PUBLIC EXPENDITURE AND OPTIMAL GOVERNMENT SIZE IN AN ENDOGENOUS GROWTH MODEL: AN ANALYSIS OF THE CASE OF ARGENTINA

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1. Introduction

In spite of the valuable contributions the Solow Swan Model[1] rendered to the modern theory of Economic Growth the approach, based on a neoclassical production function with diminishing returns to labour and capital and combined with the assumption of a constant saving rate, yielded the uncomfortable prediction that per capita growth would eventually cease unless exogenous technological progress took place.

By acknowledging this deficiency in the model, many theorists enriched the theory of Economic Growth in diverse ways; Cass (1965) and Koopmans (1965), for instance, resorted to Ramsey's contribution[2] to the analysis of consumer optimization in order to provide an endogenous determination of the saving rate. Let it however be said that this improvement of the neoclassical growth model did not solve the problem of dependence of the long run growth rate on exogenous technical advances.

In aiming at sorting out the shortcomings of exogenous growth models, new lines of research, represented by the works of Romer (1986) and Lucas (1988), developed into what is known as endogenous growth models, allowing for a broader capital definition also including human capital and whose main feature was that the long run growth rate could be constant and positive as diminishing capital marginal product did not take place.[3]

In following the latter line of analysis, it results interesting to consider the inclusion of government in endogenous growth models in order to address the questions of what the optimal government size and the tax rate maximizing per capita consumption, capital and income growth rates should be and what implications they will bear upon the analysis, should one allow for distorting taxes to be used.

[1]   Based on Solow (1956) and Swan (1956).

[2]   Ramsey (1928).

[3]   An instance of this are the so-called AK models of growth.

In this connection the paper aims at identifying for Argentina, by using an AK endogenous growth model and resorting to taxes likely to alter incentives upon savings and investment, the government size that makes maximum the per capita growth rate. Furthermore, and whatever magnitude the estimation of government size may render, the empirical exercise carried out seeks to demonstrate that an intertemporal fiscal balance is possible if a more efficiency-oriented and better administered tax system is aimed at, free from distorting taxes and with respect to which existing evasion levels are curtailed.

Notwithstanding the fact that the government size here equals the productive public spending share on GDP, the point may be differently regarded as the literature embodies at least two variants[4] for public expenditure: in the first place, the standard Samuelsonian approach to public goods in which consumption is neither rival nor excludable; in the second case, public spending refers to government activities entering private production functions as inputs subject to congestion as many firms coincide in the use of facilities.

No public spending, either current or capital outlays, is completely free from the congestion problem and, therefore, growth perspectives will tend to worsen when the former's provision falls short real of demand needs for all kinds of public services for a sustained period of time, not to mention the negative impact upon private production of externality-creating public investment shortage.[5]

In this respect, preliminary statistical analyses realized with the Argentina public spending, as of the Nineties (Table 1), showed that the public spending's and public investment's growth rate lagged in general well behind that of product for what – and to the extent that this is not reverted – public facilities scarcity may at some moment hinder the process of outuput growth. On these grounds, the congestion model of productive government services, due to Barro and Sala-i-Martín (1992), is used here as the conceptual framework for the evaluation of the optimal government size.

In extending the empirical support for the congestion model chosen, it should be noticed from figures above that the GDP's annual growth rate not only outweighed that of public spending 7 times out of 10, but also that its overall figure for the period considered reached 58.9 per cent compared with 35.6 per cent in total public spending and the modest 27.5 per cent exhibited by public investment; this gap between growth rates helps to explain why the public expenditure's proportion of GDP fell from 15.2 in 1993 to 13 per cent in 2003.

The optimal public spending share (as a proportion of GDP) definitionally equals, via the government budget constraint, the average tax rate and, for that,

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[4]   Barro (1990) also refers to the case in which public spending enters the private production function as another input (free public services to producers) whose use will be both rival and excludable.

[5]   The point is worth emphasizing here that public provision of services and investment is not to be confused with production, as the latter can be either public or private (*i.e.* privatization of construction and maintenance of a part of the road network in Argentina).

Table 1

Argentine GDP and Total Public Spending, 1993-2003

Year	GDP (1)	Current Public Spending (1, 2)	Public Investment (1)	Total Public Spending (1)	Total Public Spending/ GDP (%)	GDP's Annual Growth Rate (%)	Public Spending's Annual Growth Rate (%)
1993	236.5	32.0	4.0	36.0	15.2	-	-
1994	257.4	33.9	4.6	38.5	15.0	8.84	6.94
1995	258.0	34.4	3.9	38.3	14.8	0.23	−0.52
1996	272.2	34.0	3.1	37.1	13.6	5.50	−3.13
1997	292.9	35.3	4.4	39.7	13.6	7.60	7.00
1998	298.9	37.4	4.6	42.0	14.1	2.05	5.79
1999	283.6	38.9	4.5	43.4	15.3	−5.12	3.33
2000	284.2	39.2	3.0	42.2	14.8	2.12	−2.76
2001	268.7	38.0	2.8	40.8	15.2	−5.45	−3.32
2002	312.6	38.2	2.3	40.5	13.0	16.34	−0.74
2003	375.9	43.7	5.1	48.8	13.0	20.25	17.28
Δ	58.9%	36.5%	27.5	35.5%	-	-	-

(1) Billions of current Argentine pesos, rate of exchange with the U.S. dollar: 1 dollar = 2.93 pesos.
(2) Only Wages, Goods and Services included. Interests, Social Security Payments and Transfers not included.

Source: Own estimates based on information from the National Institute of Statistics and Censuses (INDEC) of Argentina.

the model's empirical results will permit also to compare the optimal and actual average tax rates in Argentina and to suggest policy changes in the existing tax regime, either feasible in terms of tax yield capability (emphasis in efficiency) or convenient in terms of changes in income distribution (emphasis in welfare).

A no minor point is however worth clarifying concerning the scope of the paper: although the point is acknowledged that not only quantity but also quality of public spending bears a hold on long run economic growth, no qualitative assessment is carried out in the paper assuming – as said above – a uniform quality of provided services and facilities[6] by the government.

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[6]   The author is particularly grateful to Blanca Moreno Dodson who pointed out the convenience of focusing also in efficiency aspects of public spending. Let it in this connection be said that the no consideration of the quality dimension of public spending was here decided on simplicity grounds, in view of the objectives of the paper.

As for the structure of the paper: Section 2 includes a description of the model used whereas Section 3 and 4 are respectively devoted to the empirical exercise of determining the optimal government size and of suggesting tax changes in the light of achieved results and its comparison with the structure and revenue yield of the present Argentine Tax System; finally, Section 5 concludes.

2.   An endogenous model of economic growth with public spending subject to congestion[7]

As Barro (1990) pointed out, the inclusion of public spending within an AK model amounts to enhancing the level of technology implied by A and will in consequence affect the long run per capita growth. The spending activities (subject to congestion) carried out by the government, and included in the model developed below, will therefore be considered to cause an effect on coefficient A regardless of their current or capital outlays' nature.

According to Barro and Sala-i-Martín (1992), the expression (1) below stands for the per capita production function for the ith producer:

$$y_i = Ak_i\, f(G/Y) \tag{1}$$

in which:

y_i = per capita product
k_i = per capita capital
G = productive public spending subject to congestion
$Y(\Sigma y_i)$ = aggregate product

As is easily noticed in (1), the functional expression $f(G/Y)$ implies that, given k_i, an increase in public spending relative to aggregate product will enhance y_i and in turn Y; conversely and due to congestion ($\Delta Y > \Delta G$), an increase in product relative to G will dwindle y_i.

By making the functional expression $f(G/Y)$ equal to $(G/Y)^{1-\alpha}$ and having:

$$f' = (1-\alpha)\,(G/Y)^{-\alpha} > 0 \qquad \text{and} \qquad f'' = -\alpha\,(1-\alpha)\,(G/Y)^{-\alpha-2} \langle 0$$

expression (1) above turns into:

$$y_i = Ak_i\,(G/Y)^{1-\alpha} \tag{1'}$$

where $0 \langle \alpha \langle 1$.

The demonstration that production function (1') exhibits constant returns to scale asks for all firms to have similar technology, for what α will be the same for each of them and for the economy as a whole.[8]

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[7]   This section includes a synthesis of the model used.

[8]   The author is aware that criticisms can be raised in respect of the simplifying assumption that sector i's factor shares also apply to the aggregate production function but, allowing that disparities may exist in reality regarding factors' intensity of use among sectors, results are still sound given the macroeconomic nature of the paper.

By dividing (G / Y) by the population, this quotient can be expressed in per capita terms, as in (2) below:

$$(G / Y) = [(G / N) / (Y / N)] = g / y \qquad (2)$$

and since $\Sigma y_i = N y_i = Y$, the ensuing expression (3) will also hold:

$$G / Y = g / y_i \qquad (3)$$

By substituting in (1'), and rearranging, (4') will be used to show constant returns to scale in the function:

$$y_i = A k_i (g / y_i)^{1-\alpha} \qquad (4)$$

$$y_i = A k_i y_i^{-(1-\alpha)} g^{1-\alpha} \qquad (4')$$

rearranging as follows:

$$y_i^{2-\alpha} = A k_i g^{1-\alpha}$$

and solving, (4') will turn out into (5) below:

$$y_i = A k_i^{1/(2-\alpha)} g^{(1-\alpha)/(2-\alpha)} \qquad (5)$$

It can be shown, from (5), that:

$$1 / (2 - \alpha) + (1 - \alpha) / (2 - \alpha) = 1 \qquad (6)$$

and this in turn stands for constant returns to scale in the production function.

Infinite-lived households, on their part, maximize the following utility function:

$$U(0) = \int_0^\infty e^{-(\rho-n)t} [c^{1-\theta} - 1 / (1 - \theta)] \, dt \qquad (7)$$

subject to the budget constraint (8) stating that private consumption plus gross investment equal net of taxes per capita income:

$$dk / dt = (1 - \tau) A k_i (G / Y)^{1-\alpha} - c - (\delta + n) k \qquad (8)$$

where ρ, δ and n respectively stand for the temporal rate of preference, the depreciation rate and the population growth rate; θ in turn indicates the degree of concavity of the utility function while τ is the rate of a proportional tax on the aggregates of domestic gross product whose revenue yield is used by the government to run a balanced budget,[9] according to the ensuing budget constraint:

$$G = \tau Y \qquad (9)$$

The expression (9), which depicts the government size in terms of public spending, may also be viewed as the average tax rate imposed upon the economy, according to (9') below:

$$\tau = G / Y \qquad (9')$$

Once the maximization process is performed, and all substitutions completed, the model renders per capita consumption and growth rates as follows:

$$\gamma = 1 / \theta [(1 - \tau) A (G / Y)^{1-\alpha} - (\delta + \rho)] \qquad (10)$$

or, in terms of the tax rate τ:

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[9] It would be more appropriate to state that the government could temporarily incur in surpluses or deficits, but the budget should in the long run be balanced.

$$\gamma = 1 / \theta [(1 - \tau) A \tau^{1-\alpha} - (\delta + \rho)] \tag{10'}$$

Several points are worth emphasizing concerning the expression (10') above: in the first place, in so far as the government takes resources from the private sector, taxation reduces the per capita growth rate[10] but, at the same time it helps enhancing the latter through the corresponding provision of public facilities and services. Furthermore, by being a function of constans, the per capita growth rate is itself a constant and no dynamic transition will take place towards zero growth in the steady state; in other words, the growth rate will be positive and constant in the long run.

How does the growth rate achieved in (10') relate with the optimal government size? By taking derivatives in (10') with respect to τ, setting the derivative to zero and rearranging terms the expression (11) is achieved:

$$(1 - \tau^*) = f(\tau^*) / f'(\tau^*) \tag{11}$$

where:

τ^* is the tax rate that maximizes γ, $f(\tau) = \tau^{1-\alpha}$ and $f'(\tau) = (1 - \alpha) \tau^{-\alpha}$

After conveniently rearranging it, the expression (11) becomes:

$$\tau^* = (1 - \alpha) / (2 - \alpha) \tag{12}$$

The expression (12) shows that τ^*'s value will depend, under the assumption of a Cobb-Douglas production function that exhibits constant returns to scale, on the public spending share in product. Under the mentioned assumption, payments to factors according to their marginal product will exhaust the produced income, as indicated below:

$$PY = rK + \gamma G \tag{13}$$

Dividing both members by *PY*, the ensuing expression is obtained:

$$1 = 1 / (2 - \alpha) + (1 - \alpha) / (2 - \alpha) \tag{14}$$

where:

$$1 / (2 - \alpha) = rK / PY \quad \text{and} \quad (1 - \alpha) / (2 - \alpha) = \gamma G / PY$$

and, finally:

$$\alpha = 2 - PY / rK \tag{15}$$

3.   The application of the model to the case of Argentina

3.1   The Argentine fiscal scenario

In spite of Argentina being a three-tier federation embodying one national government, twenty four provincial governments and over 1,100 municipalities, all of which are constitutionally endowed with ample faculties to raising taxes and carrying out expenditure programmes, the existing interjurisdictional fiscal

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[10]   Barro and Sala-i-Martín (1995) refers to this as the negative effect of taxation on the after tax marginal product of capital.

arrangements (the so called revenue sharing system) whereby provinces delegate to the national level the collection of main taxes (that is VAT and the Corporation and Individual Income Tax) places in the national level's hands the responsibility of collecting 77-78 per cent of all tax revenues (as shown by Table 15 in the Statistical Appendix), while the subnational governments account for a rather modest 22-23 per cent. All in all, figures also show that – for the benchmark year 2003 – the real overall average tax rate[11] (including all government layers) amounted to 33.75 points of GDP (Table 14).

The nature of the Argentine Tax Regime, and the structure of tax revenues, as depicted by Tables 13 and 15 in the Statistical Appendix are well deserving some comments. Following the introduction of VAT in 1974, tax revenues in Argentina were practically made up with a handful of taxes, namely VAT, Social Security Contributions, Corporate and Personal Income Tax and Fuel Taxes; the fiscal status-quo was firstly disturbed when – as of 1994 – the new Pension Scheme came into being and a part of Social Security Contributions (the employees'dues) went thereafter to Private Pension Funds.

The second great change in the structure of tax revenues took place in 2001 when the national government, in the middle of a political and economic turmoil and in view of the serious budgetary restraint caused by the impossibility of acceding to new loans from international organisms or of placing new debt in financial markets, embarked itself in a so called "zero deficit budgetary policy" for what new taxes had to be resorted to.

In terms of the Tax System, the main consequences of the zero deficit policy were the reintroduction of Export Tariffs, which had been done away by the Government at the beginning of the Convertibility period (in 1991), and the Tax on Financial Transactions, both strongly resisted by economic agents on the grounds that the distorting impact upon exports' competitiveness and the wrong incentives they would give economic agents to move to the shadow economy seriously challenged the convenience and economic efficiency of their use.

The fiscal consequences of these tax changes are clearly depicted by Table 14's figures, showing a mounting tax pressure in 2002, and by Figure 1 overleaf in which Property and Foreign Trade Taxes Revenue's shares are seen to markedly increase since 2001-02.

In comparison, provinces' fiscal performance (Figure 2) makes only noticeable a slight improvement in the case of Taxes on Goods and Services explained by some boost in consumption accompanied by a nominal revenue rise following devaluation in 2002.

Whatever decisive against inefficiency the preceding arguments may be, Tables 13, 14 and 16 highlight the importance export tariffs and financial

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[11]   The real overall average tax rate results from the quotient between Overall Revenues and GDP.

Figure 1

Argentina: National Taxes' Revenue Percentage Share
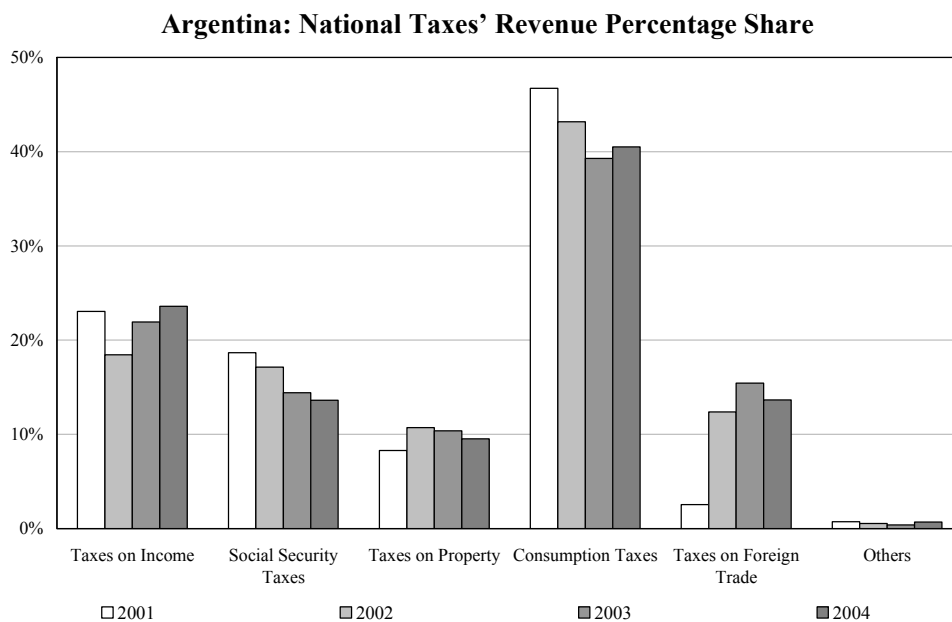
Source: Table 16 in the Statistical Appendix.

Figure 2

Argentina: Provincial Taxes' Revenue Percentage Share
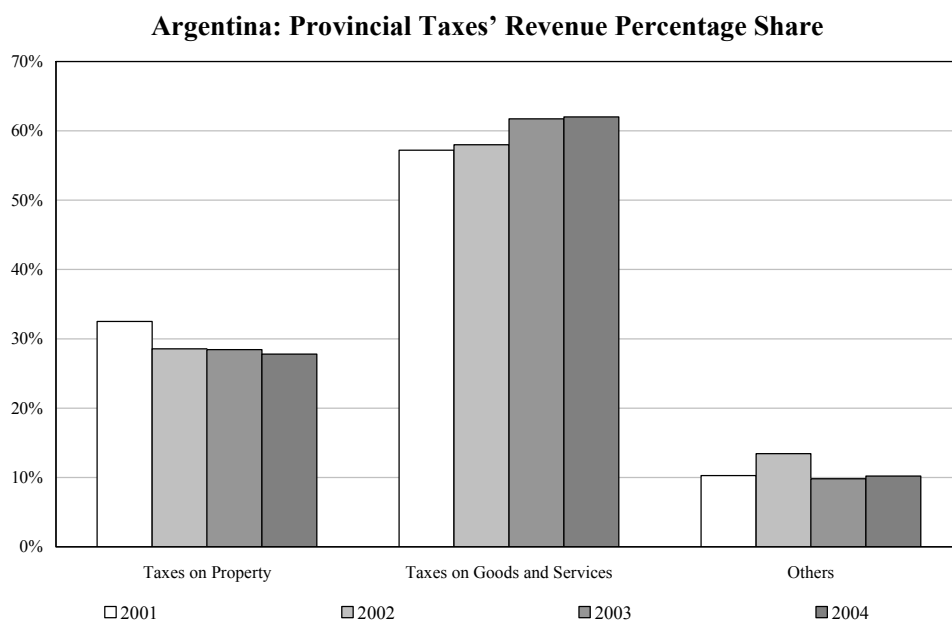
Source: Table 16 in the Statistical Appendix.

transactions taxes have reached, in terms of GDP and as a percentage of the national tax revenue (2.32-2.03 points and 8.72-7.78 per cent, respectively, in 2004), for what any substitution would only be feasible if the lost yield caused by their replacement could immediately be made up with revenues coming from other sources[12] and these precisely are the foundations of the performed simulation exercise, whose results are found in Section 4.

On the expenditure side, and due to decentralization processes set in motion at the end of the Eighties and furthered during the Nineties, subnational governments (provinces and municipalities) were responsible in 2003 for practically 50 per cent of consolidated current and capital spending; their share was overwhelmingly high in the provision of certain public goods and services – especially in the fields of Education, Public Health and Housing – in which they accounted for almost 100 per cent of incurred expenses and in Welfare and Economic Services where the subnational share can by no means considered a minor one. Again, if overall figures are taken for 2003 (Tables 2 and 3), total public expenditure reached 27.62 points of GDP in 2003 and this figure, compared to the 29.01 points of current and capital revenue, rendered a fiscal surplus of almost 1.40 per cent of GDP.[13] In turn the total primary surplus, let alone payments of interest on domestic and foreign debt, reached 3.77 points of GDP in the same year.

3.2   The calculation of the optimal government size for Argentina

Section 2 showed that the budget constraint could be rearranged in order to have the average tax rate τ to stand for the government size [expression (9')] and that its magnitude, obtained by solving equation (12), would in turn guarantee that the requirement of a maximum economic growth rate was met.

The expression (12) also stated that τ^*'s value depended on $(1 - \alpha)$ standing for the public spending share in product. Under the quoted assumption of a constant returns to scale production function $1 / (2 - \alpha)$ and $(1 - \alpha) / (2 - \alpha)$ will respectively equal to rK / PY and $\gamma G / PY$.[14]

The empirical application of the model called in the first place for the choice of benchmark values for γG and PY to be made; in this connection, and in the light of relatively normal macroeconomic conditions in 2003, following the country's abnormal situation of default of its sovereign debt and the exit of

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[12]   The argument will be more easily understood if one takes into account that these two taxes' yields are crucial in the strategy followed by the Government of building the surplus required to meet the post-default incoming financial burden. Some estimates are given below by the author.

[13]   Nevertheless, this surplus can not by any means be considered sustainable in the long run as it is somehow hiding the fact that no payments (interest and capital) are so far being made with respect to the defaulted public debt.

[14]   It must be borne in mind that, by having *K*, *G* and *Y* multiplied by their prices, both these quotients are expressed in monetary terms.

Table 2

**Argentina: Revenues, Expenditures and Financial Results
by Government Level, 2003**
(millions of current Argentine pesos)

ITEMS	NATIONAL LEVEL	PROVINCIAL LEVEL	MUNICIPAL LEVEL	TOTAL
Current Revenue	**65,080**	**35,356**	**7,690**	**108,126**
Tax Revenue	44,511	30,299	3,596	78,406
Social Security Contributions	10,470	-	-	10,470
Non-tax Revenue	3,344	4,350	4,097	11,790
Accrued Interest	4,471	257	-	4,727
Others	2,285	450	-	2,735
Current Expenditure	**53,110**	**36,577**	**7,380**	**97,067**
Consumption and Operating Surplus	12,404	24,351	6,940	43,695
Interest Payments	7,095	1,808	45	8,948
Social Security Benefits	18,868	-	-	18,868
Current Transfers	14,413	10,418	395	25,226
Other Current Expenses	331	-	-	331
Current Savings	**12,861**	**–1,221**	**310**	**11,950**
Capital Revenue	**206**	**691**	**34**	**931**
Capital Outlays	**1,267**	**4,410**	**1,080**	**6,756**
Transfers from Upper Levels	**15,706**	**6,606**	**835**	**23,147**
Transfers to Lower Levels	**22,276**	**872**	**-**	**23,147**
Total Primary Surplus	**11,423**	**2,603**	**145**	**23,147**
Total Primary Surplus[1]	**11,216**	**1,911**	**111**	**13,239**
Financial Result	**4,341**	**794**	**99**	**5,234**

(1) Exclusive of Capital Revenue.

Source: Ministry of Economics, National Direction of Fiscal Research and Analysis. Internet site: www.mecon.gov.ar/hacienda

Table 3

**Argentina: Revenues, Expenditures and Financial Results
by Government Level, 2003**
(percent of GDP)

ITEMS	NATIONAL LEVEL	PROVINCIAL LEVEL	MUNICIPAL LEVEL	TOTAL
Current Revenue	**17.31**	**9.41**	**2.05**	**28.76**
Tax Revenue	11.84	8.06	0.96	20.86
Social Security Contributions	2.79	-	-	2.79
Non-tax Revenue	0.89	1.16	1.09	3.14
Accrued Interest	1.19	0.07	-	1.26
Others	0.61	0.12	-	0.73
Current Expenditure	**14.13**	**9.73**	**1.96**	**25.82**
Consumption and Operating Surplus	3.30	6.48	1.85	11.62
Interest Payments	1.89	0.48	0.01	2.38
Social Security Benefits	5.02	-	-	5.02
Current Transfers	3.83	2.77	0.11	6.71
Other Current Expenses	0.09	-	-	0.09
Current Savings	**3.42**	**–0.32**	**0.08**	**3.18**
Capital Revenue	**0.05**	**0.18**	**0.01**	**0.25**
Capital Outlays	**0.34**	**1.17**	**0.29**	**1.80**
Transfers from Upper Levels	**4.18**	**1.76**	**0.22**	**6.16**
Transfers to Lower Levels	**5.93**	**0.23**	**-**	**6.16**
Total Primary Surplus	**3.04**	**0.69**	**0.04**	**3.77**
Total Primary Surplus[1]	**2.98**	**0.51**	**0.03**	**3.52**
Financial Result	**1.15**	**0.21**	**0.03**	**1.39**

(1) Exclusive of Capital Revenue.

Source: Own estimates based on figures in Table 2.

convertibility in 2002, it was advisable to resort to 2003 data for calculating the model's optimal value for τ.

The choice of public spending series that would adjust best to a theoretical model of economic growth in which public facilities' congestion existed was addressed to by observing the performance of public spending as of the Nineties, as depicted by Table 1 and taking also into consideration the evidence given by Table 4.

Notwithstanding the fact that figures in Table 1 permit somehow to infer that congestion in public services and facilities is by all means a likely outcome, if proper attention is paid to the fact that the Argentine overall public expenditure (excluded interests and social security benefits) fell – in the period under analysis – from more than 15 to 13 points of its GDP;[15] the main bottleneck makes itself evident in capital outlays (embodying externality creating public investment), whose participation fell from an already low average figure of 1.8 points in the mid-Nineties to less than 1.0 point of GDP in the most recent years.[16] Therefore, and in the light of the mentioned empirical evidence, it appears reasonable to resort to data on public fixed capital stock on the understanding that they will better reflect the congestion hypothesis assumed in the theoretical model.

By furthering the empirical analysis, the evidence given by Table 4 strengthens even more the case for the use of public fixed capital stock (excluding private construction) in the determination of the optimal government size in Argentina. As may be seen, the 6.31 per cent rise in public construction during the period fell well short of overall capital stock and private construction, which exhibited rises of almost 23 and 30 per cent respectively; all the same, during the difficult 1999-2003 period for the Argentine economy, overall capital stock and private construction still managed to have an increase of 2.10 and 4.86 per cent whereas public construction practically stagnated and machinery and equipment fell by 6.21 per cent.

The preceding verification suffices to say that G in expression (1) above could be well represented by "Public Construction" as, in line with the theoretical foundations of the growth model resorted to, it embodies most of the fields in which users could more easily congest public facilities. Nevertheless, a closer analysis of Table 4 also avails the inclusion of "Domestic Transport Means and Materials" and "Machinery and Equipment" on grounds that these items also comprise diverse

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[15]   Proper attention means here that there are no grounds to believe that the the reduction in public spending – relative to GDP – was somehow matched by an enhanced productivity or quality of services rendered to the public.

[16]   Although the thread of the argument still holds it must be said that, following the widespread privatization process that took place in the Nineties, private owned public utilities firms are now largely responsible for investment in communication, energy, transport and water distribution.

Table 4

Argentina: Aggregate Fixed Capital Stock, 1993-2003
(millions of Argentine pesos of 1993)

Year	Aggregate Capital Stock	Machinery and Equipment	Domestic Transport Means and Materials	Imported Transport Means and Materials	Private Constr-uction	Public Constr-uction
1993	543,164	103,648	18,234	7,621	279,367	116,514
1994	564,398	107,043	19,405	8,982	292,050	118,153
1995	580,001	108,105	20,118	10,067	301,848	119,163
1996	593,887	110,770	20,670	11,402	311,996	119,518
1997	615,345	115,737	21,295	13,179	323,615	121,055
1998	636,592	120,484	21,976	15,402	336,040	122,509
1999	652,937	122,817	22,069	16,800	345,894	123,922
2000	663,113	124,325	22,249	18,046	352,843	124,027
2001	668,841	122,441	22,379	18,868	358,850	124,100
2002	661,870	115,564	22,174	19,147	359,787	123,324
2003[1]	666,660	115,186	22,319	19,712	362,696	123,870
1993-2003	Δ 22.74%	Δ 11.13%	Δ 22.40%	Δ 158.65%	Δ 29.82%	Δ 6.31%
1999-2003	Δ 2.10%	Δ −6.21%	Δ 1.13%	Δ 17.33%	Δ 4.86%	Δ −0.04%

(1) Provisional data.

Source: DNCN-INDEC: PROJECT BID-UNPRE STUDY 1.EE.88 (2004), *The National Wealth in Argentina*. National Director: Lic. Fernando Cerro. Coordinator: Ariel Coremberg. August.

items subject to congestion investment in public services.[17] Let it be mentioned, in passing, that 1999-2003 figures show that public investment building-up did not keep in this case pace either with that of overall fixed capital stock or with the increase of GDP for what its performance will aid to better reflecting the theoretical concept underlying (G / Y) in expression (1).

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[17] This still holds in the case of several public facilities whose services have been privatized in the Nineties, such as railways or underground trains, with the firms' express compromise of building up investment on account of the conceding government level.

In computing α, according to expression (15), figures (in constant prices) for the values of production (PY) and the aggregate fixed capital rK (excluding private construction) were estimated for the benchmark year 2003 according to the ensuing procedure: the value of production was obtained by multiplying the 2003 GDP by the coefficient relating the value of industrial production and the product in the 1997 Input-Output Matrix, that is:

$$1.517 \text{ x } 256{,}023.0 \text{ millions } = 388{,}387 \text{ millions}$$

The figure for rK resulted from adding machinery and equipment, transport means and materials and public construction;[18] that is:

$$115{,}186 + 0.78^{[19]} \text{ x } 42{,}031 + 123{,}870 = 271{,}840$$

By estimating next expression (15):

$$\alpha^{[20]} = 2 - (388{,}387 \,/\, 271{,}840) = 0.571$$

the value of τ^{*} can finally be achieved:

$$\tau^{*} = (1 - 0.571) \,/\, (2 - 0.571) = 0.30$$

Thus, this figure indicates the optimal government size, in terms of the long-run maximum economic growth rate determined by expression (10') above.

4.   Optimal growth and fiscal sustainability

The immediate first conclusion, when comparing the arithmetical solution for equation (12) for the benchmark year (0.30) with the effective public spending share in the same year (27.62 per cent of GDP, Table 3 above, when the 1.39 per cent surplus is not considered) is self explaining: the actual government size in Argentina falls short of the optimal size required for long run economic growth, according to the model which explicitly accounts for the possibility of congestion in the use of public goods and facilities. In other words, the investment effort will have to be deepened in Argentina should the government expect to remove the negative impact of congestion upon long run economic growth.

Second, even though Table 3 showed that the three government levels runned altogether an overall surplus of 1.39 points of GDP in the benchmark year, the question may be raised of whether the Public Sector in Argentina is in a position of enlarging this fiscal surplus while at the same time doing away with distortionary taxes on exports and financial transactions.

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[18]   In order to keep coherence with the condition stated by expression (13) the used figure for Public Construction reflects the monetary value of public capital stock (stock in physical terms by its price).

[19]   The rationale followed here was that as much as 75 to 80 per cent of Transport Means somehow serve a productive end, either in secondary or tertiary sectors and can therefore be considered part of fixed capital stock.

[20]   All figures in million of Argentine pesos of 1993.

Having posed this challenge, the rest of this section is devoted to showing that there is in fact room in Argentina for a more efficient tax regime and yet producing revenue yields consistent with the requirements of the optimal government size, according to the endogenous model of economic growth developed in Section 2, and of long run fiscal sustainability that respects the necessary provision of public goods and services and meets the country's new financial commitments towards domestic and foreign creditors.[21]

The exercise rests on the assumption that the pressure already mounting over economic authorities will sooner or later lead to gradual reductions of export tariffs whereas, and by the same token, the tax on financial transactions could either disappear or be maintained with the possibility of using it as a tax credit for the Income Tax of Individuals and Firms.[22] Last but not least, suggestions for making the Tax Regime more efficient (by not curtailing through taxes individuals' and firms' right incentives) do not rule out the possibility of having also a more equitable Tax Sistem in terms of income distribution; this, not dealt with in this preliminary version of the paper, may be achieved by reducing the flat rate in VAT which – as all indirect taxation – hits more heavily to consumers placed in the lower income deciles. It goes without saying that the exercise's main appeal resides in showing that an equal yield scenario will be possible once all changes take place.

Simply put, the proposal deals on the one hand with a proven possibility of enhancing revenue yields of the three taxes that make up almost 50 per cent of overall tax revenues (see Table 15 in the Statistical Appendix), that is, Value Added Tax, Individuals' and Firms' Income Tax, and Employers' Contributions on the Payroll and, on the other, with the possibility of replacing the revenue yield of Financial Transaction Taxes and Export Tariffs, whose share in overall revenue reached 13-14 per cent according to 2003-04 figures. Such a fiscal re-engineering could only be possible by effectively curtailing tax evasion[23] which is reckoned[24] to be greater than 30 per cent, in the case of VAT, superior to 43 per cent in Individuals' Income Tax and not less than 38 per cent in Employers' Social Security Contribution, the latter based on recent reports on the amount of informal or not declared labour.

Although data on fiscal evasion are not so straightforwardly known in the Corporate Income Tax, it may be inferred that it is lower in large firms, whose accounting records permit their tax liability's better assessment and greater in

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[21] On the basis of the government's recent proposal to bondholders that closed on 25 February 2005.

[22] This solution is favoured by many specialists on grounds that will help to check traditionally high evasion levels particularly in the Individual Income Tax.

[23] By referring to evasion reduction as the mechanism upon which the proposal is founded, the point is here worthmentioning that the economic authorities in Argentina have also set in motion policies and devoted resources conducive to evasion curtailing.

[24] Data from different Reports on Fiscal Evasion confirm in general figures mentioned. In this case, the percentage of evasion in Income and Value Tax was taken from the paper by Avramovich (2004).

middle sized or smaller companies whose annual balance sheets may not reflect the actual situation *vis-à-vis* their tax dues.[25]

Avramovich's estimation of evasion in Value Added Tax, for year 2003 and based on the methodology developed by the Federal Administration of Public Revenues (AFIP) of Argentina, is summarized in the ensuing table:

Table 5

Argentina: Evasion in Value Added Tax, 2003
(thousands of current Argentine pesos and percentage)

Presumed Real Tax Base	142,824,808
Declared Tax Base	99,232,591.2
Effective Tax Rate	21.11%
Potential Tax Yield	30,150,317
Actual Tax Yield	20,948,000
Evasion	9,202,317
Percentage of Evasion in VAT	30.52%

Source: Avramovich (2004).

In assuming that evasion in VAT could be checked by one fifth, by far much more modest a target that the one set by the Argentine economic and fiscal authorities, figures in Table 5 would now turn into the ones shown in Table 6.

In considering next how tax revenues from the Individuals' Income Tax would have behaved should evasion had been one fifth smaller in 2003 the following two features, emphasized by Avramovich in her paper and supporting figures in Table 7, are worth mentioning:

- the variety of personal deductions (medical expenses, pension payments, family allowances and specific deductions for the employed) and a relatively high threshold for non taxable minimum income reduce significantly the number of taxpayers;

- 97 per cent of the revenue is collected from taxpayers in population decile 10 and the remaining 3 per cent from those in the population decile 9.

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[25] The size of the shadow economy could well be a proxy for inferring the evasion level in this tax. In this connection, Schneider and Klinglmair (2004) deemed that the shadow economy in Argentina reached 25.4 points of GDP in year 2000.

Table 6

Argentina: Value Added Tax Yield
under the Hypothesis that Evasion Is Reduced by One Fifth in Year 2003
(thousands of current Argentine pesos and percentage)

Presumed Real Tax Base	142,824,808
Declared Tax Base	107,946,992
Effective Tax Rate	21.11%
Potential Tax Yield	30,150,317
Actual Tax Yield	22,787,610
Evasion	7,362,707
Percentage of Evasion in VAT	24.42%
Additional Tax Yield	**1,839,610**

Source: Own estimates based on figures from Table 5.

Table 7

Argentina: Evasion in Personal Income Tax, 2003
(thousands of current Argentine pesos and percentage)

Presumed Real Tax Base	87,794,966.7
Effective Marginal Tax Rate	10%
Potential Tax Yield	8,779,496.7
Declared Tax Base	54,933,333.3
Effective Marginal Tax Rate	9%
Actual Tax Yield	4,944,000
Evasion	3,835,496.7
Percentage of Evasion in PIT	43.69%

Source: Avramovich (2004).

Table 8 shows the new values for revenue from the Individuals' Income Tax obtained by adopting a similar hypothesis of one fifth evasion reduction.

Although figures on evasion are rather scanty with respect to the Corporate Tax, contrariwise to other taxes, it is not adventurous to assume that possibilities of a revenues' better performance in the tax will certainly depend on the success in achieving a sizeble shrink of the informal economy in Argentina, given the straightforward relationship between the firms' sales and their tax base.

Table 8

**Argentina: Personal Income Tax Yield under the Hypothesis that Evasion Is
Reduced by One Fifth in Year 2003**
(thousands of current Argentine pesos and percentage)

Presumed Real Tax Base	87,794,966.7
Effective Marginal Tax Rate	10%
Potential Tax Yield	8,779,496.7
Declared Tax Base	63,448,855.6
Effective Marginal Tax Rate	9%
Actual Tax Yield	5,710,397
Evasion	3,069,099.7
Percentage of Evasion in PIT	34.96%
Additional Tax Yield	**766,397**

Source: Own estimates based on figures from Table 7.

It is also true that in upholding the same hypothesis of one fifth reduction, in this case with respect to the shadow economy, will hardly result in a tax yield increase of similar proportions as firms now entering the formal circuit will not be the largest ones already making up − and assumedly with relatively low evasion levels − most of the Corporate Tax Revenue. Therefore, the assumption of a successful one fifth reduction of the shadow economy, from 25.4 to 20.32 points of the GDP, will be taken here to be conducive to only 15 per cent increase in the 2003 tax yield, as shown by Table 9 below.

Table 9

**Argentina: Corporate Tax Yield under the Hypothesis that
the Shadow Economy Is Reduced One Third in Year 2003**
(thousands of current Argentine pesos and percentage)

Actual Tax Yield	8,559,000
Shadow Economy	25.4%
Corrected Shadow Economy	20.32%
Yield's Correction Coefficient	1.15%
Impact on CIT Yield	9,842,850
Additional Tax Yield	**1,283,850**

Source: Own estimates based on Schneider and Klinglmair (2004) and figures from Table 13.

Table 10 includes official statistical information on labour markets and the performance of the Tax Administration with relation to Social Security Taxes.

Table 10

Argentina: Labour Markets and Social Security Taxes in Year 2003

Total Employees and Workers	7,303,226
Declared Employees and Workers	4,528,000
Undeclared Employees and Workers	2,775,226
Average Monthly Wage[1][2]	867
Total Annual Earnings of Declared[3]	47,109,312
Tax Rate	16%
Actual Yield of Employers' Contributions[3]	7,539,000
Percentage of undeclared labour	38%

(1) Declared labour only.
(2) In current Argentine pesos.
(3) Thousands of current Argentine pesos.

Source: Own estimates based on figures from the Ministry of Economy. Internet site: www.mecon.gov.ar

By adopting also the assumption that Undeclared Labour could be reduced by one fifth, in line with what has so far been done, Table 11 shows the figures that will result for Employers' Contributions in 2003.

The results shown by these tables were intended to show, for the benchmark year 2003, that there was ground to assert that evasion checking could be an alternative to revenues from economically unwanted taxes. Nevertheless, a static exercise falls short of yielding conclusive evidence as long run fiscal sustainability – more akin to dynamic scenarios – is what really matters in relation to economic growth. In this connection, Table 12 depicts results obtained when spending requirements for the optimal government size and needed efficiency enhancing changes in the Tax Regime, in order to render the latter less distorting, are matched within a period extending till 2008 with the government's enhanced financial situation brought about by improvements in its tax administration. In line with the need to assess dynamic fiscal sustainability, the simulation exercise was carried out on the following assumptions: as of 2005, the inflation rate exhibits decreasing annual figures of 10, 8, 6 and 4 per cent respectively, whereas the occurrence of positive economic growth is also assumed with the GDP experiencing a constant growth rate of 4 per cent per year; this permits in turn to achieve the corresponding additional revenue yields in value added tax, individuals' income tax, corporate tax and social security taxes as percentages of product once the reduction in evasion is accounted for.

Table 11

**Argentina: Labour Markets and Social Security Taxes under the Hypothesis
that Undeclared Labour Is Reduced One Fifth in Year 2003**

Total Employees and Workers	7,303,226
Declared Employees and Workers	5,083,045
Undeclared Employees and Workers	2,220,181
Average Monthly Wage[(1)(2)]	867
Total Annual Earnings of Declared[(3)]	52,884,000
Tax Rate	16%
Actual Yield of Employers' Contributions[(3)]	8,461,440
Percentage of undeclared labour	25.33%
Additional Tax Yield[(3)]	**922,440**

(1) Declared labour only.
(2) In current Argentine pesos.
(3) Thousands of current Argentine pesos.

Source: Own estimates based on figures from the Ministry of Economy. Internet site: www.mecon.gov.ar

As the simulation mainly rests on the idea that – for the period under analysis – there will be an impact on revenues due to a once and for all successful evasion curtailing of 20 per cent in the four main national taxes, Table 12's upper part shows the corresponding additional revenue yields in value added tax, individuals' income tax, corporate tax and social security taxes, resulting from computing the reduction in evasion and once the product's benchmark figure was corrected by growth and inflation in order to correctly estimate improvements in the tax yield.

Second, and in line with the declared objective of improving the Tax Regime profile, by gradually doing away with distortionary taxation, Table 12 reflects the revenue's replacement of Financial Transactions Tax and Export Tariffs subject to the condition that the fiscal balance is not altered. The rationale resorted to here is that Export Tariffs are at present and on economic grounds the more damaging fiscal instrument since, to the negative impact upon the competitiveness of exporting sectors, it has to be added the inflationary risk derived from a rate of exchange conditioned by fiscal needs;[26] the proposal's core consists of a cumulative annual export tariff reduction reaching not less than 12.5 per cent of its present level.[27] As for Financial Transactions Taxes, the also proposed 12.5 per cent cumulative

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[26]   As the fiscal yield of export tariffs is based on two components: the rate of exchange and the international price of commodities, the latter's falls induces the government to intervine to keep a high exchange rate.

[27]   The proposal considers both the cases of an annual 12.5 per cent linear reduction in all export tariffs or case by case reduction which final overall impact reaches 12.5 per cent.

Table 12

Argentina: Optimal Growth and Fiscal Sustainability as of 2005
(millions of current Argentine pesos)

ITEMS	2005	2006	2007	2008
Improvements due to a more effective tax administration	**11,764**	**13,213**	**14,565**	**15,754**
Additional Value Added Tax Yield	6,921	7,775	8,570	9,270
Additional Individuals' Income Tax Yield	1,224	1,375	1,515	1,639
Additional Corporate Tax Yield	2,942	3,305	3,643	3,940
Additional Social Security Taxes Yield	676	759	836	905
Overall budget surplus (1.39% of GDP)	**7,113**	**7,990**	**8,807**	**9,526**
Reductions proposed in tax revenues	**–2,642**	**–5,936**	**–9,814**	**–14,153**
Reduction in Financial Transaction Tax	–1,397	–3,138	–5,188	–7,482
Reduction in Export Tariffs	–1,245	–2,798	–4,626	–6,671
Additional Public Capital Outlays in line with requirements of Optimal Government Size	**–5,066**	**–5,690**	**–6,273**	**–6,785**
Financial Commitments to Public Debt Creditors[1]	**–2,805**	**–2,805**	**–2,805**	**–2,805**
Expected Fiscal Outcome	**8,364**	**6,772**	**4,480**	**1,537**

(1) Only interest payments have been considered.

Source: Own estimates based on figures from and from the Government's recent and accepted proposal for the debt in default.

reduction could either mean a change in the existing tax rate or its taxpayer's use as a tax credit applicable to Individuals' Income and Corporate Tax.[28]

Third, Table 12 also shows required additional public spending, as determined by the solution to the endogenous model of economic growth developed in Section 2. In reason of the alternative chosen for public spending and

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[28]   As mentioned above, the second possibility is favoured on grounds that it will help to reduce evasion without increasing fiscal pressure.

acknowledging that congestion mainly affects existing infrastructure stock, it goes without saying that is not envisaged in the simulation exercise a current spending increase but the formation of new public fixed capital stock.

Fourth, the case is also considered in Table 12 of the additional budgetary burden that new financial responsibilities towards domestic and foreign bondholders of the defaulted debt, following the recent response to the government's offer,[29] will impose to the public sector. In this case, the table includes only figures for interest payments (as capital amortization will be due only as of 2024) and acknowledges the financial surplus for the overall Public Sector in Argentina, which amounted in 2003 to 1.39 points of GDP.

Let it however an important conclusion, suggested by figures in Table 12 above, be stressed: notwithstanding the fact that the expected fiscal outcome shows fiscal surpluses all throughout the period considered, the latter shrink as the cumulative reduction in Transaction Tax and Export Tariffs takes place for what, and unless the growth rate increases or further evasion checking helps reinforcing tax revenues, a complete elimination of the former two taxes is not envisaged in the very short run.

5.   Concluding remarks

The paper highlighted the relationship between public spending and the rate of economic growth, in the frame of a model of endogenous growth in which public services and facilities are subject to congestion.

A natural empirical extension consisted in comparing the optimal government size, as derived from the mentioned model, and the actual government size based on overall budgetary commitments of the three government levels in Argentina, including revenue items as well as expenditure items. Figures showing that the actual government size was slightly smaller than the optimal one hide however the fact that most public spending is devoted to non capacity creating outlays or to finance public services whose congestion level is much more difficult to assess whereas public investment (mainly public construction) in facilities like roads, transport and the like, which can more easily be congested by users, practically stagnated in the last five years.

In the light of the achieved results and of the evidence furnished by public spending figures in Argentina, a dynamic simulation exercise was intended whereby the gap between optimal and actual government size could be closed by resorting to the application of measures that meet, from the fiscal viewpoint, the long run requirements of positive economic growth.

It appears necessary, in the first place, and given the real risk of hindrance on growth likely to be imposed by public facilities' scarcity in the very short run, that

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[29]   At the closing date, on 25 February 2005, the proposal gathered an acceptance level of 76.06 per cent.

any expansion of expenditure be carried out at the expense of current spending share in total public spending.

Second, and from the revenue side, the exercise proved that additional financial needs, as well as revenues required to partially do away with damaging taxation as Financial Transactions Taxes and Export Tariffs, would not alter the fiscal balance provided that the extremely high evasion levels in main taxes (Value Added Tax, Income Tax and Social Security Contributions) could be reduced to more reasonable standards. As a matter of fact, the hypothesis of one fifth reduction in evasion sufficed, in the simulation carried out for the period 2005-08, to match the needed extra fiscal revenues.

Nevertheless, the simulation exercise gave clear evidence that a complete elimination of both distorting taxes would require further efforts in evasion curtailing, new tax instruments or higher growth rates, should the equal yield principle be met.

It is also worth mentioning that the exercise's results allowed also for the margin necessary in order that the additional financial burden, arising from the prospective settlement of the defaulted public debt, be met.

Last but not least, the paper's conclusions also pointed out that the results of the exercise carried out could only be conducive to long run dynamic fiscal sustainability if – and only if – the model's prediction of a constant and positive rate of growth of GDP is finally validated by reality.

STATISTICAL APPENDIX

Table 13

Argentina: Tax Revenues from All Government Levels
(millions of current Argentine pesos)

Items	2001	2002	2003	2004[1]
I. National Taxes				
Taxes on Income Benefits and Capital Gains of Individuals and Firms	**10,719**	**9,514**	**16,170**	**23,560**
Personal Income Tax	3,634	3,493	4,944	6,120
Corporate Tax	5,683	4,343	8,559	15,082
Taxes on Firm Assets	10	11	7	4
Taxes on Minimum Presumed Income	550	535	1,363	1,224
Taxes on Benefits Abroad	774	1,083	1,247	1,088
Others	68	49	50	43
Social Security Taxes	**8,683**	**8,841**	**10,628**	**13,601**
Employees' Contributions	2,164	1,894	2,373	2,768
Employers' Contributions	5,505	6,184	7,539	9,767
Self Employed Individuals	1,013	763	716	1,065
Taxes on Properties	**3,848**	**5,527**	**7,646**	**9,515**
Taxes on Financial Transactions	3,021	4,944	5,966	7,771
Taxes on Individuals' Assets	769	524	1,603	1,661
Others	57	60	77	83
Consumption Taxes	**21,725**	**22,285**	**28,976**	**40,461**
Value Added Tax	15,351	15,242	20,948	30,977
Taxes on Goods and Services	5,620	6,773	7,819	9,248
Fuel and Gas Taxes	3,420	4,484	4,973	5,380
Others	2,200	2,289	2,846	3,868
Others	**754**	**270**	**209**	**236**
Taxes on Foreign Trade and International Transactions	**1,185**	**6,398**	**11,394**	**13,642**
Import Duties	1,575	1,308	2,289	3,250
Export Tariffs (net of refunds)	(480)	3,800	7,845	8,708
Others	90	69	(106)	120
Others	**340**	**279**	**292**	**693**
TOTAL NATIONAL REVENUE	**46,501**	**51,622**	**73,740**	**99,908**
II. Provincial Taxation				
Taxes on Property	**3,178**	**3,028**	**4,079**	**4,881**
Taxes on Goods and Services Transaction	**5,593**	**6,145**	**8,848**	**10,890**
Others	**1,005**	**1,424**	**1,405**	**1,794**
TOTAL PROVINCIAL REVENUE	**9,775**	**10,596**	**14,332**	**17,565**
III. Municipal Taxes				
Taxes on Property, Business and Services	**5,274**	**5,696**	**7,690**	**9,382**
TOTAL MUNICIPAL REVENUE	**5,274**	**5,696**	**7,690**	**9,382**
TOTAL REVENUE	**61,550**	**67,914**	**95,762**	**126,854**

(1) Provisional figures.

Source: Ministry of Economy, National Direction of Fiscal Research and Analysis, internet site: www.mecon.gov.ar/hacienda

Table 14

Argentina: Tax Revenues from All Government Levels
(percentage of GDP)

Items	2001	2002	2003	2004[1]
I. National Taxes				
Taxes on Income Benefits and Capital Gains of Individuals and Firms	**3.77**	**3.54**	**5.17**	**6.27**
Personal Income Tax	1.28	1.30	1.58	1.63
Corporate Tax	2.00	1.62	2.74	4.01
Taxes on Firm Assets	0.00	0.00	0.00	0.00
Taxes on Minimum Presumed Income	0.19	0.20	0.44	0.33
Taxes on Benefits Abroad	0.27	0.40	0.40	0.29
Others	0.02	0.02	0.02	0.01
Social Security Taxes	**3.06**	**3.29**	**3.40**	**3.62**
Employees' Contributions	0.76	0.70	0.76	0.74
Employers' Contributions	1.94	2.30	2.41	2.60
Self Employed Individuals	0.36	0.28	0.23	0.28
Taxes on Properties	**1.35**	**2.06**	**2.45**	**2.53**
Taxes on Financial Transactions	1.06	1.84	1.91	2.07
Taxes on Individuals' Assets	0.27	0.19	0.51	0.44
Others	0.02	0.02	0.02	0.02
Consumption Taxes	**7.64**	**8.29**	**9.27**	**10.76**
Value Added Tax	5.40	5.67	6.70	8.24
Taxes on Goods and Services	1.98	2.52	2.50	2.46
Fuel and Gas Taxes	1.20	1.67	1.59	1.43
Others	0.77	0.85	0.91	1.03
Others	0.27	0.10	0.07	0.06
Taxes on Foreign Trade and International Transactions	**0.42**	**2.38**	**3.65**	**3.63**
Import Duties	0.55	0.49	0.73	0.86
Export Tariffs (net of refunds)	–0.17	1.41	2.51	2.32
Others	0.03	0.03	–0.03	0.03
Others	**0.12**	**0.10**	**0.09**	**0.18**
TOTAL NATIONAL REVENUE	**1.36**	**19.21**	**23.59**	**26.58**
II. Provincial Taxation				
Taxes on Property	**1.12**	**1.13**	**1.31**	**1.30**
Taxes on Goods and Services Transaction	**1.97**	**2.29**	**2.83**	**2.90**
Others	**0.35**	**0.53**	**0.45**	**0.48**
TOTAL PROVINCIAL REVENUE	**3.44**	**3.94**	**4.59**	**4.67**
III. Municipal Taxes				
Taxes on Property, Business and Services	**1.86**	**2.12**	**2.46**	**2.50**
TOTAL MUNICIPAL REVENUE	**1.86**	**2.12**	**2.46**	**2.50**
TOTAL REVENUE	**21.66**	**25.28**	**30.64**	**33.75**

(1) Provisional figures.

Source: Own estimates based on official figures for the GDP and of revenue data in Table 13.

Table 15

Argentina: Tax Revenues from All Government Levels
(yield percentage share in overall tax revenues)

Items	2001	2002	2003	2004[1]
I. National Taxes				
Taxes on Income Benefits and Capital Gains of Individuals and Firms	**17.42**	**14.01**	**16.89**	**18.57**
Personal Income Tax	5.90	5.14	5.16	4.82
Corporate Tax	9.23	6.39	8.94	11.89
Taxes on Firm Assets	0.02	0.02	0.01	0.00
Taxes on Minimum Presumed Income	0.89	0.79	1.42	0.96
Taxes on Benefits Abroad	1.26	1.60	1.30	0.86
Others	0.11	0.07	0.05	0.03
Social Security Taxes	**14.11**	**13.02**	**11.10**	**10.72**
Employees' Contributions	3.52	2.79	2.48	2.18
Employers' Contributions	8.94	9.11	7.87	7.70
Self Employed Individuals	1.65	1.12	0.75	0.84
Taxes on Properties	**6.25**	**8.14**	**7.98**	**7.50**
Taxes on Financial Transactions	4.91	7.28	6.23	6.13
Taxes on Individuals' Assets	1.25	0.77	1.67	1.31
Others	0.09	0.09	0.08	0.07
Consumption Taxes	**35.30**	**32.81**	**30.26**	**31.90**
Value Added Tax	24.94	22.44	21.87	24.42
Taxes on Goods and Services	9.13	9.97	8.17	7.29
Fuel and Gas Taxes	5.56	6.60	5.19	4.24
Others	3.57	3.37	2.97	3.05
Others	**1.22**	**0.40**	**0.22**	**0.19**
Taxes on Foreign Trade and International Transactions	**1.93**	**9.42**	**11.90**	**10.75**
Import Duties	2.56	1.93	2.39	2.56
Export Tariffs (net of refunds)	–0.78	5.60	8.19	6.86
Others	0.15	0.10	–0.11	0.09
Others	**0.55**	**0.41**	**0.31**	**0.55**
TOTAL NATIONAL REVENUE	**75.55**	**76.01**	**77.00**	**78.76**
II. Provincial Taxation				
Taxes on Property	**5.16**	**4.46**	**4.26**	**3.85**
Taxes on Goods and Services Transactions	**9.09**	**9.05**	**9.24**	**8.58**
Others	**1.63**	**2.10**	**1.47**	**1.41**
TOTAL PROVINCIAL REVENUE	**15.88**	**15.60**	**14.97**	**13.85**
III. Municipal Taxes				
Taxes on Property, Business and Services	**8.57**	**8.39**	**8.03**	**7.40**
TOTAL MUNICIPAL REVENUE	**8.57**	**8.39**	**8.03**	**7.40**
TOTAL REVENUE	**100.00**	**100.00**	**100.00**	**100.00**

(1) Provisional figures.

Source: Own estimates based on revenue figures in Table 13.

Table 16

Argentina: Tax Revenues from All Government Levels
(yield percentage share in tax revenues by government level)

Items	2001	2002	2003	2004[1]
I. National Taxes				
Taxes on Income Benefits and Capital Gains of Individuals and Firms	**23.05**	**18.43**	**21.93**	**23.58**
Personal Income Tax	7.82	6.77	6.71	6.13
Corporate Tax	12.22	8.41	11.61	15.10
Taxes on Firm Assets	0.02	0.02	0.01	0.00
Taxes on Minimum Presumed Income	1.18	1.04	1.85	1.22
Taxes on Benefits Abroad	1.66	2.10	1.69	1.09
Others	0.15	0.10	0.07	0.04
Social Security Taxes	**18.67**	**17.13**	**14.41**	**13.61**
Employees' Contributions	4.65	3.67	3.22	2.77
Employers' Contributions	11.84	11.98	10.22	9.78
Self Employed Individuals	2.18	1.48	0.97	1.07
Taxes on Properties	**8.27**	**10.71**	**10.37**	**9.52**
Taxes on Financial Transactions	6.50	9.58	8.09	7.78
Taxes on Individuals' Assets	1.65	1.01	2.17	1.66
Others	0.12	0.12	0.10	0.08
Consumption Taxes	**46.72**	**43.17**	**39.29**	**40.50**
Value Added Taxes	33.01	29.53	28.41	31.01
Taxes on Goods and Services	12.09	13.12	10.60	9.26
Fuel and Gas Taxes	7.35	8.69	6.74	5.38
Others	4.73	4.43	3.86	3.87
Others	**1.62**	**0.52**	**0.28**	**0.24**
Taxes on Foreign Trade and International Transactions	**2.55**	**12.39**	**15.45**	**13.66**
Import Duties	3.39	2.53	3.10	3.25
Export Tariffs (net of refunds)	−1.03	7.36	10.64	8.72
Others	0.19	0.13	−0.14	0.12
Others	**0.73**	**0.54**	**0.40**	**0.69**
TOTAL NATIONAL REVENUE	**100.00**	**100.00**	**100.00**	**100.00**
II. Provincial Taxation				
Taxes on Property	**32.51**	**28.58**	**28.46**	**27.79**
Taxes on Goods and Services Transaction	**57.21**	**57.99**	**61.73**	**62.00**
Others	**10.28**	**13.44**	**9.81**	**10.21**
TOTAL PROVINCIAL REVENUE	**100.00**	**100.00**	**100.00**	**100.00**
III. Municipal Taxes				
Taxes on Property, Business and Services	**100.00**	**100.00**	**100.00**	**100.00**
TOTAL MUNICIPAL REVENUE	**100.00**	**100.00**	**100.00**	**100.00**

(1) Provisional figures.

Source: Own estimates based on revenue figures in Table 13.

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