	-0.0166* (-1.87)
Constant	-0.0981*** (-3.71)	0.965*** (16.18)	0.601*** (6.77)	-0.747*** (-3.79)	0.334*** (3.50)	-0.0168 (-0.08)
Observations	408	408	408	408	408	408
R-squared	0.262	0.226	0.373	0.362	0.434	0.448
F	45.12	37.01	56.46	54	48.34	51.12

Notes:

t statistics in parentheses, * p<0.10, ** p<0.05, *** p<0.01

log(DT/GDP)= log of Discretionary Transfers as a ratio of provincial GDP

log(AT/GDP)= log of Automatic Transfers as a ratio of provincial GDP

log(Roy/GDP)= log of Royalties as a ratio of provincial GDP

Dum90s= 1 for 1993 to 2001

The results show that:

- economic activity and inflation increase the share of the cascade tax in own source tax revenue but reduce the share of the property tax, as expected given that the tax base of the cascade tax is associated to the size of the nominal GDP, while property taxation needs costly (and visible for the taxpayer) adjustments in the valuation of properties only to maintain its purchasing power in real terms.
- Discretionary transfers increase the share of the cascade tax and reduce the share of the property tax while automatic transfers have no statistical significant effect on the share of the cascade tax but reduce the share of the property tax in some specifications of the model (column (1) in Table 13 and columns (1), (3) and (5) in Table 12). This evidence is consistent with the hypothesis that the “windfall” of discretionary transfers is partially used to reduce the share of the most visible property tax.⁶³ On the other hand, automatic transfers do not affect the tax structure, consistent with the idea that, because they are anticipated, they are incorporated in the budget process of each province.
- The dummy that takes a value of 1 in the 1990’s and 0 otherwise is significant only for the cascade tax in Table 12 but with the expected sign in all the specifications: there was an upward drift in the collections of this tax after the economic crisis. In the instrumental variable specification the dummy is not significant in all the cases
- The collection of royalties has an effect in the same direction of automatic transfers in column (1) and (2) of Table 12, but once provincial GDP is included as a regressor, royalties become non significant.

The tax structure does not necessarily show the tax effort. To measure tax burden we use the tax collection of the cascade sales and the property taxes as fractions of the provincial GDPs (both measured in logs, in order to have elasticities as our parameters of interest). Hausmann endogeneity test (using the Deputies and Senators overrepresentation as instruments)

⁶³However, the estimated coefficients suggest a moderate to low effect. To see this, consider for instance the unweighted average discretionary transfers for the entire sample (2.36% of GDP) and the average share of cascade tax (67% of total own source revenues). An estimated coefficient 0.028 implies that an increase in one percentage point of GDP in discretionary transfers (i.e. increasing transfers from 2.36% to 3.36%) implies an increase in the share of cascade tax of one percentage point, that is an increase in the share of CT from 67% to 68%.

indicates that Discretionary Transfers are endogenous, therefore we report only the results for the instrumental variable estimators.⁶⁴

Table 13: Tax Structure. Instrumental Variable (IV) Fixed Effect Estimation

	(1)	(2)	(3)	(4)
	PT Share	CT Share	PT Share	CT Share
	-		-	
log(DT/GDP)	0.0155*** (-2.72)	0.0197 (1.58)	0.0171*** (-3.09)	0.0283** (2.41)
log(AT/GDP)	-0.0201* (-1.92)	-0.00753 (-0.33)	-0.0127 (-1.23)	-0.0269 (-1.22)
	-		-	
log(Roy/GDP)	0.000363 (-0.15)	-0.00439 (-0.81)	0.000666 (-0.28)	-0.00407 (-0.79)
	-		-	
Log(GDP)	0.0589*** (-4.42)	0.179*** (6.15)	-0.0247** (-2.20)	0.0633*** (2.65)
Provincial Inflation Rate			- 0.0148*** (-4.62)	0.0322*** (4.71)
dum90s			-0.00488 (-1.00)	-0.00914 (-0.89)
Observations	408	408	408	408
F	32.77	30.08	23.99	35.96

Notes:

t statistics for robust standard errors in parentheses, * p<0.10,

** p<0.05, *** p<0.01

log(DT/GDP)= log of Discretionary Transfers as a ratio of provincial GDP

log(AT/GDP)= log of Automatic Transfers as a ratio of provincial GDP

log(Roy/GDP)= log of Royalties as a ratio of provincial GDP

Dum90s= 1 for 1993 to 2001

Table 14 shows the main results.⁶⁵ Real GDP and inflation rate at provincial level affect tax effort in the same direction that they affect the tax structure: they reduce the tax pressure of

⁶⁴ Deputies and Senators overrepresentation variables explain on overall 27% of the variation in the ratio of Discretionary Transfers to GDP, and pass the Cragg-Donald test of weak instruments. Also according to Kleibergen-Paap rk LM statistic the null hypothesis of underidentification is rejected at 1% significance level.

Property Taxes but increase the tax pressure of Cascade Taxes. The dummy variable comparing 1990s and 2000s shows that tax pressure (at the same level of transfers, GDP and inflation) was smaller in the 1990s than in the 2000s. Finally, in terms of Central Government transfers we find an asymmetric response: Discretionary Transfers tend to reduce the tax pressure on both property and cascade taxes (the effect is larger for the property tax, consistent with the previous finding of a reduction in its share on local tax revenue), whereas Automatic Transfers increase both.⁶⁶ This apparent contradictory effect needs to be explained in more detail. Discretionary Transfers seem to work as a free lunch, reducing the effort. On the other hand, the finding that automatic transfers do not affect tax structure but increase the tax pressure might be related with the fact that most provinces receive more automatic transfers than what they contribute to the revenue pool.⁶⁷ This regional redistribution of income helps to improve the standard of living (at least for some parts of the population) and to increase consumption, favoring the collection of property taxes and the cascade sales tax.

⁶⁵ Since some provinces have delegated the property tax to municipalities, our property tax revenue figure might be measured with errors for these cases. To control for this, we run the models also excluding these provinces (Chubut, Formosa, Salta, Santa Cruz, Tierra del Fuego), the sign and magnitude of the estimated coefficient do not change, but the model using PT as dependent variable fits much better, suggesting measurement errors is not contaminating our estimates but increasing standard errors (results are available from the authors).

⁶⁶ The negative effect of Discretionary Transfers is positive if we do not control for endogeneity (just fixed effect estimations). Since:

$$plim\hat{\beta}_{OLS} = \beta + \frac{cov(x, e)}{var(x)}$$

the results suggest that $cov(x, e)$ is positive what implies discretionary transfers work in practice more like conditional than compensatory transfers in Argentina (unobserved effort in tax collection is compensated with additional transfers). Using instruments for automatic transfers (falsification of the endogeneity assumption) do not change the results of the estimated coefficient for this variable, what suggests the instruments are working well.

⁶⁷ Excluding the City of Buenos Aires that demands a deeper analysis because the federal government pays part of the local services, there are 17 out of 23 provinces that have a lower share on the country's GDP than their share in automatic federal transfers. If an estimate of the wage bill is used, the figure raises to 21 out of 23 provinces. Only province of Buenos Aires (to a large extent) and Chubut are the net payers to the rest of the provinces. If we exclude these two provinces from our regressions the elasticity of automatic transfers increase, suggesting part of the explanation is due to this effect.

Table 14. Tax Structure. IV Fixed Effect Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
	PT /PBI	CT /PBI	PT /PBI	CT /PBI	PT /PBI	CT /PBI
log(DT/GDP)	-0.173 (-1.25)	-0.177** (-2.52)	-0.231* (-1.94)	-0.154*** (-3.20)	-0.239** (-2.05)	-0.149*** (-3.75)
log(AT/GDP)	0.592** (2.06)	1.060*** (7.25)	0.920*** (4.21)	0.738*** (8.36)	1.039*** (4.77)	0.674*** (9.07)
log(Roy/GDP)	-0.0435 (-0.81)	0.102*** (3.75)	0.0526 (1.02)	-0.00828 (-0.40)	0.0432 (0.85)	-0.0092 (-0.53)
Log(GDP)			-0.742*** (-2.67)	0.911*** (8.13)	-0.509** (-2.14)	0.273*** (3.37)
Provincial Inflation Rate					-0.244*** (-3.59)	0.196*** (8.50)
Dum90s					-0.258** (-2.52)	-0.0695** (-1.99)
Observations	408	408	408	408	408	408
F	2.553	29.05	15.29	57.12	13.31	70.75
Anderson canon. corr.						
LM statistic	29.828	29.828	48.438	48.438	55.235	55.235
Cragg-Donald Wald F statistic	16	16	19.9	19.9	31.67	31.67
F	2.553	29.05	15.29	57.12	13.31	70.75

Notes:

t statistics in parentheses, * p<0.10, ** p<0.05, *** p<0.01

log(DT/GDP)= log of Discretionary Transfers as a ratio of provincial GDP

log(AT/GDP)= log of Automatic Transfers as a ratio of provincial GDP

log(Roy/GDP)= log of Royalties as a ratio of provincial GDP

Dum90s= 1 for 1993 to 2001

3.c. The Effect of Federal Transfers on Provincial Expenditures

In this section we analyze the other side of the same coin: expenditures. We used the same specification but using as dependent variable the log of provincial total expenditure and log of provincial capital expenditures (both as a share of the provincial GDP). Table 15 shows the results without controlling for endogeneity, where both types of transfers and the royalties have positive elasticities. Table 16 controls for endogeneity of the discretionary transfers, showing how the coefficient changes (ie, were formerly contaminated by endogeneity). In

particular, the positive effect on total expenditures turns negative now, although it is close to zero (elasticity of -0.07), whereas the elasticity of automatic transfers is still positive and high at 0.73. This shows that discretionary transfers are not used to increase total expenditures, but as shown above they decrease own-source revenue effort. For capital expenditures we find a positive result suggesting that a fraction of discretionary transfers are used for capital expenditures, but not for current expenditures.

The results suggest provinces react differently to the central government transfers, depending on the nature of the transfer. Automatic transfers are consumed and, at the same time, they increase the tax bases of some provincial taxes easing higher revenues. This reaction is consistent with a permanent income shock. But discretionary transfers are seen as temporary income.⁶⁸ Provinces use part of them to increase capital expenditures and another part to reduce own taxes. This reduction may be reversed later if the political game (or shortages of funds) force a reduction for the discretionary amounts received from the Federal government. This is a particular type of the “flypaper effect”.

Our empirical findings are important for a proposal to improve sub-national revenue mobilization. It would be better to rely less on discretionary transfers, but they are better replaced by the allocation of more tax bases. If they are converted into automatic transfers they are likely to increase government expenditures with no reduction in the vertical imbalance.

⁶⁸ *Unlike consumers, provinces have no incentive to save the temporary income (the discretionary transfers) because this may trigger a retaliation of the Federal government reducing the amounts transferred in the future. Saving in a provincial fund has no immediate political benefits, while the inauguration of infrastructure programs may be appealing to politicians of all levels of government. At the same time, provinces may try to finance current expenditures with more permanent sources of revenues to avoid a higher dependency from the Federal government in the future.*

Table 15. Sub-national Expenditure: Fixed Effect Estimation

Dependent variable: log expenditure on GDP

	(1)	(2)	(3)	(4)	(5)	(6)
	Capital	Total	Capital	Total	Capital	Total
	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.
log(DT/GDP)	0.107*** (3.68)	0.0346*** (4.00)	0.04 (1.22)	0.0345*** (3.59)	0.0721** (2.21)	0.0427*** (4.62)
log(AT/GDP)	1.346*** (9.82)	0.665*** (16.29)	1.251*** (9.33)	0.665*** (16.10)	1.147*** (8.57)	0.601*** (15.81)
log(Roy/GDP)	0.0628* (1.72)	0.01 (1.04)	(0.00) (-0.11)	0.01 (0.97)	0.01 (0.17)	0.02 (1.60)
Log(GDP)			0.676*** (5.02)	0.00 (0.02)	0.768*** (4.75)	(0.07) (-1.50)
Provincial Inflation Rate					0.113** (2.29)	0.116*** (8.30)
Dum90s					0.277*** (4.25)	0.153*** (8.29)
Constant	0.41 (1.05)	7.028*** (60.11)	6.259*** (-4.53)	7.020*** (16.49)	7.369*** (-4.82)	7.278*** (16.78)
Observations	408	408	408	408	408	408
R-squared	0.291	0.496	0.335	0.496	0.365	0.592
F	52.04	125.2	47.8	93.66	36.22	91.22

Table 16. Sub-national Expenditure: IV Fixed Effect Estimation

Dependent variable: log expenditure on GDP

	(1) Capital Exp.	(2) Total Exp.	(3) Capital Exp.	(4) Total Exp.	(5) Capital Exp.	(6) Total Exp.
log(DT/GDP)	(0.06) (-0.56)	-0.0663* (-1.84)	0.10 (1.09)	0.0658** (-2.15)	0.144* (1.68)	-0.0706** (-2.47)
log(AT/GDP)	1.627*** (7.23)	0.835*** (11.13)	1.189*** (7.36)	0.775*** (13.81)	1.067*** (6.66)	0.727*** (13.61)
log(Roy/GDP)	0.0911** (2.18)	0.0284** (2.04)	(0.00) (-0.04)	0.01 (0.47)	0.01 (0.29)	0.01 (0.77)
Log(GDP)			0.568*** (2.77)	0.190*** (2.66)	0.708*** (4.06)	0.03 (0.44)
Provincial Inflation Rate					0.105** (2.11)	0.128*** (7.70)
Dum90s					0.311*** (4.13)	0.0995*** (3.97)
Observations	408.00	408.00	408.00	408.00	408.00	408.00
R-squared	0.23	0.32	0.33	0.35	0.36	0.43
F	43.8	89.4	47.3	71.47	35.42	63.76

3.d. Are provinces exploiting their tax bases?

It is interesting to analyze whether provinces are exploiting adequately their tax bases. There are different alternatives to do the analysis. One option is to use Stochastic Frontier Analysis (SFA). This technique was used for production functions and more recently it was adapted to revenue effort.⁶⁹ This is akin to our Data Envelope Analysis for provincial tax authorities (See Appendix 1), a process that is advisable when there are many “inputs” that influence the “output” and it is not clear which is the “production function” that links them. In this analysis, each province would be compared to the “efficient frontier”.

Another option is a Regression-Based model where each province is compared with the average provincial tax effort. *Both techniques have the problem that a departure from the frontier or the average may be a*

provincial decision to have a lower tax burden or the consequence of inefficiencies in collecting taxes. But given the information that we have and the purpose of the analysis we prefer a Regression-Based model for the following reasons:

- the SFA estimates the parameter of inefficiency from the errors in the equation. In our case there are heteroskedasticity, spatial correlation and autocorrelation that are better addressed with a Regression-Based model. The use of Panel-corrected standard error correct the variance-covariance estimation in order to account for these assumptions failure. Such correction (especially for the spatial correlation) has been not developed yet in the context of SFA
- The SFA was originally designed for production functions where it is easier to include all inputs that affect production. When used to analyze the performance of tax revenues it is likely that many “inputs” will be missing for lack of information. More specifically, “inputs” related to tax administration are crucial in a SFA analysis because the main purpose of the exercise is to detect deviations from an efficient performance. In a regression-based analysis there is no attempt to separate a decision to collect more taxes because the society prefers a lower size of government from a lower collection due to a poor tax administration.⁷⁰
- In the case of fixed-effect panels, SFA is subject to the “incidental parameter problem”⁷¹ that affects the consistency property of the parameter estimations.⁷² Some exercises to address this problem have been developed in recent years.⁷³ Moreover, the application of this recommended transformation does not protect the estimations from the particular error structure that we have in the data

⁶⁹ Pessino and Fournier (2010) use this technique at the national level.

⁷⁰ Esteller-Moré (2003) provides an example of the amount of information that is necessary to include, especially with regards to tax administration, which is not available for a panel of Argentine provinces.

⁷¹ See Greene, W.H. (2005).

⁷² As Wang and Ho (2010) comment on “true fixed-effect” model for SFA proposed by Greene: “For a fixed-effect model, the number of fixed-effect parameters (also called incidental parameters since their values are usually not of direct interest) increases with the number of individuals (N). In this situation, the conventional asymptotic result, which relies on $N \rightarrow \infty$, cannot be applied and estimates of the incidental parameters are necessarily inconsistent for a fixed T (number of observations per individual). For many estimators, inconsistency may also contaminate the estimates of the model's other parameters; the issue is referred to as the incidental parameters problem.... For instance, for linear models with normal errors, the maximum likelihood estimator (MLE) of the slope coefficients is still consistent, but that of the variance-covariance matrix is inconsistent...”

⁷³ See Wang and Ho (2010) and Chen et al (2011).

We use as dependent variable Total Tax Revenues Per Capita of each province. As explanatory variables we use: Local GDP per capita, Deposits as percentage of local GDP, years of education of the population over 16 years, poverty index, the share of the agro-industrial activities on the GDP, Royalties, Mining (as share of local GDP) and the automatic transfers of the central government to each province.⁷⁴

Table 17 shows the results for different alternatives. As expected, income, automatic transfers, deposits, years of education (except the last years where the sign is reversed and significance is lost) have all coefficients that are positive. Royalties are negative but statistically insignificant. Poverty has the negative expected sign and is also significant. The agro-industrial and mining shares both show negative relations with tax collection, however mining shows a stronger relation. Two dummy variables were tried: one that captures the pre and post convertibility period,⁷⁵ and another for the year 2002 to capture the impact of the economic crisis.

The results of equation (5) (excluding the variables that are non-significant at 10%) are used to estimate revenue bands for each province and for each year. As of 2009 Catamarca, Formosa and Tucuman were collecting more than projected according to their characteristics; Chubut, San Luis and Santa Cruz were converging to the forecasting interval after some year of “excess” revenues; and Entre Rios and Santa Fe were collecting less than projected while Cordoba was converging after some years of “low” revenues. The difference is relatively high for Entre Rios and Santa Fe with a shortage of about 15%.⁷⁶

⁷⁴ *The justification to include automatic transfers is that they increase the tax base of provincial taxes in most provinces.*

⁷⁵ This dummy is 0 from 1993-2001 and 1 from 2002 to 2009.

⁷⁶ *This may be a consequence of a decision to have lower taxes rather than a problem of efficiency. For example, Entre Rios and Santa Fe have relatively low weighted average rates in the Cascade Sales Tax in Figure 2, and relatively low tax rates on automobiles in Table 7. Santa Fe also has a relatively low tax rate on urban properties in Table 5. But they also show inefficiencies in their tax administration as shown in Appendix 1 in the Data Envelope Analysis.*

Table17: Local revenues determinants (Panel-corrected standard errors used)⁷⁷

Dependant variable: Total Provincial tax revenues per capita					
	Eq. 1	Eq. 2	Eq. 3	Eq. 4	Eq. 5
log(Prov. GDP in real terms pc)	0.750*** (0.074)	0.588*** (0.0733)	0.591*** (0.0751)	0.585*** (0.0776)	0.912*** (0.115)
Log(Automatic transfers / Prov.GDP)	0.328*** (0.0561)	0.237*** (0.0574)	0.235*** (0.0573)	0.232*** (0.0576)	0.179*** (0.06)
Log (Deposits/ Prov. GDP)	0.110*** (0.0226)	0.0563*** (0.0207)	0.0574*** (0.0209)	0.0549*** (0.0209)	0.0458** (0.0201)
Log (years of education)	0.482** (0.236)	0.00947 (0.261)	0.0135 (0.262)	0.0347 (0.266)	-0.112 (0.264)
Poberty	-0.949*** (0.137)	-1.188*** (0.158)	-1.188*** (0.159)	-1.189*** (0.16)	-0.911*** (0.167)
Log(Royaties / Prov. GDP)			-0.00344 (0.0106)	-0.00253 (0.0108)	
Agroindustrial (Share of Prov. GDP)				-0.0328 (0.33)	-0.762* (0.393)
Mining (Share of Prov. GDP)					-1.121*** (0.3)
d2002		-0.151*** (0.0293)	-0.150*** (0.0293)	-0.153*** (0.0297)	-0.153*** (0.0287)
Convertibility Dummy		0.162*** (0.0276)	0.162*** (0.0276)	0.164*** (0.0279)	0.146*** (0.0274)
Constant	-12.96*** (0.765)	-11.04*** (0.87)	-11.16*** (0.968)	-11.14*** (1.009)	-13.92*** (1.185)
Observations	325	325	325	320	320
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

4. SUB-NATIONAL TAXATION AND THE POLITICAL ECONOMY GAME

4.a. Introduction

Analyzing sub-national revenue mobilization necessarily involves considering political economy issues as the best normative design of a tax system will not be of interest if it cannot be implemented. From this perspective, several issues –in line with Stein et al (2006)- should be thought of: (i) as taxes have broad effects all over the economy, the number of players in the policymaking game is likely to be large;⁷⁸ (ii) taxation is subject to severe common-pool problems;⁷⁹ (iii) tax systems are hard to change in essence, though adjustments continuously

⁷⁷ The model estimated shows evidence of heteroscedasticity, contemporaneously correlation, and autocorrelation. The use of Panel-corrected standard error seems the most plausible estimation at this point. Fixed effects were captured with the inclusion of dummy variables for each province, these parameters estimation are not shown in the table for simplicity.

⁷⁸ Almost every actor in the political game has the chance to intervene in any major tax reform needed to mobilize subnational revenues, including business associations and unions.

⁷⁹ It may be viewed as a game in which each player wins or loses depending on his ability to extract more than he contributes to the pool of resources.

occur; this has to do with the relative dominance of the players and their ability/intention to achieve cooperation, which is much difficult, particularly when it is not known whether gains would offset losses (in the whole), combined with an aversion to losing revenues (for a particular player); (iv) this high level of uncertainty increases the complexity of the Political Making Process (PMP); (v) visibility and transferability vary with taxes, always against direct taxation, limiting available instruments.

The institutional design of a political system, along with the players involved and the phase of the economic cycle, will determine the probability of a major tax reform. A deep tax reform may also be catalyzed by a crisis, whether economic or political. Moreover, its probability may rise during a fiscal adjustment program within an IMF agreement as political costs shift away from the government (Stein et al, 2006).

4.b. The Argentine case

Policymaking in Argentina has been depicted as a “non-cooperative game in which each actor behaves opportunistically and tries to maximize short-term benefits” (Spiller and Tommasi, 2008). In this context, volatility has been a characteristic of the economic performance as well as policymaking. Reforms and counter-reforms have been common and particularly important in taxation and budgetary areas⁸⁰.

From a political perspective, Argentina is a federal country where sub-national units preceded the foundation of the Nation. Provinces tend to present limited democracies often controlled by political dynasties, restricted political competition, weak division of powers, clientelistic political linkages, while frequently the same elites dominate the media and business opportunities (Tommasi, several years, Spiller and Tommasi, 2008, Gervasoni, 2009 and 2010, FIEL, 2010 and Urbiztondo et al 2009). Naturally, governors are the creditors of this strong power⁸¹, which make them primary players in the political economy game –particularly during the last 20 years- even with strong presidents.

Despite their power, the fiscal organization, primarily marked by high vertical fiscal imbalances and soft budget constraints, makes the governors strongly dependents on the funds

⁸⁰ *Former presidents Carlos Menem and Nestor Kirchner, for example, have undertaken important changes in national policies of exactly opposite sign, but utilizing the same political logic of exchanges with their “fellow provincial barons” (Ardanaz et al., 2010).*

collected by the federal government. Ardanaz et al. (2008) add that the importance of the provinces and the dominance of governors in national politics are mutually reinforcing factors: governors must be successful in achieving the national resources to finance increases in spending, and this will be rewarded in the elections.

At the same time, there is also dependency of the Executive on governors for approval of nationwide economic policies in Congress. Bonvecchi (2010) argues that the distribution of resources from the common pool is the only trigger for reforms in all fiscal areas. Every reform is negotiated by the president and governors first. The latter mandates its legislators⁸² to approve the bill to receive compensations (vg. discretionary transfers, provincial allocation of national programs and public works, provincially based tax exemptions) for this action.

Therefore, as Gibson (2007) concludes, relations between the President and the governors are of mutual interdependence. This two-way relationship is conditioned by the economic cycle. In good times, the game flows and governors may seem weak; on the contrary, in the contracting phase of the cycle, negotiations gain prominence. When presidents are unable to provide fiscal benefits to the provinces, governors use their power to block presidential initiatives and even design provincial policies contrary to those at the national level. Ultimately, the game continues and no actor appears in a position to develop win-win strategies, even in periods of strong growth.

As Constitution and electoral rules give the provinces a strong weight in the distribution of National power -they constitute districts for all national elective seats⁸³- territorial interests tend to prevail in the decisions of political and social actors. Political integration of national parties has been decreasing during the last two decades, particularly since the early 2000, making even more necessary -and difficult- the negotiations between the President and governors. In this context, it is very difficult to reach agreements on reforms, because interprovincial heterogeneity generates different sets of preferences with respect to national policies between provinces. Provincial representation in Congress is biased in favor of the least

⁸¹ Low levels of democracy are to be expected when sub-national units enjoy *abundant* central government transfers and subsidies and have a weak tax link with local citizens and businesses, because accountability from their constituencies is almost not necessary as they tend to be relatively rich vis-à-vis their societies and fiscally independent from them.

⁸² *Legislators act always as agents –normally of provincial party bosses- and have little involvement in drafting tax bills, which are designed by the Ministry of Economy and proposed by the Federal Executive.*

⁸³ *The only exception since the 1994 Constitutional reform is for the presidential election.*

populated provinces⁸⁴, often financially vulnerable, that can be co-opted in the legislative process at a low cost. In consequence, public spending and redistributive policies are skewed in favor of them.

Tax reforms, likely required to generate space for new provincial tax assignment or even the replacement of existing provincial taxes, are especially difficult to implement, as special majorities in Congress are needed. This requirement arises from three Constitutional clauses: the division of tax sources between the provinces and the federal government; the procedural advantage on tax initiatives granted to the Lower House, and the special majority required to introduce or change any earmarking of tax revenues. To achieve these special majorities, the National Executive needs to negotiate not only with over-represented and normally poor provinces, but also with large jurisdictions (Bonvecchi, 2010).⁸⁵

In summary, when considering the probability of tax reforms needed to mobilize sub-national revenues, it should be remembered that every intention to change the federal revenue-sharing law was blocked by the provinces and even agreements developed between the federal government and the provinces –those of 1992 and 1993-, with huge transfer of resources to the latter, were finally reversed in the aspects related with taxation. Additionally, it is indispensable to look at the phase of the economic cycle.⁸⁶ A deep crisis would probably allow for structural changes but, if it is not the case, an expansionary phase of the cycle will be a requisite, as governors will know that they will not lose resources.

The present conjuncture is marked, in a context of increasing fiscal deficits, by intents of improving tax collection at the provincial level. During the last 2 to 3 years, several provinces have introduced new taxes or have reintroduced older ones, and have increased rates or the

⁸⁴ *Mal-apportionment is magnified as it is present not only in the Senate, which is the case in any federal country, but also in the House of Representatives.*

⁸⁵ In this context, agents in the private sector react to the policies with short-sighted views, as it is the case in the national PMP as a whole. Business associations are of widespread heterogeneity so each sector has strong incentives to negotiate separately and seek its own benefits. So, the instability seen in the political and business cycles goes together with the instability and fragmentation in businesses' representation. The phase of the economic cycle, the proximity to elections and the predominance of the Executive Power also alter the participation of businesses in the PMP. As Schneider (2005) characterized them, in Argentina business associations are weak. Compared with the business sector, labor unions have a stronger, more homogeneous, collective, long-lasting, less-linked to the economic cycle and open participation in the PMP. As governors, they normally obtain benefits in exchange for political support.

valuation of tax bases or reduced exemptions in already existing ones. In most of the cases these decisions hamper economic efficiency. In this situation some provinces will be less willing to introduce structural tax reforms.

5. PRIORITIES FOR REFORM

In every country there are trade-offs to reform sub-national revenues and even opposing views depending on the use of normative or positive theories.⁸⁷ These trade-offs may differ from one country to another but are particularly relevant for Argentina because political economy issues blocked previous proposals to reform both federal transfers and sub-national own-source revenues.⁸⁸ We first analyze the pros and cons of the different alternatives of sub-national own-revenue assignment and then we make some proposals on how to improve sub-national revenue mobilization.

5.a. Sub-national own-revenue assignment

Table 18 summarizes the pros and cons of different potential sub-national taxes. With the exception of three tax handles (a PIT surcharge, the business VAT and the Retail Sales Tax), the other are already in use in Argentina, either at the federal level or at the sub-national level. In the analysis we considered most of the tax attributes, linked to structural characteristics of Argentina –particularly its geographical heterogeneity, which is shown in its population density, endowment of natural resources, income distribution, etc. for the twenty four provinces-, the effective behavior of the Argentine tax system and its administration at the national and sub-national levels, as well as political economy issues.⁸⁹ Then we compared the

⁸⁶ In Argentina, according to Bonvecchi (2010), economic or policy shocks explain the recurrence and frequency of fiscal reforms and partly explain their type. In such circumstances, the federal government intends to centralize authority promoting reforms of tax, revenue-sharing and budgetary rules and policies. The results will depend on the relative strength of the other actors engaged. In any case, as Bonvecchi (2010) mentions, since 1988 only about 30 percent of tax reforms (25 out of 83) at the federal government introduced structural changes in tax rules (created new taxes, extended tax bases, raised tax rates, or enabled the Executive to manage rates and/or bases with discretion).

⁸⁷ For example, Ambrosiano and Bordignon (2006), Fedelino and Ter-Minassian (2009), Ahmad and Brossio (2008).

⁸⁸ The political gridlock is evident: the 1994 reform of the Argentine Constitution mandated that a new Revenue Sharing regime should be enforced after 1996. So far no changes were agreed.

⁸⁹ Following Bird (2010) we added four columns with political economy issues which are unavoidable when thinking of changes in the tax structure.

results with modern tax assignment theory and international practice. In doing so, we arrived at two rankings (weighted/non weighted) of the main and traditional tax handles (Table 19).⁹⁰ Given that the tax burden in Argentina is already high, the weights are biased towards efficiency attributes (Table 20).

We assume that each tax would be applied by provincial governments, which would autonomously manage rates and the administration of the taxes, while bases should be coordinated in some cases.

Table 18: Potential of subnational tax handles

	Revenue potential	Mobility of tax base	Potential efficiency costs	Sensitivity to cycle	Even distribution of tax base	Costs of admin.	Compliance costs	Potential corruption	Political Acceptability		Local Accountability
									Politicians	P. sector	
PIT	L/M	M	M	H	L	H	M/H	M/H	H	L	L/M
PIT surcharge	L/M	M	M	H	L	M	M	M	H	L	L/M
CIT	M/H	H	H	H	L	H	M	M/H	H	L	L
Payroll taxes	M/H	M	H	H	L	L	L	M	H	L	L
RST	M	M	M	H	L	H	L/M	M	L/M	L/M	M/H
VAT	H	M	M	H	L	M/H	L/M	L/M	L/M	L/M	M/H
Business VAT	M	M/H	H	H	L	M	M	L/M	M	L/M	M
Gross sales taxes	H	M	H	H	L	M	M/H	M	H	L	L
Excises	L/M	M/H	M/H	M	L	M	L	L	L/M	M/H	M
Property taxes	L/M	L	L	L	L	H	L	L	M	L	H
On financial transactions	H	M/H	H	H	L	L	L	L	H	L	L
Stamp taxes	L/M	M	H	M/H	L	L	L	L	H	L	L
Royalties	M/H	L	L/M	M/H	L	L/M	L	M	H	M	L
User fees	M	L/M	L	L	L/M	M	L/M	L	L/M	M	H

Source: Authors' estimates

Table 20: Tax Assignment' Weights

Table 19: Rankings of Subnational Tax Handles						Weight	
Weighted Ranking			Unweighted Ranking				
	Points	Ranking		Points	Ranking		
User fees	31	1	User fees	31	1	Potential efficiency costs	191.9%
Property taxes	29	2	Property taxes	29	2	Mobility of tax base	127.9%
Royalties	25	3	Royalties	25	3	Even distribution of tax base	127.9%
VAT	20	4	Excises	18	4	Local Accountability	127.9%
Excises	18	5	On financial transactions	16	5	Average	100.0%
RST	17	6	VAT	20	6	Sensitivity to cycle	83.1%
Stamp taxes	17	7	Stamp taxes	17	7	Costs of administration	83.1%
On financial transactions	16	8	Payroll taxes	16	8	Compliance costs	83.1%
PIT surcharge	16	9	RST	17	9	Political Acceptability - Politicians	83.1%
Payroll taxes	16	10	PIT surcharge	16	10	Revenue potential	64.0%
PIT	13	11	Business VAT	13	11	Potential corruption	64.0%
Business VAT	13	12	Gross sales taxes	12	12	Political Acceptability - Private Sector	64.0%
Gross sales taxes	12	13	PIT	13	13	Normalized to 100	
CIT	8	14	CIT	8	14	Source: Author's estimates.	

Source: Authors estimates.

⁹⁰ Rankings were constructed assigning 4 points to the best option up to 0 points in the case of the worse one. This means that, in the case of Revenue Potential (RP), 4 points go for High RP while 0 points go for Low RP; on the contrary, Low Corruption captures 4 points while High Corruption receives 0 points.

User fees, Property Taxes and Royalties lead both rankings. **User fees** are not sufficiently used in Argentina, but they are exclusive resort of the Executive at each level of government. The technical advice is to set fees that cover their costs. **Royalties** collected by sub-national governments have several drawbacks (tax bases unevenly distributed and volatile revenues), but they receive higher ranks when other factors are added to the analysis. More important, according to the National Constitution *provinces have the original dominion over the natural resources existing in their territory* so there are virtually no chances to advance in a reform of this assignment. However, as most provinces do not have the natural resources that are taxed with royalties it is necessary to explore other sources of revenues.

Property taxes are appropriate in terms of efficiency (particularly those on residential real estate as they are not exportable to other jurisdictions) even at the local level, but pose some challenges when political economy considerations are included, because of their high visibility that may discourage collection –both via lack of controls⁹¹ or under-valuation of properties. They also have high administrative costs.⁹²

A surcharge on the **Personal Income Tax (PIT)** might be an alternative to residential property taxation, but it has several problems: (i) the top marginal tax rate at the Federal level is already high at 35% leaving little room for a provincial surcharge on top of it (ii) evasion, elusion and a high-minimum exempt level explain why the Federal PIT collects only 1.7% of GDP; a surcharge of 10% would produce a modest 0.2% of GDP, and a higher surcharge is likely to create efficiency problems; (iii) a surcharge on PIT needs coordination between provincial administrations and the Federal Tax Revenue Agency (AFIP) which is far from common practice.

In the case of **VAT**, one of the sources –together with the Cascade Sales Tax or Financial Transaction taxes and royalties- with most revenue potential, compliance costs are lower, while administrative ones will depend on which level of government deals with the collection. As long as the Federal agency is already assuming this task and that tax bases at the sub-national level could be similar to the National one, administrative costs could be substantially

91 Some Tax Administrators mentioned to us that it is not politically feasible to execute properties even after a court ruling.

92 Under-valuation is very frequent particularly with respect to residential real estate.

reduced (in fact, the *Convenio Multilateral* already does a similar job for the Cascade Sales tax).⁹³ On the other hand, efficiency costs are not high, particularly comparing with alternatives (vg. the Cascade Sales Tax or Financial Transaction taxes). Accountability is also likely to be high. Nevertheless, when considering political economy issues there are some problems: the politicians⁹⁴ are not prone to change the current cascade sales tax. In any case, a destination VAT is better than a **RST** as it has a higher revenue potential, less costs of administration, while its debit-credit mechanism discourages evasion.

To introduce **excise taxation** at the provincial level (vg. on fuels) may be a way to reduce the vertical imbalance.

Other options are less attractive either for efficiency considerations or low revenue potential or from political economy issues.

5.b. Tax administration and compliance costs

Appendix 1 shows that the collection cost of provincial tax agencies has wide disparities: the lowest cost is about 1.1% of provincial own-source tax revenues and the highest is 10%. The federal tax agency has a cost of about 2% of its collections.

However, this may be a consequence of economies of scale. We performed a Data Envelope Analysis to find an “efficient” frontier and 12 of the 22 cases depart from the frontier suggesting that there is some room to improve efficiency. This inefficiency pattern is more frequent for less advanced provinces but also for intermediate developed provinces such as Entre Ríos and Santa Fe. Coincidentally, these latter provinces also exhibit a revenue effort lower than expected.

A separate analysis conducted by FIEL suggests that compliance costs for taxpayers are on average about 1.43% of the taxes paid and they are regressive (0.22% of the sales of large companies and 11% of the sales of small companies).

When asked to apportion the compliance cost to each level of government the Federal government was responsible of 55% of the cost, while for the firms in the sample it received

⁹³ *Canadian experience shows that with good tax administration it is perfectly feasible to operate a VAT on a destination basis at the sub-national level.*

88% of the taxes paid. It follows that the compliance costs with sub-national taxes is very high compared to the taxes paid: it is 45% of the total compliance cost for only 12% of the taxes paid. The Cascade Sales Tax is responsible for 16% of the total compliance cost and only contributes 9% of the total.

5.c. Proposals

When making proposals to improve sub-national revenue mobilization we have to take into account some general restrictions for a tax reform and some particularities of Argentina. For example:

- For most (if not all) tax handles there are important trade-offs to accomplish the multiple objectives that are expected from the tax system (minimum distortions, support the efforts to improve income distribution, minimum compliance and administration costs and revenues for the government). When political economy factors are added this is even worse because some “bad” taxes may be valuable for politicians if they provide the government with important revenues and are not visible to the average voter.
- Usually, existing taxes are more accepted than new ones to the extent that some “learning by doing” is necessary.
- Improvements in the efficiency of tax administration in Argentina face some limitations from inflexible labor rules that protect their employees, even those that are not efficient.
- Both the General Government tax burden and the vertical imbalance of provinces are high in Argentina. Therefore, it would be advisable to raise own-source provincial revenues at the same time that the federal tax burden is reduced. One easy way out is a reduction of discretionary transfers but this would likely find a resistance of the Federal government that use them to “control” powerful governors or to “buy” votes in the Congress.

⁹⁴ *Interviews with heads of tax agencies and economic ministers in several provinces show reluctance to introduce a provincial VAT.*

- However, the analysis of previous sections shows that a reduction of discretionary transfers will improve own-source revenues, and that an eventual replacement by automatic transfers will be a bad alternative: it will not reduce the vertical imbalance, it will aggravate the perception that there is a soft budget constrain, and it will motivate an increase in government expenditures even though it is not evident that there is a need for that. .
- The timing for a reform is probably not good. Fiscal deficits at the provincial level are small and are being financed mostly by the federal government, there are no strong leaders besides the President of the country, and all levels of government have paid little attention to the problems of the actual tax system. In fact, they have moved in the opposite direction by raising the share of the cascade sales tax at the expense of the property tax at the provincial level and at the federal level by maintaining “bad” taxes that were supposed to be temporary sources of financing to a government strapped for funds, even though that is no longer the case (e.g. the tax on financial transactions).

In this context we can think of reforms that are more ambitious (with lower chances of success) and other less ambitious that look more feasible, like the improvement of existing taxes.

On the more ambitious front we think that there is a lot to gain from replacing the Cascade Sales Tax by a provincial VAT that shares the same tax base than the federal VAT (to ease its administration), but allowing each province to set its rate inside a band that will be agreed among all provinces. To guarantee that provinces will not go back to cascade taxation, it would be better to include a restriction to do that under the new (and postponed) revenue sharing among the federal government and the provinces.

The Retail Sales tax has some disadvantages compared with a VAT. For example, all revenues are obtained from retailers that in Latin-American countries may be more difficult to audit. If the retailer is able to evade the government loses all revenues while with a VAT it still collects some money from manufacturing. Moreover, it is difficult to tax only retail sales. Slemrod and Bakija (1996) quote empirical evidence from US states that show that about 40% to 50% of the revenues correspond to intermediate sales. The advantage of the retail sales tax

is that exports are tax free while with the VAT they might be de facto taxed (in spite of being zero-rated by Law) by delaying the reimbursement of the VAT credits.

But a provincial VAT has some problems, too. To minimize distortions it has to be a tax on final consumption. One option is to tax inter-provincial sales, but this requires that the province where the consumption is made reimburses the firms for all the VAT credits paid (including those paid to other provinces). Some provinces may be reluctant to reimburse the tax paid to other provinces, especially if they are strapped for funds. However, in Argentina, if provinces were ready to accept a similar tax base as the Federal VAT it would be possible to adopt a clearing house of VAT credits because the provincial VATs will be added to the invoice together with the Federal tax. This will provide other source of information to reduce tax evasion and the possibility to include the Federal government as an arbiter in the clearing house.⁹⁵

Another option is to zero-rate interprovincial sales. The problem of carousel fraud that has affected the European Community is likely to be less severe given the existence of a Federal VAT.⁹⁶

An eventual replacement of *Ingresos Brutos* by a less distortionary tax (Provincial VAT or Retail Sales tax) would need to solve complex political economy problems. The impact on the personal and regional distribution of income might be different. To estimate the impact on the regional distribution of tax revenues we need to estimate the regional source of the Federal VAT tax collection. This will provide us with an approximation of the revenues that each province would perceive if they decide to replace the cascade tax with a piggy back on the Federal VAT (or with a retail sales tax with similar exemptions and reduced rates than the VAT). Appendix 2 provides an estimate of the effective rates on each good and service that is a necessary reference to assess the impact of a change towards a more uniform provincial VAT in the personal distribution of income.

⁹⁵ *The Federal government has to intervene in foreign trade. For imports the situation is not much different to the withholdings of Ingresos Brutos that is made at Customs and sent later to each province. For exports the Federal government is already reimbursing the VAT credits on the Federal VAT and could do the same for the provincial VATs. If this were the case the Federal government will be one actor of the clearing house.*

⁹⁶ *Bird 2007 mentions that in the Canadian case a Federal VAT provides more guarantees.*

The Federal VAT has a general rate of 21%, but some goods (usually food) are taxed at 10.5% and many goods and services are exempt. The best proxy of the tax base is Consumption. As this macroeconomic aggregate is not available at the geographical level, we estimated the shares of each jurisdiction by utilizing labor income (salaried and not salaried) from the Households's Permanent Survey (Encuesta Permanente de Hogares, INDEC) (Table 21, Column 1). In addition, it is necessary to distinguish goods taxed at different rates from exempt goods. Using the shares of each good and service in the expenditure survey we simulated the weighted average tax collection. To distribute it among the 24 provinces we used the shares on the National Households' Expenses Survey (Encuesta Nacional de Gasto de los Hogares) 1996/97 baskets, the last one available with the required disaggregation (Columns 2 and 3 of Table 6).⁹⁷ Table 21 compares the regional distribution of a provincial VAT that replicates the Federal VAT with the collections of the cascade tax. On average, a surtax of 7.1% of the Federal VAT would be required to ensure the same revenues of the cascade tax but there are important differences by province. Columns 8, 9 and 10 illustrate the case assuming that the provincial VAT replicates the Federal VAT and Columns 11 to 13 assumes that the provincial VAT is charged at a single rate of 21% on all taxed goods and services (although exemptions in the Federal VAT are maintained at the provincial level). The revenue shortfall or excess is estimated as a percentage of the collection of the cascade tax (therefore providing a rough estimate of the change in the tax rate necessary to maintain actual collections), or as a percentage of own-source revenues or total revenues (therefore providing an estimate of the change in other source of revenues that are necessary to offset the impact of the replacement of the cascade tax). For example, there are 6 provinces that may match the actual collections with a surcharge rate lower than 6% (compared to the average 7.1%) and there are other 6 provinces that need rates higher than 9% to maintain the collections.⁹⁸ Most of the winners are poor provinces that receive large transfers from the rest of the country (i.e. these are provinces with large "current account deficits"), and about half of the losers are oil-producing provinces that will lose this easy-to-tax base when the taxation is shifted from production to final consumption. Among the large provinces, the city of Buenos Aires would lose with the change reflecting the important

⁹⁷ We also show the shares of each province in the economy's GDP (Table 21, column 4).

⁹⁸ These are rough estimates because they ignore changes in compliance.

contribution of financial services and of large firms under the Multilateral Agreement that have offices (and expenses) in the City.⁹⁹ Mendoza and province of Buenos Aires are modest gainers from the change.¹⁰⁰

Unlike the Cascade Sales Tax that is not visible for consumers, both taxes on consumption have the advantage of being transparent to the end user. However, provincial rates that fluctuate inside an ample band are likely to create problems (at least for border transactions), and are complicated from a political point of view. Therefore, it is likely that some compensation will be necessary for the losing provinces that should be financed from the rest of the country. This is possible through amendments in the secondary distribution of the revenue sharing arrangement, but it is likely to be very demanding and probably request a complete overhaul of the system that is unlikely to be approved.

⁹⁹ *The difference between Cordoba (a loser) and Santa Fe (neutral) is striking.*

¹⁰⁰ *The differences between the estimates of columns 8 to 10 and columns 11 to 13 are minimal for each province. This shows that the gap between their actual collection of Ingresos Brutos and a provincial VAT cannot be filled by eliminating the multiple rates of the Federal Tax.*

SUB-NATIONAL REVENUE MOBILIZATION IN LATIN AMERICA AND CARIBBEAN COUNTRIES. THE CASE OF ARGENTINA

Table 21: Effective Turnover tax collection vs. Theoretical VAT 2009 - Millions of current AR\$ and Percentages

Province	Consumption	Taxed Consumption	Consumption net of VAT Exemptions	GDP	Turnover Tax Collection			Turnover Tax Collection vs. Potential VAT Distribution			Turnover Tax Collection vs. Potential VAT Distribution Excluding Reduced Rates		
	Shares				Millions of AR\$	Share	Required aliquot on VAT Base	As % of Turnover Tax	As % of Own Source Taxes	As % of Total Revenues	As % of Turnover Tax	As % of Own Source Taxes	As % of Total Revenues
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Misiones	0.71%	0.71%	0.71%	1.91%	597	1.51%	15.2%	53.11%	34.14%	7.27%	52.83%	33.96%	7.23%
San Luis	0.55%	0.55%	0.55%	0.83%	364	0.92%	12.0%	40.47%	27.24%	6.13%	40.58%	27.31%	6.15%
Neuquén	1.33%	1.36%	1.35%	2.30%	832	2.11%	11.1%	35.53%	6.51%	4.75%	36.00%	6.59%	4.81%
Santa Cruz	0.80%	0.82%	0.81%	1.04%	462	1.17%	10.2%	29.92%	5.26%	2.66%	31.28%	5.50%	2.79%
Córdoba	5.92%	5.92%	5.94%	7.50%	3,120	7.90%	9.5%	25.12%	16.73%	6.07%	24.92%	16.60%	6.02%
La Pampa	0.52%	0.52%	0.52%	0.64%	268	0.68%	9.4%	24.07%	8.58%	2.65%	23.86%	8.51%	2.63%
Tucumán	2.01%	1.97%	2.00%	1.22%	963	2.44%	8.8%	19.40%	12.02%	3.04%	17.97%	11.14%	2.82%
Salta	1.38%	1.35%	1.37%	1.21%	628	1.59%	8.4%	15.18%	7.22%	1.95%	13.68%	6.50%	1.76%
Entre Ríos	1.33%	1.33%	1.33%	2.11%	601	1.52%	8.2%	13.01%	5.47%	1.28%	12.52%	5.27%	1.23%
CABA	20.60%	20.08%	19.78%	22.92%	9,093	23.04%	8.1%	12.87%	8.78%	7.75%	14.18%	9.67%	8.54%
Río Negro	1.18%	1.20%	1.20%	1.38%	498	1.26%	7.5%	4.48%	1.85%	0.64%	5.17%	2.14%	0.74%
Santa Fe	6.76%	6.76%	6.80%	8.10%	2,646	6.70%	7.1%	-0.79%	-0.55%	-0.18%	-1.36%	-0.96%	-0.31%
Corrientes	0.83%	0.83%	0.84%	1.77%	316	0.80%	6.9%	-3.74%	-2.39%	-0.33%	-4.35%	-2.78%	-0.38%
Chaco	0.99%	1.03%	1.03%	1.12%	384	0.97%	6.8%	-5.40%	-3.30%	-0.36%	-5.88%	-3.60%	-0.39%
Mendoza	3.11%	3.12%	3.11%	3.24%	1,116	2.83%	6.5%	-10.36%	-4.08%	-1.74%	-10.16%	-4.01%	-1.71%
Buenos Aires	45.14%	45.48%	45.70%	35.55%	15,544	39.39%	6.2%	-15.46%	-10.74%	-5.45%	-16.03%	-11.13%	-5.66%
Chubut	1.66%	1.71%	1.68%	1.87%	573	1.45%	6.1%	-18.05%	-4.08%	-2.48%	-15.76%	-3.57%	-2.17%
Catamarca	0.54%	0.55%	0.56%	0.94%	184	0.47%	6.0%	-18.25%	-5.66%	-1.22%	-19.68%	-6.11%	-1.32%
Jujuy	0.71%	0.69%	0.71%	0.85%	229	0.58%	5.9%	-19.47%	-12.63%	-1.25%	-21.59%	-14.00%	-1.38%
Sgo.del Estero	0.74%	0.76%	0.77%	0.90%	240	0.61%	5.7%	-25.04%	-13.24%	-1.35%	-26.55%	-14.04%	-1.44%
Ta. del Fuego	0.93%	0.96%	0.94%	0.71%	270	0.68%	5.1%	-39.79%	-14.27%	-5.49%	-37.08%	-13.30%	-5.12%
Formosa	0.54%	0.56%	0.56%	0.52%	145	0.37%	4.7%	-51.47%	-29.79%	-2.14%	-52.16%	-30.18%	-2.17%
La Rioja	0.46%	0.47%	0.47%	0.46%	109	0.28%	4.2%	-68.35%	-32.32%	-2.89%	-70.38%	-33.28%	-2.97%
San Juan	1.29%	1.29%	1.29%	0.90%	282	0.72%	3.9%	-81.03%	-33.02%	-6.27%	-80.71%	-32.89%	-6.24%
Total	100.00%	100.00%	100.00%	100.00%	39,464	100.00%	7.1%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

(1) Shares were calculated from labor income according to Households's Permanent Survey (EPH, INDEC).

(2) Consumption net of Tax Exemptions and considering Reduced Rates

(3) Consumption net of Tax Exemptions

Source: Authors' estimates

A replacement of the turnover by a provincial VAT will not reduce the vertical imbalance, but may open a window to do that if the federal VAT rate is also reduced to allow the provinces to have a higher provincial rate.

Another option is to allow the provinces to introduce a surtax on some excises like those that fall on fuels or even to transfer part of the tax power of the Federal government.

A less-ambitious proposal is to improve the turnover by reversing some of the bad decisions that complicated the administration of the tax in recent years. This will require an agreement like the ones signed in the early 1990's under the umbrella of the revenue sharing system for it to be credible (and with financial penalties to the provinces that do not comply). It is possible that some of the needed counter reforms have Constitutional support (e.g. the use of higher rates on manufacturers located in other provinces may be interpreted as a barrier on domestic trade that is forbidden by the Constitution). The elimination of some problems (like chronic excess withholdings) may be achieved if provinces agree that controversies with

taxpayers have to be solved by an interprovincial Court (similar to the solution of disputes under the *Convenio Multilateral*) but with a more important role for impartial judges rather than the participation of the Ministries of Economy of each province that is used today under the *Convenio*.

If primary activities and manufacturing are exempt from the tax and there is some coordination in the taxing of financial intermediation and transport, the cascade will be reduced substantially.¹⁰¹

With respect to taxation of real estate it is possible to use a National Cadastre (as proposed in 2007 but that has not been working so far) to improve on some of the pitfalls observed in recent years. In a more comprehensive reform the National Cadastre will be the only one responsible for the valuation of properties in all the country. This Cadastre may be “owned” by the 24 provinces but will be less subject to local political interference by being accountable to the 24 governors and the Federal government. A National Cadastre can use the same criteria to value property in all the country and impose a minimum correction for inflation.¹⁰² Provinces may undo the final effect of this decision on their voters by reducing the tax rate, but an external valuation will eliminate the fiscal externality that today encourages some provinces to underestimate the value of properties: for many properties the Federal government uses the fiscal value as the base of the tax on personal assets. To avoid a windfall benefit for the Federal government it may reduce the rate of the federal tax for the properties located in the provinces that agreed to participate in the National Cadastre. This will be an incentive for provinces to adhere to the reform.

¹⁰¹ *It would be better to extend the exemption to financial activities and transport but as they are important sources of revenue for some provinces this proposal is unlikely to receive much support.*

¹⁰² *A permanent assessment of the market value of properties is very expensive. Therefore, some general indexation of the tax value is necessary even with an efficient cadastre.*

APPENDIX 1. TAX ADMINISTRATION COSTS

Provincial Tax Offices in Argentina: Performance Assessment

Under the Argentine federal fiscal system, each province organizes the tax administration and collection, independently. In practice, there are important similarities and differences among the 24 provincial governments in this regard. Taxes applied are very similar in nature but their shares in the total tax provincial revenues vary according to the characteristics of each province (population, business density, size of urban centers, etc). The provincial cascade sales tax (*ingresos brutos*) is the most important tax revenue source in every province followed, alternatively, by the property tax on real estate (urban and rural) or the stamp tax. Instead, operation and degree of administrative autonomy may differ significantly. For instance, in some provinces the tax authorities are organized as autarkic offices (agencies such as the ones in Buenos Aires City –AGIP- or Buenos Aires Province –ARBA-) deciding on their own budget and reporting to the Provincial Ministry of Finance or Economy. In others, they are mere administrative branches, sometimes Provincial Directorates as in the case of Santa Fe or Mendoza, under the corresponding Ministry of Economy or Finance. Auditing of the tax offices by central provincial authorities proceed also under different modalities.

As regards main operational functions, these offices collect taxes, handle the administration of tax forms and deal with contested tax demands from individuals and companies, use inspectors to verify and investigate tax forms, impose fines. The cascade sales tax comprises more than 70% of the tax revenue in most provinces. As mentioned in the main text, in 21 out of the 24 provinces the tax rate is higher on manufacturers “imported” from other provinces than on the ones produced in their territory. The *Convenio Multilateral* signed by the provinces is the mechanism used to distribute the collections of large taxpayers that have sales in more than one jurisdiction among provinces. Withholding mechanisms through credit card and banking operations or through large companies have also been increasing and became pervasive in the system. Thus, the tasks of a typical tax office include the surveillance of these ad-hoc collection mechanisms. In some cases they also monitor the revenues from royalties on natural resources. In the case of the property tax on real state, some provinces have

decentralized the collection to the municipalities. A few use outsourcing of legal aspects or tax collection to specialized private companies.

A comparison of the performance of the provincial tax offices is shown in A.Table 1 that reports the tax collection/the total budget (in monetary terms) of 21 cases comprising 13 provinces out of the 24 provinces (for some provinces we considered an average of several years). This indicator approximates a rough measure of productivity (total output/ total inputs).

These ratios exhibit a great deal of dispersion that calls for an explanation. One factor influencing this result may be the difference in operational performance of each unit. Also, as already mentioned, the scope of activities of each tax office may vary by province resulting in a different mix of products and costs. Moreover, principal-agent relationship and the use of incentive regulations may play an important role. The next subsections will discuss and present a measure of relative efficiency of tax offices more rigorously. For this purpose we will summarize the international experience and provide our own estimates using the Data Envelopment Approach (DEA).

A. Table 1. Provincial Tax Offices-Performance indicators

Tax Offices (DMUs)	Tax Revenues / Office Budget (ARG\$)	
	Ratio	Ranking
1	72,2	2,0
2	10,1	20,0
3	58,7	5,0
4	14,5	19,0
5	56,6	6,0
6	30,8	14,0
7	52,4	7,0
8	87,3	1,0
9	41,0	10,0
10	38,7	11,0
11	37,1	12,0
12	42,5	9,0
13	45,1	8,0
14	68,7	3,0
15	36,9	13,0
16	26,6	16,0
17	61,4	4,0
18	20,4	18,0
19	23,5	17,0
20	10,1	21,0
21	28,7	15,0

Source: Own estimates based on provincial information. DMU: Decision Making Unit.
Note: A total of 10 tax offices are considered with data available for several years between 2005 and 2009. In the case of AFIP (National Tax Office) in 2009 this figure is ARG\$ 52.

The international evidence

Improving the operation of the public sector requires, as a first step, to make an assessment of its efficiency and productivity. One apparent difficulty in this regard is the fact that most of public sector activities do not develop in a market context. Thus, to measure output in relation to inputs has proved to be a difficult task in itself. Moreover, in general, public administration techniques and book keeping practices are biased to deal with inputs (budget) omitting clear references to outputs (services and their outcomes).

In particular, the analysis of efficiency of tax offices is not abundant. Here we will gather some of the available evidence from four studies corresponding to Norway, Portugal, Belgium and Spain. One common feature of the studies considered here is that all of them have been

restricted by the need to use pre-existing data, though in the Norwegian case the Directorate of Taxes had conducted a previous discussion about the definition of the most relevant measures of outputs and inputs regarding their tax offices. Another common feature is that labor input is a key component in the construction of all DEA exercises. In all cases wages are recognized as the dominant cost in the tax office budget and often, other expenses are allocated in proportion to labor input (space, computers, furniture, etc). A. Table 2 reports the inputs and outputs used in each case.

In the Norwegian case, the study provides the DEA scores for the tax offices correcting them by a probabilistic method to make a statistical assessment of the efficiency estimates.¹⁰³ These authors find that small units tend to belong to the least efficient part of the efficiency distribution (technical efficiency). Their results give a potential output increase of 21-24% if all units become efficient.

In the Portuguese case only 10 out of 41 offices are efficient assuming CRS (Constant Returns to Scale). The number grows to 14 when VRS (Variable Returns to Scale) is allowed, showing that scale is a main factor of tax offices' efficiency. The author points out that some of the shortcomings of their tax offices stem from the following facts: the sector suffers from chronic low levels of education among employees, excess of bureaucracy, endemic petty corruption, appointment of tax office managers prone to respond to politically dominant interest groups and job tenure in the public sector that is not linked to performance. In this case allocative efficiency and productivity evolution is measured along with the standard technical efficiency. As a second step a Tobit model is estimated to associate the efficiency scores to external factors that may influence the DEA results. Findings are that efficiency is higher for urban tax offices, higher for offices in "rich" municipalities and higher for those offices situated in municipalities with higher public expenditure.

¹⁰³ *They apply a "bootstrapping" method to correct for the bias of the DEA frontier that is a "non-parametric" estimation based on the best observed practice but is a biased estimate of the best "possible" practice.*

A. Table 2-Tax Office Efficiency- International Experience

Cases	Definition of inputs	Definition of outputs
Norway (2005)- 98 tax offices under the Directorate of Taxes of the Ministry of Finance.	Total cost including labor and offices expenses	-Number of corporate tax returns. -Number of returns from non-incorporated business. -Number of complaints on tax assessments. -Number of false registrations detected by control activities. -Number of people relocated as tax-payers during the year.
Portugal (2007)- 41 Tax offices at the municipal level (all of them in Lisbon)	-Number of employees -Rents -Total taxed population by office	-Tax revenues by type of tax. -Clear-up rate of legal disputes by type.
Belgium (2002)- 289 regional tax offices collecting personal income tax	Personnel expressed in full-time equivalents.	-Number of audited returns by taxpayer category. -Number of audited returns that led to an increase in the tax base by category.
Spain (2000)- 15 regional tax offices	Number of tax inspectors/total personnel	-Number of actions performed to total tax payers -Business taxpayer's debt/Regional Gross Value Added

Source: Own based on References.

The Belgian case uses both DEA and FDH (Full Disposal Hull) methods.¹⁰⁴ The DEA results under VRS show that only 10% of the tax offices compose the efficiency frontier. Further analysis of the efficiency scores suggests that managerial skills, organizational designs and the presence of a Central Tax Office do matter while the monitoring system within each Regional Directorate General is less important.

¹⁰⁴ FDH frontier constitutes a closer envelope of the actual data as compared to DEA.

In the Spanish case where only regional agencies specialized in business taxpayers were included, one third of the 15 offices, analyzed with DEA and a bootstrapping technique, were efficient. Average efficiency score is about 0,81.

The Data Envelopment Analysis (DEA)

DEA models are used for examining the relative efficiency of a set of similar decision-making units (DMUs) (see Box 1). This method does not make any assumption regarding the functional relationship between input and output variables to measure performance. It is a benchmark tool used to calculate efficiency scores intended to produce a ranking of DMUs and identification of efficient units within the analyzed sample.¹⁰⁵ The idea behind this method is that studying the practices of the efficient units in relation to the less efficient ones may provide a number of useful recommendations to improve the operation of the offices.

¹⁰⁵ *The DEA frontier is relative to the sample considered in the analysis and without statistical distributional hypotheses, the DEA does not allow for random errors in the data assuming away measurement errors and the influence of other factors affecting outcomes.*

BOX 1

Data Envelopment Approach

In the DEA the production structure is based on the production possibility set defined by enveloping the observations by a piece wise linear convex outer boundary, the *frontier transformation function*. Two alternative approaches are available in DEA to estimate the efficient frontier. One is input-oriented and the other is output-oriented. The following DEA model is an input-oriented model where inputs are minimized and the outputs are kept at their current levels

$$\text{Min } \theta - \varepsilon \left(\sum_{i=1}^m s_i^- + \sum_{r=1}^s s_r^+ \right)$$

Subject to (in the case of CRS)

$$\sum_{j=1}^n \lambda_j x_{ij} + s_i^- = \theta x_{i0} \quad \text{con } i = 1, 2, \dots, m$$

$$\sum_{j=1}^n \lambda_j y_{rj} - s_r^+ = y_{r0} \quad \text{con } r = 1, 2, \dots, s$$

$$\lambda_j \geq 0 \quad \text{con } j = 1, 2, \dots, n$$

where j corresponds to the “n” DMUS; i corresponds to the “m” inputs y r to the “s” outputs. When assuming Variable Returns to Scale (VRS), the following restriction has to be computed:

$$\sum_{j=1}^n \lambda_j = 1$$

θ is the efficiency parameter for each of the “j” units, “s⁻” is the redundancy of inputs or, alternatively, “s⁺” is the additional product for a given level of inputs. It is bounded between 0 and 1. Those DMUs with θ = 1 are classified as efficient and will be the benchmark for the analysis.

Source: based on Zhu (2009)

This approach is especially suitable in a setting of multiple inputs and outputs, where price information on outputs is not available and the production function relating outputs to inputs is unknown or uncertain, which is most often the case of bureaucratic processes such as those of the State agencies as “production units”.

The boundary of the production possibility set S corresponds to the neoclassical notion of an efficient transformation function between inputs and outputs. There are two basic directions to go from an observation to the frontier: keeping outputs fixed and moving to the frontier by a proportional reduction in inputs, or keeping inputs fixed and moving to the frontier by a proportional expansion of outputs. In input-oriented models, the DEA identifies

technical inefficiency as the possibility to provide the same output with a proportional reduction of inputs. Output-oriented models are symmetrically defined by the possibility of increasing output using the same amount of inputs. Results are equivalent in terms of identification of inefficient DMUs, and selection of orientation depends on the nature of the production process and data availability. In the case of tax offices, the idea of cost control of bureaucratic administration suggests an input oriented approach.

The analysis assumes that the DMUs included in the calculation have a degree of homogeneity which is adequate for DEA.

An index equal to one accounts for a technically efficient DMU. A measure less than one indicate a certain degree of inefficiency.

A standard procedure in the literature to understand the causes for the revealed differences has been to investigate possible explanatory variables by regressing efficiency or productivity scores on candidates for explanatory variables, i.e. variables in addition to the ones used as inputs or outputs.

A draft calculation for a sub-sample of provincial tax collection offices

The data:

As in the previous reported cases, we selected two indicators of inputs related to labor, which is the most important component of the tax offices budget. We selected only one output: the total tax revenue.

Notice that one requirement for applying DEA fruitfully is that the DMUs are using resources on the same set of outputs. This means that the diverse scope of the tax collection offices in Argentine provinces could be the source of some inaccuracy in the present results. In this estimation no adjustment has been introduced in order to reflect differences of scope in operational responsibilities between offices (for instance, Buenos Aires City tax office includes in the budget the labor costs of the City Statistical Office; Santa Fe tax office uses the common central informatics service for information processing, reducing costs but presumably reducing efficiency too).

The results:

Figures A1 and A2 present our results for DEA of the Provincial Tax Offices considering each of the inputs separately, as an illustration.

Figure A1. Provincial Tax Offices

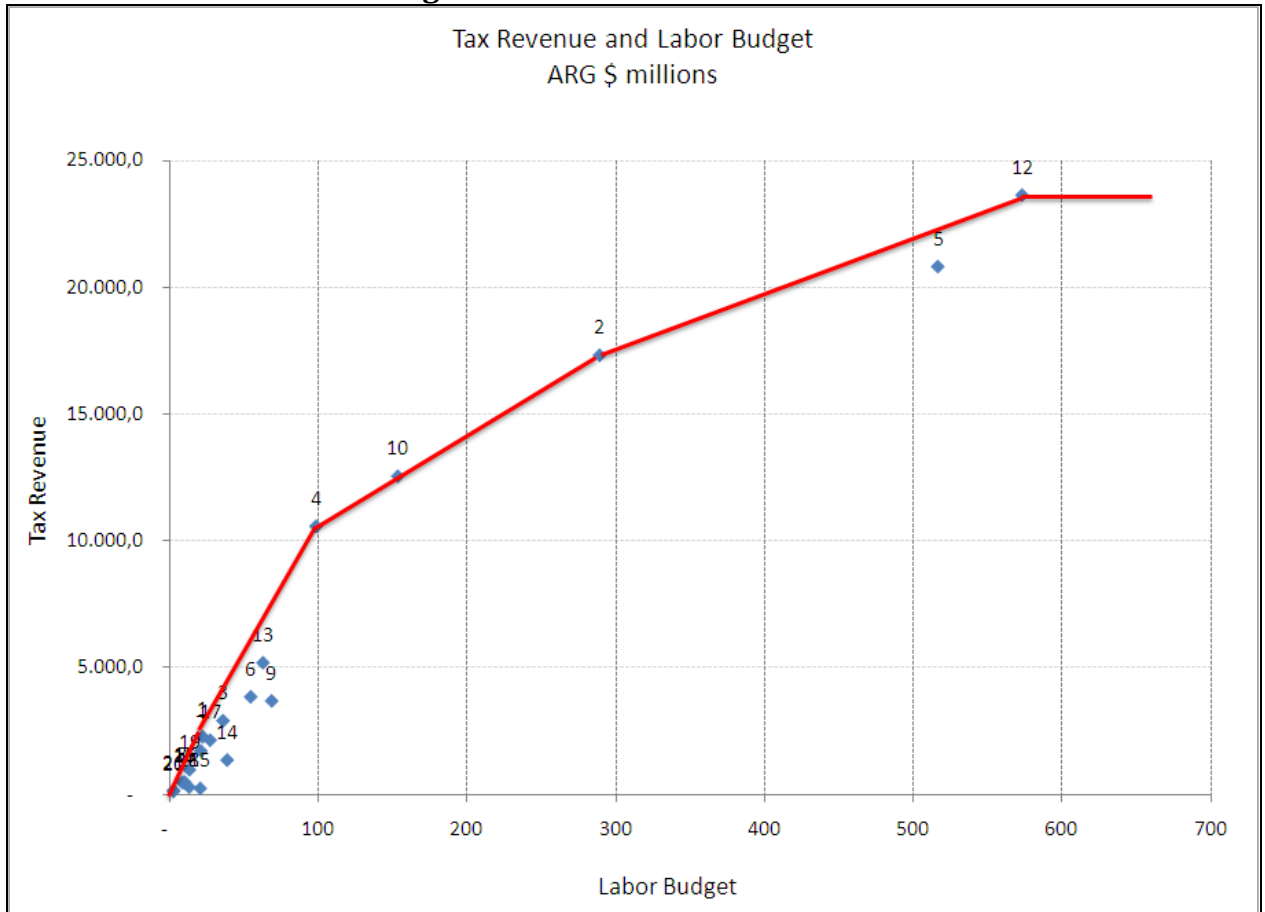
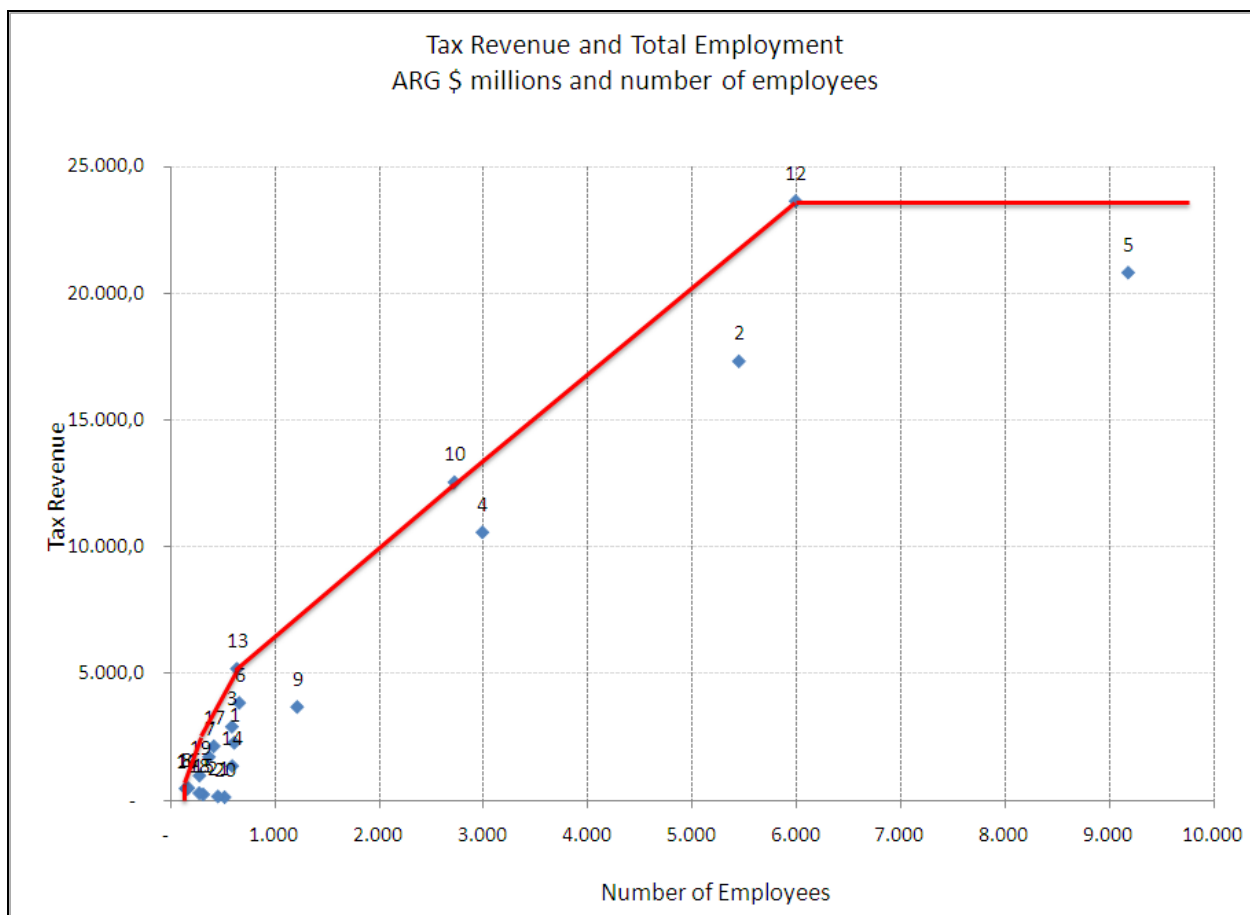


Figure A2. Tax Offices



When considering both inputs together a set of nine DMUs (a tax provincial office in a selected year between 2005 and 2010) are located on the efficiency frontier (see A.Table 3).

The simple average of the scores is 0,88, a bit higher than the ones observed in the international evidence, presumably due to the sample that is biased towards the larger more developed provinces at the moment.

**A.Table 3. Provincial Tax Offices- Data Envelope Analisis
Input Oriented Efficiency - VRS**

Provincial Tax Offices Data Envelope Analisis Input Oriented Efficiency - VRS	
Indicators	
$\tau = 1$	9
% < 1	57,14
Mean	0,88
Standard Deviation	0,18
S.D / Mean (%)	20,71
Min	0,46
Tax Offices (DMUs)	Efficiency Scores θ
1	1,00
2	1,00
3	0,92
4	1,00
5	0,86
6	0,84
7	0,98
8	1,00
9	0,59
10	1,00
11	0,87
12	1,00
13	1,00
14	0,46
15	0,47
16	0,95
17	0,95
18	0,61
20	0,95
21	1,00
22	1,00

The DEA model also provides the benchmarks for each inefficient case, calculated as a linear convex combination of efficient cases which may add information when analyzing the causes of their inefficiency (See A.Table 4).

A.Table 4. Benchmarks for each DMU (I)

Benchmarks for each DMU (λ)

Tax Offices (DMUs)	Efficiency Scores θ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Σ
1	1,00	1,0	-	-	-	-	-	-	0,0	-	-	-	-	0,0	-	-	-	-	-	-	-	-	1,0
2	1,00	-	1,0	-	-	-	-	-	-	-	0,0	-	0,0	-	-	-	-	-	-	-	-	-	1,0
3	0,92	0,5	-	-	-	-	-	-	0,2	-	-	-	-	0,3	-	-	-	-	-	-	-	-	1,0
4	1,00	0,0	-	-	1,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,0	1,0
5	0,86	-	0,4	-	-	-	-	-	-	-	-	-	0,6	-	-	-	-	-	-	-	-	-	1,0
6	0,84	0,2	-	-	-	-	-	-	0,2	-	-	-	-	0,6	-	-	-	-	-	-	-	-	1,0
7	0,98	0,3	-	-	-	-	-	-	0,5	-	-	-	-	0,1	-	-	-	-	-	-	-	-	1,0
8	1,00	-	-	-	-	-	-	-	1,0	-	-	-	-	-	-	-	-	-	-	-	-	-	1,0
9	0,59	0,6	-	-	0,0	-	-	-	-	-	-	-	-	0,4	-	-	-	-	-	-	-	-	1,0
10	1,00	-	-	-	0,0	-	-	-	-	-	1,0	-	-	0,0	-	-	-	-	-	-	-	-	1,0
11	0,87	0,0	-	-	-	-	-	-	1,0	-	-	-	-	0,0	-	-	-	-	-	-	-	-	1,0
12	1,00	-	-	-	-	-	-	-	-	-	(0,0)	-	1,0	-	-	-	-	-	-	-	-	-	1,0
13	1,00	0,0	-	-	0,0	-	-	-	-	-	-	-	-	1,0	-	-	-	-	-	-	-	-	1,0
14	0,46	0,1	-	-	-	-	-	-	0,7	-	-	-	-	0,1	-	-	-	-	-	-	-	-	1,0
15	0,47	-	-	-	-	-	-	-	1,0	-	-	-	-	-	-	-	-	-	-	-	-	-	1,0
16	0,95	-	-	-	-	-	-	-	1,0	-	-	-	-	-	-	-	-	-	-	-	-	-	1,0
17	0,95	0,3	-	-	-	-	-	-	0,5	-	-	-	-	0,3	-	-	-	-	-	-	-	-	1,0
18	0,61	-	-	-	-	-	-	-	0,9	-	-	-	-	-	-	-	-	-	-	-	-	0,1	1,0
19	0,95	0,2	-	-	-	-	-	-	0,7	-	-	-	-	0,0	-	-	-	-	-	-	-	-	1,0
20	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,0	0,0	1,0
21	1,00	-	-	-	-	-	-	-	0,0	-	-	-	-	-	-	-	-	-	-	-	-	-	1,0

Finally, we compare the ranking of the efficiency scores with the ranking corresponding to the productivity indicator built as Total Tax Revenue/Total budget cost. The results show that both rankings differ significantly (A.Table 5). On the one hand, DEA allows for a more complete analysis of the average tax office performance as compared to our simple initial indicator of productivity. On the other, some important inputs may be missing. For instance, Government administration and collection costs capture only a portion of the administrative costs of a tax system. Individuals and businesses also incur costs of paying and filing their taxes and a complete estimate of administrative costs should include all three components.

A.Table 5- Tax Offices Efficiency in Argentina

Tax Offices (DMUs)	Tax Revenues / Office Budget (ARG\$)		Efficiency Scores Θ	
	Ratio	Ranking	Θ	Ranking
1	72,2	2,0	1,0	1,0
2	10,1	20,0	1,0	2,0
3	58,7	5,0	1,0	3,0
4	14,5	19,0	1,0	4,0
5	56,6	6,0	1,0	5,0
6	30,8	14,0	1,0	6,0
7	52,4	7,0	1,0	7,0
8	87,3	1,0	1,0	8,0
9	41,0	10,0	1,0	9,0
10	38,7	11,0	1,0	10,0
11	37,1	12,0	0,9	11,0
12	42,5	9,0	0,9	12,0
13	45,1	8,0	0,9	13,0
14	68,7	3,0	0,9	14,0
15	36,9	13,0	0,9	15,0
16	26,6	16,0	0,9	16,0
17	61,4	4,0	0,8	17,0
18	20,4	18,0	0,6	18,0
19	23,5	17,0	0,6	19,0
20	10,1	21,0	0,5	20,0
21	28,7	15,0	0,5	21,0
Spearman's rank correlation coefficient				0,32

APPENDIX 2: AN ESTIMATE OF THE EFFECTIVE TAX RATE OF *INGRESOS BRUTOS*

To evaluate a possible replacement of *Ingresos Brutos* it is necessary to: a) estimate the effective tax rate on each good and service that depends on the statutory tax rates and on the degree of cascading; b) estimate the impact on the personal and regional distribution of revenues of using a VAT (or retail sales tax) instead of the cascade tax.

Computing the Cascade of the Turnover Tax Rate

The value of production (VP) of sector i without taxes is:

$$\langle 1 \rangle \quad VP_i = \sum_{j=1}^N I_{ij} + M_i + VA_i$$

Where I_{ij} is the national input j used for the production of good i and M is the imported component in the production of i , both valued at the purchasing cost (but excluding the turnover tax and VAT) and VA is the value added by sector i . The (naïve) effective turnover tax collected from sector i (T) is:

$$\langle 2 \rangle \quad T_i = (\sum_{j=1}^N I_{ij} (1 + t_j) + M_i (1 + t_m^0) + VA_i) (1 + t_i^0) - VP$$

Where t_i^0 is the statutory rate for the turnover tax on sector i , t_j is the effective turnover tax rate on input j and t_m^0 is the statutory turnover tax rate on imports (imports that enter directly in the production of good i do not have a cascade component). For simplicity we use a unique rate for all imported inputs aggregated in M , as it is the case in fact in Argentina. The previous expression can be rewritten using $\langle 1 \rangle$ as:

$$\langle 3 \rangle \quad T_i = (\sum_{j=1}^N I_{ij} t_j + M_i t_m^0 + VP) (1 + t_i^0) - VP$$

The effective tax rate is computed as the ratio of the tax paid by sector i to its value of production.

$$\langle 4 \rangle \quad t_i = \frac{T_i}{VP_i} = (\sum_{j=1}^N sh_{ij} t_j + sh_i t_m^0 + 1) (1 + t_i^0) - 1$$

Where sh denotes the share of input j or import m on the value of production of i . This expression has the interpretation of a direct and indirect effect:

$$\langle 5 \rangle \quad t_i = \underbrace{\left(\sum_{j=1}^N sh_{ij} t_j (1 + t_i^0) + sh_i t_m^0 (1 + t_i^0) \right)}_{\text{Cascade}} + \underbrace{t_i^0}_{\text{Direct Effect}}$$

Note that the effective tax rate is unknown and it is in both sides of the equations.

Calling t the vector containing all the tax rates, S the matrix of coefficients of local production (where each row corresponds to the share of all the national inputs used for the final production of a good), S_m a vector with the share of imports on value of production for each sector, expression 5 can be rewritten in matrix form as:

$$\langle 6 \rangle \quad f(t) = (D_{t^0} S) t + (D_{t^0} S_m) t_m^0 + t^0$$

which is a linear function of t . D_{t^0} is a diagonal matrix containing one plus the statutory turnover tax rate for each production sector in its diagonal; i.e. : $D_{t^0} = I + It^0 \mathbf{1}'$ where I is the $N \times N$ identity matrix and $\mathbf{1}$ is a $N \times 1$ vector of ones.

The effective tax rate vector is a fixed point of the previous expression (i.e. it is found when $(t^*) = t^*$). Since the fixed point exists and is unique for this linear function, we can solve by iteration. Alternatively, it can be solved algebraically as:

$$\begin{aligned} It - (D_{t^0} S) t &= (D_{t^0} S_m) t_m^0 + t^0 \\ [I - (D_{t^0} S)] t &= (D_{t^0} S_m) t_m^0 + t^0 \\ t &= [I - (D_{t^0} S)]^{-1} [(D_{t^0} S_m) t_m^0 + t^0] \end{aligned}$$

This is a naïve effective tax rate because the computation assumes that all the tax is passed on to consumers. This expression is analogous to the one used by Varsano et al (2001) (who estimate the cascade effect of Brazilian taxes by using also the input-output matrix). In this case the turnover tax is just a consumption tax at different effective rates. But some sectors cannot transfer taxes because they are price takers (especially for tradable activities). If the producer of a tradable good cannot transfer the price to the buyer the turnover tax becomes a production tax and cascade is reduced. For instance, in the extreme case that nobody can pass through the tax, there is no cascade. To accommodate the fact that in some cases only a fraction of the tax

can be passed on to consumers, we assume that there is arbitrage with the turnover tax on imports, i.e. for the price takers sectors the effective tax rate that is passed on to the next stage of the cascade will be t_m^0 (the turnover tax on imports, which do not have cascade).

To compute this effective tax rate call \bar{D} an $N \times N$ diagonal matrix with ones in the diagonal except for the price taker sectors that contain t_m^0 (i.e. the matrix transforms t into a vector \tilde{t} where the price taker sectors have t_m^0 tax rate), and \underline{D} the matrix that selects the price taker sectors. We can solve it with an iterative method:

$$t_1 = (D_{t^0} S) t^0 + (D_{t^0} S_m) t_m^0 + t^0$$

So the deputed tax vector for the first stage of the iteration is:

$$t'_1 = \bar{D} \cdot t_1 + \underline{D} \cdot t_0$$

To solve:

$$t_{i+1} = (D_{t^0} S) t'_i + (D_{t^0} S_m) t_m^0 + t^0$$

where

$$t'_i = \bar{D} \cdot t_i + \underline{D} \cdot t_0$$

There is not a closed form solution, but it can be solve by iteration until $t_i \simeq t_{i-1}$.

The intuition is that the effective tax rate vector that affects the final price is t'_i which means that in each stage of the iteration we force commodities effective tax rates to be t_m^0 .

Finally, when using the Input-Output Matrix of Argentina, there is a matrix for inputs, and there are additional matrices that add transportation, wholesale and retail margin. When using the standard input-output matrix, which does not include these margins, the estimated cascades is a producer prices. Wholesale and retail activities are also taxed, and in general at higher tax rates, what implies that the cascade continues downstream.

Estimate of the Turnover Effective Tax on Consumption

We compute in this section the turnover tax component included in the final consumption of goods and services. The goods and services at producer level are later sell to other producers, exported or consumed domestically. In Argentina, exports of services are not in

general exempt, but export of goods are exempt (with the exception of the province of Misiones), but there is an implicit component due to the cascade.

Exported products add to the cost at producer level transportation and commerce margins. We assume these costs are born by the exporter and therefore they are exempt from the turnover tax, what means exported goods have a producer tax given by the implicit tax rate included in the cascade.

We compute the effective producer tax rate paid by exporters of goods as:

X= Value of Production Exported at producer prices

t = Effective Tax Rate for this sector (as computed following the previous exercise)

t0 =Statutory Tax Rate for this sector

MgX= Value of Transportation and Wholesale Margins on Exports

tmg =Effective Tax Rate for Transportation and Wholesale Margins

tmg0 =Statutory Tax Rate for Transportation and Wholesale Margins

$$\langle 7 \rangle \quad \text{Effective Tax Rate on Exports} = \frac{X \cdot (t - t_0) + MgX \cdot (t_{mg} - t_{mg0})}{X + MgX}$$

For consumption, we need to make additional assumptions because we do not know the transactions involved in the commercial stage (wholesale and retail). Input-Output Matrix of the National Account estimates independently the component of Transportation, Wholesale and Retail that goes on top of the cost at the producer level.¹⁰⁶ If the product goes first through wholesale and then through retail, it has a double effect on the Cascade. For instance, in the Buenos Aires province for small firms the turnover tax rate on wholesale and retail is 3%. A product valued at \$100 at producer level with \$20 of wholesale margin and \$20 of retail margin would increase its effective tax rate from 2% at producer level (for instance) to 4.7% at wholesale level and to 7.16% to final consumer. But small shops compete with large and integrated retail companies, such as supermarkets, what mean they cannot pass on all the tax to consumers. Following the example of the Buenos Aires provinces, large firms in the retail and wholesale sectors are taxed at 4.5% (instead of 3%). It could be assumed that the lower of

¹⁰⁶ See Appendix 2 for details about the input-output matrix.

the two (small shop tax rate but with cascade versus large shop rate but without cascade) is binding in terms of incidence. We assume in our exercise that the large firm tax rate is the limit (what means only 4.5% is passed on to the consumer by small shops, as well as large shops). We compute the effective tax rate on consumption as:

C= Value of Production Consumed Domestically at producer price

t = Effective Tax Rate for this sector (as computed following the previous exercise)

t₀ =Statutory Tax Rate for this sector

MgC= Value of Transportation, Wholesale and Retail Margins on Consumption

t_c =Theoretical Tax Rate on Final Consumption

$$\langle 8 \rangle \quad \text{Effective Tax Rate on Domestic Consumption} = \frac{[C \cdot (1+t) + MgC] \cdot (1+t_c)}{C + MgC}$$

Neuquén follows the same approach of Buenos Aires, and Cordoba and San Luis as a general and a reduced tax rate regime.

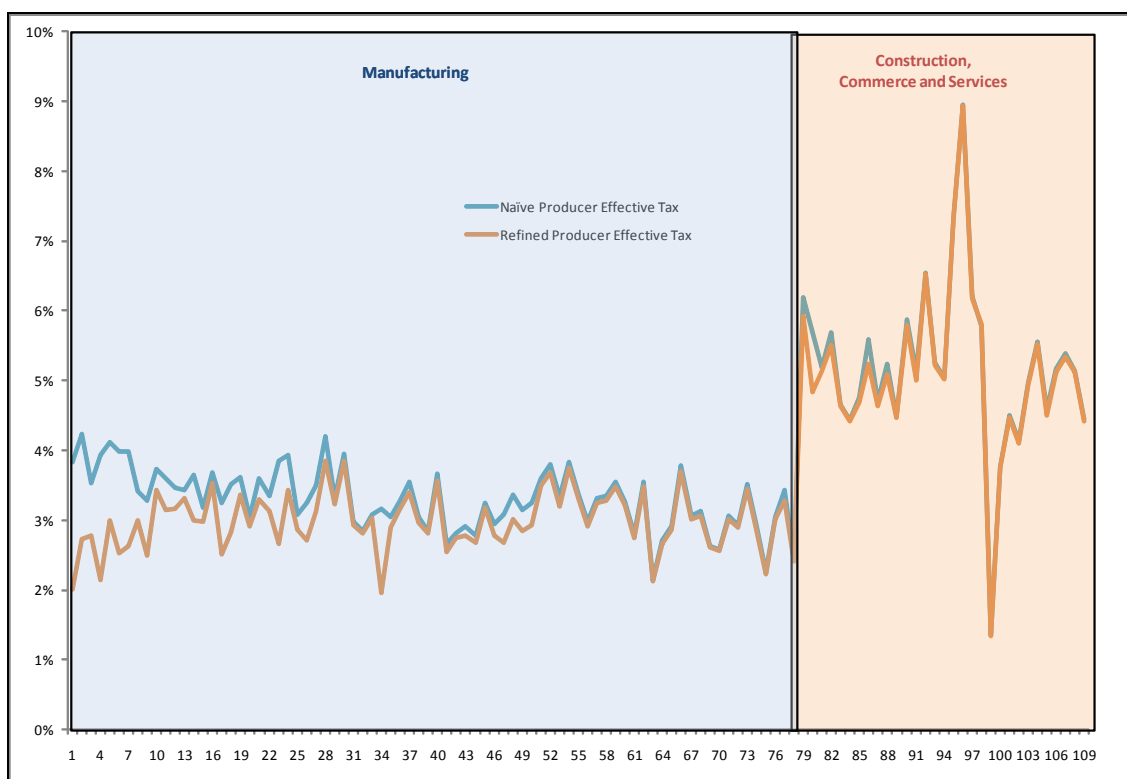
The case of the province of Buenos Aires

In this section we illustrate the results for the cascade and effective tax rate for the Buenos Aires Province, which is among the most complex cases to compute.

In this province, the turnover tax rate for agriculture, mining and manufacturing is 1% for small firms and 3% for large firms. In the case of services the tax rate goes from 3% to 5.5%, depending again on the size of the firm.

For the production side of the cascade we use the rate for small firm, since the cascade for these firms does not exceed the 3% limit of large firms. In the case of transport, wholesale and retail on top of the producer price, we assume that these activities are integrated and pay the large firm tax rate (4.5%). Figure A2.1 shows the relationship between the refined effective tax rate at producer prices where we assumed the effective tax rate of commodity produces cannot pass-through any tax to consumers. As expected, this affects mostly the food (the first sectors in manufacturing), sectors that uses more intensively commodities and add less value.

**Figure A2.1 Naïve v Refined Producer Effective Tax Rate by sector.
Turnover Tax, Buenos Aires**



The same exercise for different provinces gives a similar picture, where services are in general more taxed.

Using Effective instead of Statutory Tax Rates

In the previous exercise we use statutory tax rates, since all the provinces have exemptions and special regimes; a concern is that if we do not take into account the tax expenditures we overestimate the cascade and the equivalent tax to consumers. We compute the Cascade at the

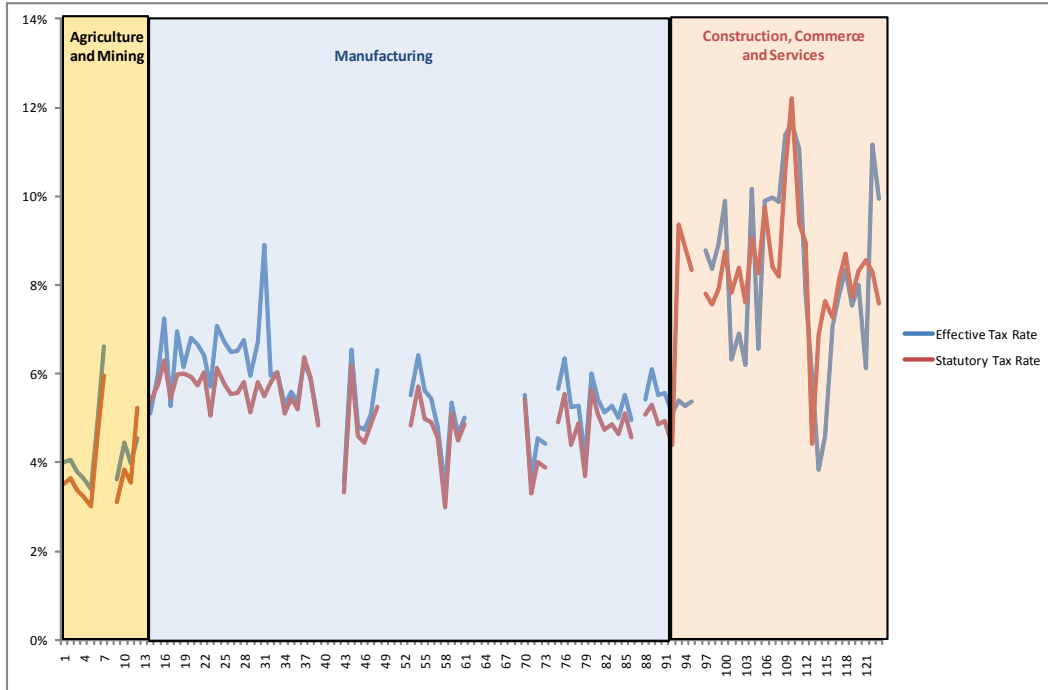
producer level (i.e. without including the commercialization margin). The results show that using the small taxpayer statutory tax rate the measurement error is very small.¹⁰⁷

We then compute the implicit tax rate charged to final consumer, i.e. we add to the value of the goods at producer price plus the cascade the wholesale and retail margin with the turnover tax rate (which generates the last cascade), assuming there is not intermediate transaction in this last stage (what is consistent with the assumption that in each sector there are retail firms buying directly to producers, not allowing retail firms buying at the wholesale market to pass-through to consumer the turnover tax on wholesale). Since effective and statutory tax rates for the last two stages are not very different, we obtain a similar result, using either of them (Figure A2.2).¹⁰⁸ The (simple) average implicit tax rate on final consumers using statutory tax rates is 5.9% and using the effective tax rate computed from provincial tax authority data is 6.2%.

¹⁰⁷ To explore more why the effective tax rate is more similar to the tax rate to small tax payers we compute simple descriptive statistics. The results suggest the distributions are different, although mean tax rate is similar: the distribution for the effective tax rate has more weight in both tails. This means that there are more sectors with high tax (sectors that are dominated by large tax payers facing higher statutory tax rates) and more sectors with low tax. Since the effective tax rate is computed as the tax paid as a ratio of the sales reported to the tax agency, the results is not driven by evasion but by exempted firms, that are not captured in our model using statutory tax rates. For more details see Artana et al, 2011.

¹⁰⁸ The sectors not shown in the figure are, according to the Input-Output matrix, selling only to other producers.

**Figure A2.2 Implicit Tax Rate on Final Consumer
Effective Tax Rate vs Statutory Tax Rate for Small Tax Payers**



REFERENCES

- ACEA. 2010. (European Automobiles Manufacturers Association). *ACEA Tax Guide*.
- Acosta, P. 2010. "The "Fly-Paper" Effect in the Presence of Spatial Interdependence: Evidence from Argentinean Municipalities". *Ann Reg Sci*. 44. 453-466.
- Ardanaz, M., M. Leiras and M. Tommasi. 2008. "The Foundations of Ineffective Policies and Weak Accountability: Federalism Argentine Style", Mimeo, Universidad de San Andrés.
- Ardanaz M., M. Leiras and M. Tommasi M. 2010. "The politics of Federalism in Argentina and its Effects on Governance and Accountability". Columbia University, Universidad de San Andres, July.
- Ahmad, E. and G. Brosio. 2008. "Political economy of multi-level tax assignments in Latin American countries: earmarked revenues versus tax autonomy". IMF Working Paper. WP 71.
- Ambrosiano, M. and M. Bordignon. 2006. "Normative versus Positive Theories of Revenue Assignments in Federations" in E. Ahmad and G. Brosio (Eds) *Handbook of Fiscal Federalism*. Northampton Massachusetts. Edward Elgar Publishing Inc.
- Artana, D. 2007 "Are Latin-American Countries Decentralized? FIEL Working Paper. Marzo.
- Artana, D. and I. Templado. 2010. "Is the Argentine Revenue Effort "too" High? FIEL Working Paper No. 106. November.
- Artana, D., E. Bour, J. Bour and N. Susmel. 2010. "Strengthening Long-term Growth in Argentina". Paper prepared for the OECD Economic Development and Review Committee (EDRC) Seminar "Beyond the Crisis – Returning to Sustainable Growth in Latin America". Paris. France. November.
- Artana, D. S. Auguste, M. Cristini and C. Moskovits. 2011 "The Cascade Sales Tax in Argentina. Options for Reform". Paper prepared for the IADB (mimeo). June.
- Atkinson, A. and J. Stiglitz. 1980. *Lectures on Public Economics*. Mc Graw Hill.
- Auguste, S. 2006. "Los costos de cumplimiento del sistema tributario". En FIEL *La presión formal sobre el sector formal de la economía*. Buenos Aires.
- Bahl R. and M. Cyan. 2011. "Tax assignment: does the practice match the theory?" *Environment and Planning C: Government and Policy* 29(2) 264 – 280
- Baldrich, J. 2010. "Taxing Our Neighbors? Why Some Sub-national Revenues Are so Small". Universidad de San Andrés, Marzo.
- Barros, C.P., 2007. "Technical and Allocative Efficiency of Tax Offices: A Case Study", *Int, J, Public Sector Performance Management*, vol, 1, n° 1, pp, 41-61.
- Bird R. 2007. "Is a State VAT the Answer? What's the Question? International Tax Program. University of Toronto. TP Paper 0703. Toronto, Ontario.
- 2008. "Tax Assignment Revisited". IBB Paper No. 17. Rotman School of Management, University of Toronto. August.

----- 2010. "Sub-national Taxation in Developing Countries – A view of The Literature". The World Bank. October.

Bird R., F. Vaillancourt and E. Roy-Cesar. 2010. "Is Decentralization "Glue" or "Solvent" for National Unity?" International Studies Program, Working Paper 10-03. Georgia State University. February.

Blöchliger H. and D. King. 2006. "Less than You Thought: The Fiscal Autonomy of Sub-central Governments". OECD.

Blöchliger H. and J. Rabesona 2009. "The Fiscal Autonomy of Sub-central Governments: An Update". OECD Network on Fiscal Relations Across Levels of Government. WP 9.

Bonvecchi A. 2010. "The Political Economy of Fiscal Reform in Latin America: The Case of Argentina". Inter-American Development Bank. IDB Working Paper Series No. IDB-WP-175. May.

Borge L. Rattso J. 2004. "Spending Growth With Vertical Fiscal Imbalance: Decentralize Government Spending in Norway 1880-1990". Norwegian University of Science and Technology.

Brosio, G. and J.P. Jiménez. 2010. "The intergovernmental assignment of revenue from natural resources: a difficult balance between centralism and threats to national unity", CEPAL, Santiago de Chile.

Calvo, E. and J. P. Micozzi. 2005. "The Governor's Backyard: A Seat-Vote Model of Electoral Reform for Sub-national Multiparty Races", *The Journal of Politics*, 67:1050-1074.

Chen, Y; P. Schmidt and H. Wang. 2011. "Consistent estimation of the fixed effect stochastic frontier model". Michigan University. August.

Cherny N., G. Feierherd and M. Novaro. 2010. "El Presidencialismo Argentino: De la Crisis a la Reconstrucción del Poder". *América Latina Hoy*, Vol 54, 2010, pp. 15-41. Universidad de Salamanca.

Courant, P., E. Gramlich, and D.. Rubinfeld, 1979. "The Simulative Effects of Intergovernmental Grants: Or Why Money Sticks Where It Hits." In P. Mieszkowski and W. Oakland, ed. *Fiscal Federalism and Grants-In-Aid*. Washington, DC: Urban Institute, pp. 5-21.

Dahlberg, M., E. Mörk, J. Rattso and H. Agren. 2006. "Local Taxes and Spending: Estimating the Flypaper Effect Using a Discontinuous Grant Rule" (mimeo).

De Cesare C. and J. Lazo Martin. 2008. "Impuestos a los patrimonios en América Latina". CEPAL. Serie Macroeconomía para el Desarrollo No. 66. Mayo.

Esteller More, A. 2003. "Is there a connection between the tax administration and the political power?," Working Papers in Economics 100, Universitat de Barcelona. Espai de.

Eichengreen, B., and J. von Hagen. 1996. "Federalism, Fiscal Restraints, and European Monetary Union." *American Economic Review* 86(2): 134-38.

Fedelino, A. and T. Ter-Minassian. 2009. "Macro Policy Lessons for a Sound Design of Fiscal Decentralization". IMF Fiscal Affairs Department. July.

Ferroni, M., M. Mateo and M. Payne. 2006. "Social Cohesion in Latin America and the Caribbean. Analysis, Action and Coordination". IADB. Washington DC.

FIEL. 1993. *Hacia una nueva organización del federalismo fiscal en la Argentina*. Buenos Aires.

----- 2003. *El ambiente de negocios en las provincias argentinas*. Buenos Aires.

----- 2006. *Instituciones fiscales para la Argentina*. Buenos Aires.

----- 2007. *El Desorden Urbano*. Buenos Aires.

----- 2010. *Argentina, política fiscal y cohesión social: el federalismo cuenta*. Fundación Carolina.

Filimon, R. T. Romer and D. Rosenthal. 1982. "Asymmetric Information and Agenda Control". *Journal of Public Economics*. Vol. 17 (February), 51-70.

Freytes C. 2010. "Time is of the Essence: the Politics of Taxation and Constraining Fiscal Institutions in Latin America".

Forsund, F., Kittelsen and F. Lindseth . 2005. "Efficiency and Productivity of Norwegian Tax Offices", Working Paper n° 29, Department of Economics, University of Oslo.

Fullerton, D. and S. West. 2002. "Can Taxes on Cars and on Gasoline Mimic and Unavailable Tax on Emissions?" *Journal of Environmental Economics and Management* 43, 135-157.

Gervasoni, C. 2008. "Conceptualizing and Measuring Sub-national Regimes: An Expert-based Operationalization of Democracy in the Argentine Provinces". Annual Meeting of American Political Science, Boston. MA.

----- 2009. "¿Cuán Democráticas son las Provincias Argentinas? Estrategias Objetivas y Subjetivas de Inferencia Descriptiva", *Boletín de Política Comparada*. Edición N. 1, Buenos Aires. August.

----- 2010 a. "A Rentier Theory of Sub-national Regimes. Fiscal Federalism, Democracy and Authoritarianism in Argentine Provinces" *World Politics*. 62, No. 2. 302-40.

----- 2010 b. "Measuring Variance in Sub-national Regimes: Results from an Expert-Based Operationalization of Democracy in Argentine Provinces". *Journal of Politics in Latin America*. 2, 2, 13-52.

Gibson E. 2007. "Control de límites: autoritarismo subnacional en países democráticos", *Desarrollo Económico*, N° 186, Vol. 47, Buenos Aires. July-September

Gibson, E. and Suarez-Cao, J. 2007. "Federalized Party Systems: Patterns of Competition and Hegemony" Paper presented at the annual meeting of the American Political Science Association, Hyatt Regency Chicago and the Sheraton Chicago Hotel and Towers, Chicago, IL August.

Giraudy, A. 2007. "The Distributive Politics of Emergency Employment Programs in Argentina (1993–2002)", *Latin American Research Review*, Vol. 42, No. 2, University of Texas Press, Austin.

Gomez Sabaini J. and J. Jimenez. 2010. "El Financiamiento de los Gobiernos Subnacionales en America Latina". CEPAL. Agosto.

Gomez Sabaini J. and J. O'Farrell. 2009. "La Economía Política de la Política Tributaria en América Latina". 21 seminario de Política Fiscal. ILPES/CEPAL. Enero.

Gonzalez Martínez, X. and D. Miles. 2000. "Eficiencia en la inspección de Hacienda", *Revista de Economía Aplicada*, n° 24, vol, VIII, pp, 203-219.

Gordin, J. 2006. *The Politics of Intergovernmental Fiscal Relations in Argentina*, IBEI WP 2006/2, Barcelona

Gordon, R. and W. Li. 2009. "Tax Structures in Developing Countries; Many Puzzles and a Possible Explanation". *Journal of Public Economics*. 93. 855-866.

Govinda Rao M. 2006. "Transition to Market and Normative Framework of Fiscal Federalism" in E. Ahmad and G. Brossio (Eds) *Handbook of Fiscal Federalism*.

Hines, J. and R.Thaler. 1995. "The Flypaper Effect," *Journal of Economic Perspectives*, American Economic Association, Vol. 9 (4). Fall. Pages 217-226.

IARAF. 2010 a. "Volvió a subir la presión tributaria provincial sobre la actividad económica". Córdoba, Octubre.

----- 2010 b. "Los principales municipios del país continuaron aumentando la carga tributaria sobre la actividad económica durante 2010". Instituto Argentino de Análisis Fiscal. Córdoba 29 de Diciembre.

IERAL. 2004. "Carga Fiscal provincial y municipal. Análisis de las 23 jurisdicciones provinciales, CABA y 100 municipios de todo el país. Año 2004". IERAL de Fundación Mediterránea. Diciembre,

----- 2006. "Proyecto Carga Tributaria Provincial y Municipal. Síntesis de los resultados de la medición anual 2006. IERAL de Fundación Mediterránea". 13 de Diciembre,

Inman, R. 2008. "The fly paper effect". NBER Working paper 14579. December.

Jones, M., O. Meloni and M. Tommasi. 2009. "Voters as Fiscal Liberals: Incentives and Accountability in Federal Systems". (Mimeo).

Jones, M., S. Saiegh, P. Spiller and M. Tommasi. 2001. "Amateur Legislators-Professional Politicians: The Consequences of Party-Centered Electoral Rules in a Federal System" *American Journal of Political Science*, Vol. 46, No. 3: 656-669.

Jones, M., P. Sanguinetti and M. Tommasi. 1997. "Politics, Institutions and Fiscal Performance in a Federal System: An Analysis of the Argentine Provinces." Buenos Aires, Argentina: Universidad de San Andrés. Mimeographed document.

Jones, M., P. Sanguinetti and M. Tommasi. 1999. "Politics, Institutions and Public Sector Spending in the Argentine Provinces." In: J. Poterba and J. von Hagen, editors. *Budget Institutions and Fiscal Outcomes*. Chicago, United States: University of Chicago Press and National Bureau of Economic Research

Joumard I. and P. Kongsrud. 2003. "Fiscal Relations across Government Levels". OECD Economics Department Working Paper No. 375. December.

Keen, M. and A. Simone. 2004. "Tax Policy in Developing Countries: Some Lessons from the 1990s and Some Challenges Ahead" in S. Gupta, B. Clements and G. Inchauspe (eds) *Helping Countries Develop: The Role of Fiscal Policy*. International Monetary Fund. Washington DC.

Kenney, L. and S. Winner. 2006. "Tax Systems in the World: An Empirical Investigation into the Importance of Tax Bases, Collection Costs, and Political Regime". *International Tax and Public Finance*. vol 13.

Llanos, M. 2003. "Los Senadores y el Senado en Argentina y Brasil: informe de una encuesta", *Res publica*. Revista de Ciencias Sociales, 3, S.117-154, Buenos Aires.

López Murphy R. and C. Moskovits. 1998. "Desarrollos recientes en las finanzas de los gobiernos locales en Argentina". FIEL Documento de Trabajo No. 58, Noviembre.

Martinez-Vazquez J. Rider M. 2008. "The Assignment of The Property Tax: Should Developing Countries follow the conventional Wisdom?" International Studies Program. Working Paper 08-21. Georgia State University. December.

- McLure, Ch. 2003. "Intergovernmental Fiscal Relations and Resource Development" Special Report of the International Tax & Investment Center. Washington DC, November.
- McLure Ch. and J. Martinez-Vazquez. 2002. "The Assignment of Revenues and Expenditures in Intergovernmental Fiscal Relations".
- Mikesell, J. L. 2003. *International Experiences with Administration of Local Taxes: A Review of Practices and Issues*. Indiana University.
- Moesen, W. and Persoon, A. 2002. "Measuring and Explaining the Productive Efficiency of Tax Offices: a Non-Parametric Best Practice Frontier Approach", *Tijdschrift voor Economie en Management*, vol, XLVIII, 3.
- Nicolini J. J. Posadas J. Sanguinetti P. Sanguinetti and M. Tommasi. 2002. "Decentralization, Fiscal Discipline in Governments and the Bailout Problem: The Case of Argentina". Inter-American Development Bank. Research Working Paper No. R-467. August.
- Oates W. 1978. "The Changing Structure of Intergovernmental Fiscal Relations". In Oates W. (Ed.) 1991. *Studies on Fiscal Federalism*. Edward Elgar Publishing Company.
- 1999 "An Essay on Fiscal Federalism". *Journal of Economic Literature*. No. 37.
- Oates, W. and R. Schwab. 2004. *What should local governments tax: income or property?* in, *City Taxes. City Spending*, Amy Ellen Schwartz, ed., Edward Elgar
- Purfield, C. 2004. "The Decentralization Dilemma in India". IMF Working Paper 32.
- Rattso, J. and P. Tovmo. 2002. "Fiscal Discipline and Asymmetric Adjustment of Revenues and Expenditures: Local Government Responses in Denmark". *Public Finance Review*. 30, 3. 208-234.
- Saiegh, S. and M. Tommasi. 1998. "Argentinas Federal Fiscal Institutions: A Case Study in the Transaction-Cost Theory of Politics." Buenos Aires, Argentina: CEDI and Universidad de San Andrés. Mimeographed document.
- Saiegh S. and M. Tommasi. 1999. "Why is Argentina's Fiscal Federalism so Inefficient? Entering the Labyrinth" *Journal of Applied Economics*. Vol. II. No. 1. Pp 169-209. May.
- Sanguinetti P., J. Sanguinetti and M. Tommasi. 2001. "La conducta fiscal de los gobiernos municipales en Argentina. Los determinantes económicos, institucionales y políticos". Febrero.
- Schneider, B.R. 2005. "Business Politics and Policy Making in Contemporary Latin America." Paper prepared for Inter-American Development Bank Workshop on State Reform, Public Policies and Policymaking Processes, Washington, DC. February 28-March 2,
- Sepulveda C. and J. Martinez-Vazquez. 2009. "Property Taxation in Latin-America: An Assessment and Options for Reform". Paper presented at the CEPAL-GTZ conference "Relaciones intergubernamentales y descentralización en América Latina". Santiago, Noviembre.
- Shleifer. A. and R. Vishny. 1998. *The grabbing hand: government pathologies and their cures*. Harvard University Press.
- Slemrod, J. and J. Bakija. 1996. *Taxing Ourselves. A Citizen's Guide to the Great Debate Over Tax Reform*. The MIT Press.
- Spiller, P., and M. Tommasi. 2008. "Political Institutions, Policymaking Processes and Policy Outcomes in Argentina." In: E. Stein and M. Tommasi, editors. *Policymaking in Latin America: How Politics Shapes Policy*. Cambridge, United States: Harvard University Press.

Stein E., M. Tommasi, K. Echebarria, E. Lora and M. Payne. 2006. *The Politics of Policies. Economic and Social Progress in Latin America*. Inter-American Development Bank. Harvard University.

Sturzenegger F. and R. Werner. 2006. "Fiscal Federalism and Procyclical Spending: The Cases of Argentina and Brazil", *Economica*. La Plata LII, Nro. 1-2.

Ter-Minassian, T. and J.P. Jiménez. 2011. "Macroeconomic challenges of fiscal decentralization in Latin America". Serie Macroeconomía del desarrollo N° 112, CEPAL. Santiago de Chile

Tommasi M. 2002. "Federalism in Argentina and the Reforms of the 1990's". August.

Urbiztondo S, M. Cristini, C. Moskovits. and S. Saiegh. 2009. "The Political Economy of Productivity in Argentina. Interpretation and Illustration". IDB Working Paper Series No. IDB-WP-102. Inter-American Development Bank. October.

Varsano, R., T. Pereira, E. Amorim Araujo, N. Costa da Silva and M, Ikeda. 2001. "Substituindo o PIS e a COFINS-E Por Que Nao a CPMF? – Por Uma Contribucao Nao Cumulativa. Instituto de Pesquisa Economica Aplicada (IPEA). Rio de Janeiro Outubro.

Vegh, C. and G. Vuletin. 2010. "Unsticking the Flypaper Effect Using Distortionary Taxation" (mimeo). May.

Wang, H. and C. Ho. 2010. Estimating Fixed-Effect Panel Stochastic Frontier. Models by Model Transformation. *Journal of Econometrics* 157, 286-296.

Weingast, B. 2006. "Second Generation Fiscal Federalism: Implications for Decentralized Democratic Governance and Economic Development". June.

Worthington, A. and B. Dollery. 2000. Efficiency Measurement in Local Public Sector: Econometric and Mathematical Programming Frontier Techniques. School of Economics and Finance. Discussion Papers & Working Papers Series 078, Queensland University of Technology.

Zhu, Joe. 2009. *Quantitative Models for Performance Evaluation and Benchmarking. Data Envelope Analysis with Spreadsheets*. Second Edition. Springer.

SERIE DOCUMENTOS DE TRABAJO

109. Sub-national Revenue Mobilization in Latin America and Caribbean Countries. The case of Argentina. D. Artana, S. Auguste, M. Cristini, C. Moskovits and I. Templado. Enero 2012.
108. Energía, Maldición de Recursos y Enfermedad Holandesa. F. Navajas. Octubre 2011.
107. What Drove Down Natural Gas Production in Argentina? D. Barril y F. Navajas. Mayo 2011.
106. Is the Argentine Revenue Effort “too” High? D. Artana and I. Templado. Noviembre 2010.
105. Infraestructura y Energía en la Argentina: Diagnósticos, Desafíos y Opciones. F. Navajas. Octubre 2010.
104. Passenger Cars and CO2 Emissions: Assessing Global Impacts of a Convergence to Low-power. F. Navajas y M. Panadeiros. Octubre 2010.
103. Política Fiscal y Cohesión Social: El Federalismo Cuenta. M. Cristini, C. Moskovits, G. Bermúdez y D. Focanti. Junio 2010.
102. Informalidad Laboral en la Argentina. J. L. Bour, N. Susmel y P. Roccatagliata. Mayo 2010.
101. Energy Populism and Household Welfare. W. Cont, P. Hancevic y F. Navajas. Agosto 2009.
100. Acceso a Internet y Desempeño Académico en la Argentina: Explorando la Evidencia. M. Cristini y G. Bermudez. Diciembre 2008. Abril 2009.
99. Políticas para Mitigar Riesgos Sociales. El Caso de los Infortunios Laborales y el Desempleo. M. Panadeiros y N. Susmel. Diciembre 2008.
98. El Desempeño de los Sistemas de Capitalización Previsional en América Latina: Determinantes Estructurales y Regulatorios sobre la Competencia de las AFP. Sebastián Auguste y Santiago Urbiztondo. Noviembre 2008.
97. Financiamiento de la Infraestructura en la Argentina: lo que dejó la crisis macroeconómica. D. Artana y R. Moya. Noviembre 2008.
96. Adaptación Tarifaria y Tarifa Social: Simulaciones para Gas Natural y Electricidad en el AMBA. F. Navajas y P. Hancevic. Diciembre 2007.
95. Estructuras Tarifarias en el Servicio de Electricidad para Usuarios Residenciales. El Caso de las Provincias Argentinas. Walter Cont. Diciembre 2007.
94. El Shock de los Precios del Petróleo en América Central: Implicancias Fiscales y Energéticas. Daniel Artana, Marcelo Catena y Fernando Navajas. Agosto 2007.
93. El Mapa Económico de las Mujeres Argentinas (1998-2006). M. Cristini y G. Bermudez Abril 2007.
92. Are Latin-American Countries Decentralized? D. Artana. Marzo 2007.
91. El Sistema Argentino de Innovación (1980-2004): Evaluación y Propuestas. M. Cristini, G. Bermudez y F. Ares. Diciembre 2006.
90. ¿Qué Hace Diferente a las Aseguradoras del Resto de las Empresas? Una Propuesta General para Fortalecer el Mercado de Seguros. R. Moya. Diciembre 2006.
89. “Energó –Crunch” Argentino 2002-20XX. F. Navajas. Octubre 2006.
88. Privatization of Infrastructure Facilities in Latin America: Full Economic Effects and Perceptions. S. Urbiztondo. Julio 2006.
87. Gasto Tributario: Concepto y Aspectos Metodológicos para su Estimación. D. Artana. Diciembre 2005.
86. Fusiones Horizontales. W. Cont y F. Navajas. Diciembre 2005.
85. La Reforma del Sector Eléctrico en Colombia: Breve Análisis y Crítica Constructiva. S. Urbiztondo y J.M. Rojas. Octubre 2005.

84. Transparencia, Confidencialidad y Competencia: Un Análisis Económico de las Reformas Actuales en el Mercado de Gas Natural Argentino. S. Urbiztondo, FIEL. Agosto 2005.
83. Proyecto Mundial de Internet: El Capítulo Argentino. FIEL e Instituto de Economía Aplicada (Fundación Banco Empresario de Tucumán). Noviembre 2004.
82. La Anatomía Simple de la Crisis Energética en la Argentina. F. Navajas y W. Cont. Septiembre 2004.
81. La Nueva China Cambia al Mundo. M. Cristini y G. Bermúdez. Septiembre 2004.
80. Las PyMES Argentinas: Ambiente de Negocios y Crecimiento Exportador. M. Cristini y G. Bermúdez. Junio 2004.
79. Educación Universitaria. Aportes para el Debate acerca de su Efectividad y Equidad. M. Echart. Diciembre 2003.
78. Cables Suelos: La Transmisión en la Provincia de Buenos Aires (Comedia). E. Bour y Carlos A. Carman. Noviembre 2003.
77. Renegotiation with Public Utilities in Argentina: Analysis and Proposal. S. Urbiztondo. Octubre 2003.
76. Productividad y Crecimiento de las PYMES: La Evidencia Argentina en los 90. M. Cristini, P. Costa y N. Susmel. Mayo 2003.
75. Infraestructura y Costos de Logística en la Argentina. M. Cristini, R. Moya y G. Bermúdez. Noviembre 2002.
74. Nuevas Estrategias Competitivas en la Industria Farmacéutica Argentina y Reconocimiento de la Propiedad Intelectual. M. Panadeiros. Octubre 2002.
73. Estructuras Tarifarias Bajo Estrés. F. Navajas. Setiembre 2002.
72. Seguridad Social y Competitividad: El Caso del Sistema de Salud. M. Panadeiros. Marzo 2002.
71. El Agro y el País: Una Estrategia para el Futuro. M. Cristini y Otros. Octubre 2001.
70. Reseña: Índice de Producción Industrial y sus Ciclos. Lindor Esteban Martin Lucero. Agosto 2001.
69. Apertura Comercial en el Sector Informático. P. Acosta y M. Cristini. Junio 2001.
68. Microeconomic Decompositions of Aggregate Variables. An Application to Labor Informality in Argentina. L. Gasparini. Marzo 2001.
67. Una Educación para el Siglo XXI. La Práctica de la Evaluación de la Calidad de la Educación. Experiencia Argentina e Internacional. M. Nicholson. Diciembre 2000.
66. Una Educación para el Siglo XXI. La Evaluación de la Calidad de la Educación. G. Cousinet. Noviembre 2000.
65. Hacia un Programa de Obras Públicas Ampliado: Beneficios y Requisitos Fiscales. S. Auguste, M. Cristini y C. Moskovits. Setiembre 2000.
64. La Apertura Financiera Argentina de los '90. Una Visión Complementaria de la Balanza de Pagos. Claudio Dal Din . Junio 2000.
63. La Integración Mercosur-Unión Europea: La Óptica de los Negocios. M. Cristini y M. Panadeiros. Diciembre 1999.
62. El Control Aduanero en una Economía Abierta: El Caso del Programa de Inspección de Preembarque en la Argentina. M. Cristini y R. Moya. Agosto 1999.
61. El Crédito para las Microempresas: Una Propuesta de Institucionalización para la Argentina. M. Cristini y R. Moya. Agosto 1999.
60. El Problema del Año 2000. Implicancias Económicas Potenciales. E. Bour. Marzo 1999.
59. Aspectos Financieros de Tipos de Cambio y Monetarios del Mercosur. Diciembre 1998.
58. Desarrollos Recientes en las Finanzas de los Gobiernos Locales en Argentina. R. López Murphy y C. Moskovits. Noviembre 1998.
57. Regulaciones a los Supermercados. D. Artana y M. Panadeiros. Julio 1998.
56. La Deuda Pública Argentina: 1990-1997. C. Dal Din y N. López Isnardi. Junio 1998.

55. Modernización del Comercio Minorista en la Argentina: El Rol de los Supermercados. D. Artana, M. Cristini, R. Moya, M. Panadeiros. Setiembre 1997.
54. Competencia Desleal en el Comercio Minorista. Experiencia para el Caso Argentino. D. Artana y F. Navajas. Agosto 1997.
53. Decentralisation, Inter-Governmental Fiscal Relations and Macroeconomic Governance. The Case of Argentina. Ricardo L. Murphy and C. Moskovits. Agosto 1997.
52. Las Estadísticas Laborales. Juan L. Bour y Nuria Susmel. Junio 1997.
51. Determinantes del Ahorro Interno: El Caso Argentino. R. López Murphy, F. Navajas, S. Urbiztondo y C. Moskovits. Diciembre 1996.
50. Mercado Laboral e Instituciones: Lecciones a partir del Caso de Chile. Ricardo Paredes M. Diciembre 1996.
49. Una Propuesta de Tarificación Vial para el Area Metropolitana. O. Libonatti, R. Moya y M. Salinardi. Setiembre 1996.
48. El Relanceo de las Tarifas Telefónicas en la Argentina. D. Artana, R. L. Murphy, F. Navajas y S. Urbiztondo. Diciembre 1995.
47. Las PYMES en la Argentina. M. Cristini. Diciembre 1995.
46. Precios y Márgenes del Gas Natural: Algunas Observaciones Comparativas. F. Navajas. Octubre 1995.
45. Encuesta sobre Inversión en la Industria Manufacturera (2da. parte). M. Lurati. Setiembre 1995.
44. Defensa de la Competencia. D. Artana. Marzo 1995.
43. Defensa del Consumidor. D. Artana. Diciembre 1994.
42. Fiscal Decentralization: Some Lessons for Latin America. D. Artana, R. López Murphy. Octubre 1994.
41. Reforma Previsional y Opción de Reparto-Capitalización. José Delgado. Junio 1994
40. La Experiencia del Asia Oriental. FIEL/BANCO MUNDIAL. Marzo de 1994.
39. Financiamiento de la Inversión Privada en Sectores de Infraestructura. FIEL/BANCO MUNDIAL. Diciembre de 1993.
38. La Descentralización de la Educación Superior: Elementos de un Programa de Reforma. Agosto 1993.
37. Encuesta sobre Inversión en la Industria Manufacturera. M. Lurati. Julio 1993.
36. El Arancel Externo Común (AEC) del MERCOSUR: los conflictos. M. Cristini, N. Balzarotti. Febrero 1993.
35. Costos Laborales en el MERCOSUR: Comparación de los Costos Laborales Directos. J. L. Bour, N. Susmel, C. Bagolini, M. Echart. Diciembre 1992.
34. Gasto Público Social: El Sistema de Salud. M. Panadeiros. Setiembre 1992.
33. El sistema Agro-Alimentario y el Mercado de la CE. M. Cristini. Junio 1992.
32. Costos Laborales en el MERCOSUR: Legislación Comparada. J. L. Bour, N. Susmel, C. Bagolini, M. Echart. Abril 1992.
31. Los Acuerdos Regionales en los 90: Un Estudio Comparado de la CE92, el NAFTA y el MERCOSUR. M. Cristini, N. Balzarotti. Diciembre 1991.
30. Reforma de la Caja de Jubilaciones y Pensiones de la Provincia de Mendoza. M. Cristini, J. Delgado. Octubre 1991.
29. El Sistema de Obras Sociales en la Argentina: Diagnóstico y Propuesta de Reforma. M. Panadeiros. Agosto 1991.
28. Propuesta de Reforma de la Carta Orgánica del Banco Central. J. Piekarz, E. Szewach. Marzo 1991.
27. La Comercialización de Granos. Análisis del Mercado Argentino. D. Artana, M. Cristini, J. Delgado. Diciembre 1990.
26. Algunas Consideraciones sobre el Endeudamiento y la Solvencia del SPA. D. Artana, O. Libonatti, C. Rivas. Noviembre 1990.
25. Evolución de las Cotizaciones Accionarias en el Largo Plazo. C. Miteff. Julio 1990.
24. Efectos de un Esquema de Apertura Económica sobre la Calidad de Bienes Producidos Localmente. C. Canis, C. Golonbek, I. Soloaga. Marzo 1990.

23. Principales Características de las Exportaciones Industriales en la Argentina. C. Canis, C. Golonbek, I. Soloaga. Diciembre 1989.
22. La Promoción a la Informática en la Argentina. D. Artana, M. Salinardi. Septiembre 1989.
21. Inversión en Educación Universitaria en Argentina. J. L. Bour, M. Echart. Junio 1989.
20. Incidencia de los Impuestos Indirectos en el Gasto de las Familias. J. L. Bour, J. Sereno, N. Susmel. Enero 1989.
19. Aspectos Dinámicos del Funcionamiento del Mercado de Tierras: El Caso Argentino. M. Cristini, O. Chisari. Noviembre 1988.
18. Investigaciones Antidumping y Compensatorias contra los Países Latinoamericanos Altamente Endeudados. J. Nogués. Agosto 1988.
17. Sistema de Atención Médica en la Argentina: Propuesta para su Reforma. M. Panadeiros. Mayo 1988.
16. Regulación y Desregulación: Teoría y Evidencia Empírica. D. Artana y E. Szewach. Marzo 1988.
15. Informe OKITA: Un Análisis Crítico. D. Artana, J. L. Bour, N. Susmel y E. Szewach. Diciembre 1987.
14. La Política Agropecuaria Común (PAC): Causas de su Permanencia y Perspectivas Futuras. M. Cristini. Julio 1987.
13. Las Encuestas de Coyuntura de FIEL como Predictores del Nivel de Actividad en el Corto Plazo. M. Cristini e Isidro Soloaga. Noviembre 1986.
12. La Demanda de Carne Vacuna en la Argentina: Determinantes y Estimaciones. M. Cristini. Noviembre 1986.
11. El Impuesto a la Tierra: una Discusión de sus Efectos Económicos para el Caso Argentino. M. Cristini y O. Chisari. Abril 1986.
10. El Impuesto a la Tierra, las Retenciones y sus Efectos en la Producción Actual y la Futura. M. Cristini, N. Susmel y E. Szewach. Octubre 1985.
9. El Ciclo Ganadero. La Evidencia Empírica 1982-84 y su Incorporación a un Modelo de Comportamiento. M. Cristini. Noviembre 1984.
8. Determinantes de la Oferta de Trabajo en Buenos Aires. J. L. Bour. Enero 1984.
7. La Oferta Agropecuaria: El Caso del Trigo en la Última Década. M. Cristini. Septiembre 1983.
6. Ocupaciones e Ingresos en el Mercado de Trabajo de la Cap. Fed. y GBA. H. Hopenhayn. 1982. 3 tomos.
5. Oferta de Trabajo: Conceptos Básicos y Problemas de Medición. J. L. Bour. Julio 1982.
4. Ganado Vacuno: El Ciclo de Existencias en las Provincias. M. Cristini. Junio 1982.
3. Algunas Reflexiones sobre el Tratamiento a los Insumos no Comerciables en el Cálculo de Protección Efectiva. G. E. Nielsen. Diciembre 1981.
2. Encuesta sobre Remuneraciones en la Industria. Diseño Metodológico. J. L. Bour, V. L. Funes, H. Hopenhayn. Diciembre 1981.
1. La Fuerza de Trabajo en Buenos Aires, J. L. Bour. Diciembre 1981.

ESTAS EMPRESAS CREEN EN LA IMPORTANCIA DE LA INVESTIGACIÓN ECONÓMICA PRIVADA EN LA ARGENTINA

AACS - Asociación Argentina de Compañías de Seguros

ABA – Asociación de Bancos de la Argentina

ACARA – Asociación de Concesionarios de Automotores de la República Argentina

Amarilla Gas S.A.

American Express Argentina S.A.

AMX Argentina S.A.

Apache Energía Argentina S.R.L.

Banco CMF S.A.

Banco COMAFI

Banco Galicia

Banco Sáenz S.A.

Banco Santander Río

BBVA Banco Francés

Bodegas Chandon S.A.

Bolsa de Cereales de Buenos Aires

Bolsa de Comercio de Buenos Aires

Brinks

Bunge Argentina S.A.

Caja de Seguro S.A.

Cámara Argentina de Comercio

Campos y Asociados Comunicación

Cargill S.A.C.I.

Cauciones Seguros

Cencosud S.A.

Central Puerto S.A.

Cervecería y Maltería Quilmes

Chep Argentina S.A.

Citibank, N.A.

Coca Cola de Argentina S.A.

Coca Cola FEMSA de Argentina

Consejo Federal de Inversiones

Corsiglia y Cía. Soc. de Bolsa S.A.

Costa Galana

CSAV Argentina S.A.

Dell Argentina

Distribuidora de Gas del Centro S.A.

Droguería Del Sud

Du Pont Argentina S.A.

Esso S.A. Petrolera Argentina

Everis Argentina S.A.

F.V.S.A.

Falabella S.A.

FASTA

Farmanet S.A.

Firmenich S.A.I.yC.

Ford Argentina S.A.

Fratelli Branca Dest. S.A.

Gas Natural Ban S.A.

Grupo Carrefour Argentina

Grupo Danone

Grupo Linde Gas. S.A.

Grimoldi S.A.

Hoteles Sheraton de Argentina

HLB Pharma Group

IBM Argentina S.A.

Infupa S.A.

Internet Securities Argentina SRL.

Johnson Diversey de Argentina S.A.

JP Morgan Chase

KPMG

ESTAS EMPRESAS CREEN EN LA IMPORTANCIA DE LA INVESTIGACIÓN ECONÓMICA PRIVADA EN LA ARGENTINA

**Loimar S.A.
Loma Negra C.I.A.S.A.
Los Gallegos Shopping
L'Oreal Argentina
Louis Dreyfus Commodities**

**Mabe Argentina
Magic Software Argentina A.A.
Manpower
Marby S.A.
Massalin Particulares S.A.
Mastellone Hnos. S.A.
Medicus
Mercado Abierto Electrónico S.A.
Merck Química Argentina S.A.I.C
Metrogas S.A.
Microsoft de Argentina**

**Neumáticos Goodyear SRL.
Nextel Communications Argentina S.A.
Nike Argentina S.A.
Nobleza Piccardo S.A.I.C.F.**

**OCA S.A.
Organización Techint
Orlando y Cía. Sociedad de Bolsa**

**Pan American Energy LLC
Parexklaukol S.A.
Parker Hannifin Argentina S.A.I.C
PBBPolisur S.A.
Pegasus Argentina S.A.
Petroquímica Cuyo SAIC
Petrobras Energía S.A.
Pirelli Neumáticos SAIC.
Quickfood S.A.
Roggio S.A.**

**San Jorge Emprendimientos S.A.
SC Johnson & Son de Arg. S.A.
Sealed Air Argentina S.A.
Securitas Argentina S.A.
Shell C.A.P.S.A.
Siemens S.A.
Smurfit Kappa de Argentina S.A.**

**Sociedad Comercial del Plata S.A.
Sociedad Rural Argentina
Sodexho Pass
Standard Bank
Standard New York Securities, INC**

**Telecom Argentina
Telecom Italia S.P.A. Sucursal Argentina
Telefónica de Argentina
Televisión Federal Argentina
Terminal Zárate S.A.
Total Austral**

Unilever de Argentina S.A.

Vidriería Argentina S.A.

Wärtsilä Argentina S.A.

YPF