Rogelio Arellano, Fausto Hernández Trillo

Challenges of Mexican Fiscal Policy

CIDE

Abstract

This article examines the main challenges of Mexican Fiscal Policy. For simplicity we divide them into macro and micro level. Among the former ones, through an econometric analysis, we conclude that oil revenues have been spent on current expenditures, contrary to what the theory states. Likewise, this is exerting pressure to the aggregate demand. Second, we find that Mexican fiscal policy is not sustainable. Finally, from the micro perspective it is concluded that Mexico should restructure its revenue and expenditure sides of policy so that it promotes growth and redistributes income.

Resumen

Este artículo examina tres de los principales retos que debe enfrentar la política fiscal mexicana. Por facilidad se dividen a su vez en retos a nivel macro y en el ámbito micro. Dentro del primero se concluye, mediante un análisis econométrico, que en los últimos 25 años México ha destinado sus ingresos petroleros a financiar el gasto corriente, contra lo que la teoría sugiere. Asimismo, y aunado a este fenómeno, esto puede representar una presión a la demanda agregada. En segundo lugar, se aborda el problema de la Sostenibilidad de la política fiscal. Se concluye que ésta no es sostenible en el largo plazo. Finalmente, desde el ámbito micro se encuentra que México debe trabajar fuertemente por reestructurar su gasto e ingresos públicos de manera que se promueva el crecimiento económico y se disminuya la desigualdad en el ingreso.

Introduction

During the 1970s and early in the 1980s Mexico sustained large public deficit, reaching 16 % of GDP in 1982, the highest in contemporary Mexican history. When the well-known debt crisis of that year erupted, the economy had then to adjust through an orthodox, first, and a heterodox plan later. These programs were based on several actions, including a strong fiscal adjustment.

Since then, Mexico has achieved a sustained fiscal discipline[1], even after the so-called *tequila* crisis, when Mexico had to increase the VAT from 10 to 15 %. This fiscal discipline has been accompanied by a tight monetary policy institutionalized since 1993 with an independent central bank. Some concerns regarding fiscal policy mismanagement during this last period of discipline pinpoint at the debt management prior to the 1994 crisis, but overall fiscal policy has been prudent.

In effect Mexico has been relatively good at containing expenditures and has achieved an acceptable sustained fiscal discipline. Although this fact, we argue that Mexico faces important challenges in the fiscal side. First, fiscal sustainability is a potential problem for the medium and long run; second, low tax collection poses a serious problem for growth, which is aggravated by the "Fiscal Dutch Disease", which has made Mexico to rely heavily on oil revenues, which in turn poses problems for the inflation targeting schedule under which the country has been tied up. And, third, the micro design of the fiscal policy has been absent during most of the XX Century.

This essay addresses these three challenges. Section 1 presents a discussion of the role of fiscal policy on inflation. Section 2 argues that one fiscal problem that may put in danger the inflation target and viability of public finances is the problem of sustainability. Section 3 examines the consequences of oil revenues on aggregate demand. Finally, section 4 presents the microeconomic challenges of fiscal policy.

1.- Fiscal versus Monetary Dominance: some concepts

Recently, Mexican pension systems, including that of state employers, have raised concerns about fiscal sustainability and the impact of this on inflation, even with an independent central bank. This issue has been recognized in the literature, though is a matter of a theoretical debate. This is known as the fiscal versus monetary dominance.

Traditional monetary theory argues that inflation is purely a monetary phenomenon, and hence, fiscal policy does not affect inflation. By assuming

---

[1] Even at the electoral years, 1994 and 2000, the discipline was acceptable.

that markets are complete and that Ricardian equivalence holds, fiscal deficit does not affect aggregate demand. Thus, within this monetary dominance hypothesis, appropriate monetary policy that credibly signals an inflation path would be enough to avoid price pressures. In other words, the benchmark of monetary dominance is that fiscal policy has to ensure that the solvency of the public sector is maintained for any monetary policy (Liviatan, 2003). Woodford (2001) argues that this proposition is not of such general validity to sustain the irrelevance of fiscal policy regarding inflation.

On the other hand, fiscal dominance proposition claims that fiscal policy has to be supported by the monetary authority in such a way that the effectiveness and credibility of monetary policy are jeopardized by the size of fiscal imbalances (e.g. unsustainable expansionary policy or debt dynamics). In this setting the price level is determined by the budgetary policies of the fiscal authority, and the monetary authority is forced to generate the seignorage and inflation tax needed to maintain solvency.

Moreover, fiscal policy can affect the price level even when an autonomous central bank determines monetary policy independent of fiscal variables, which could occur when the price level needs to adjust to hold the government's intertemporal budget constraint in balance (Woodford, 2001). In this regard the fiscal theory of the price level considers that unless the adequate rules are established to ensure a sustainable fiscal policy, price stability may not be attained even with an independent central bank. We shall recall that several high-inflation episodes associated with fiscal dominance – non-Ricardian- regimes existed around the globe[2].

We shall recall that several high-inflation episodes associated with fiscal dominance –non-Ricardian- regimes existed around the globe.[3]

Given that non-Ricardian fiscal regimes are possible, public policy must put in place either explicit or implicit fiscal rules in order to maintain macroeconomic stability. Therefore, central banks must use monetary rules that are consistent with the fisal policy regime in place. This clearly implies that the choice of fiscal policy is important to achieve price stability.

---

[2] The concepts of Ricardian regime (monetary dominance) and non-Ricardian regime (fiscal dominance) were coined by Woodford (1995), whose analysis also derived in the fiscal theory of price level (FTPL). Advocates of this theory include Dupor (2000) and Sims (1994). On the other hand, Buiter (1997, 2004), Carlstrom and Fuerst (2000), Kocherlakota and Phelan (1999) and McCallum (2003) discuss the validity of the assumptions of the FTPL as they criticized the government's intertemporal budget constraint as an equilibrium condition that determines the general price level rather than a relationship that has to hold identically. A very detailed analysis of the FTPL is presented in Christiano and Fitzgerald (2000).

[3] The concepts of Ricardian regime (monetary dominance) and non-Ricardian regime (fiscal dominance) were coined by Woodford (1995), whose analysis also derived in the fiscal theory of price level (FTPL). Advocates of this theory include Dupor (2000) and Sims (1994). On the other hand, Buiter (1997, 2004), Carlstrom and Fuerst (2000), Kocherlakota and Phelan (1999) and McCallum (2003) discuss the validity of the assumptions of the FTPL as they criticized the government's intertemporal budget constraint as an equilibrium condition that determines the general price level rather than a relationship that has to hold identically. A very detailed analysis of the FTPL is presented in Christiano and Fitzgerald (2000).

Fiscal dominance and the risk it poses for inflation have been addressed by implementing fiscal rules with the primary objective of conferring credibility to macroeconomic policies. A good example of these rules include the European Community's Stability and Growth Pact, that explicitly states that "(…) the objective of sound government finances as means of strengthening the conditions for price stability and for strong sustainable growth conducive to employment creation".[4] Fiscal rules have also been implemented in emerging market economies. For example, Chile established a central government structural surplus of 1 % of GDP, while Brazil adopted a fiscal responsibility law that sets an annual primary surplus target of 4 and a quarter % of GDP and imposes limits to public debt.[5] This leads to the role of fiscal sustainability as an important element in price stability.

In fact, emerging economies that are in the process of building up credibility on macroeconomic stabilization, need some tightening of fiscal policy to ensure public debt sustainability. The threshold debt-to GDP ratio which points that debt may turn unsustainable differs among countries. In a study for 34 emerging market economies, the IMF (2002) obtains a median debt-GDP ratio of 50 % the year before a country defaults. Nevertheless, the document recognizes that it is difficult to make generalizations of emerging economies as a group. Further, the threshold depends on other elements besides macroeconomic factors. For example, Reinhart, Rogoff and Savastano (2003) emphasize the role of political factors, the nation's history of financial difficulties and the degree of institutional development. Independently of the threshold ratio, policy makers in several countries prioritize the reduction of budget deficit to strengthen credibility in order to avoid markets interpreting a cyclical weakening of the fiscal stance as permanent. This has been indeed the recent experience of Mexico.

Therefore, credibility indirectly depends on fiscal sustainability. Next section addresses this element for the Mexican case.

2.- Fiscal Sustainability

Mexico has followed a prudent fiscal policy during the last two decades, especially during the 1990s and the beginning of the XXI Century. Table 1 shows the main public finance indicators since 1990 at constant prices and as a proportion of GDP. Note that the primary balance has been in surplus for

---

[4] This was translated into a medium-term objective of budgetary position s close to balance or surplus, but allows normal cyclical fluctuations while keeping the government deficit within 3 % of GDP and general government gross debt below 60 % of GDP (see Balasonne and Franco, 2001); Balasonne and Monacelli, 2000; Canzoneri *et al* (2002), Gali and Peroti , 2003; and Marín, 2002).

[5] Notice, however, that fiscal rules in Latin America may not operate as effectively as the ones in the European Union due to weaker institutions (see Guidoti, 2002).

the whole period and has been able to service the debt with the help of some small economic deficit. The latter has decreased over the period mainly because the international interest rates have been very low since the world recession started in 2000, and, apart from the mismanagement observed during 1994, because the country has showed an adequate debt management. To appreciate it better, note that debt service has gone from 4.59 % of GDP in 1995 to 1.38 in 2003 (Table 2). Also the average maturity of these obligations has increased substantially and there has been a substitution of external with internal debt, which reduces the exchange risk of the debt service (Figures 1 and 2).

Table 1

Public sector budgeting & finance *

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bugdetary Revenues	8.65%	8.42%	8.86%	7.66%	7.56%	7.24%	7.16%	8.05%	8.66%
Federal Government	15.25%	15.54%	15.86%	14.17%	14.68%	15.81%	16.11%	16.08%	16.77%
Tax revenue	9.27%	8.95%	9.83%	10.51%	11.36%	10.59%	11.24%	11.84%	11.35%
Non-tax revenue	5.98%	6.59%	6.03%	3.66%	3.32%	5.22%	4.88%	4.24%	5.42%
Public enterprises and entities	7.55%	7.45%	7.20%	6.18%	6.14%	5.82%	5.70%	6.47%	6.92%
Budgetary expenditure	10.90%	10.82%	11.17%	10.62%	10.90%	11.40%	11.73%	11.85%	12.32%
Programmable expediture	7.12%	7.25%	7.46%	7.39%	7.29%	7.55%	7.90%	8.26%	8.63%
Non-programmable expenditure	3.78%	3.57%	3.71%	3.23%	3.62%	3.85%	3.82%	3.59%	3.69%
Primary budgetary expenditure	8.82%	8.91%	9.39%	9.22%	9.01%	9.50%	9.87%	10.20%	10.70%
Primary budgetary balance	2.69%	2.65%	2.57%	1.52%	1.95%	2.10%	2.04%	1.67%	2.16%
Primary non-budgetary balance	0.16%	0.10%	0.01%	0.06%	0.08%	0.07%	0.05%	0.06%	0.04%
Primary economic balance	2.85%	2.75%	2.57%	1.57%	2.04%	2.17%	2.09%	1.73%	2.20%
Budgetary balance	0.61%	0.74%	0.78%	0.12%	0.05%	0.21%	0.18%	0.02%	0.54%
Non-budgetary balance	0.33%	0.03%	0.02%	-0.06%	0.02%	0.00%	-0.01%	-0.01%	-0.02%
Economic balance	0.94%	0.77%	0.80%	0.05%	0.07%	0.20%	0.17%	0.01%	0.52%
Total debt	0.04%	0.03%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Foreign debt	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%	0.01%
Domestic debt	0.04%	0.02%	0.02%	0.02%	0.02%	0.01%	0.01%	0.01%	0.01%

* As GDP Percentage
Source: Banco de México, 1990-2003

Table 2

Interest Payment

Year	% GDP
2001	1.67%
2002	1.49%
2003	1.38%

Figure 1

Average Maturity
(days)

Figure 2

Net Total Public Sector Debt
(millions of 1993 MxP)
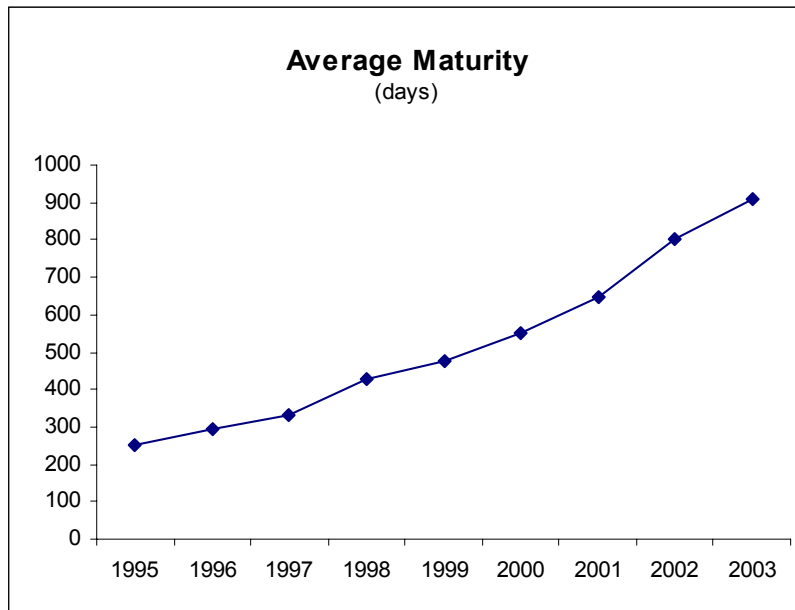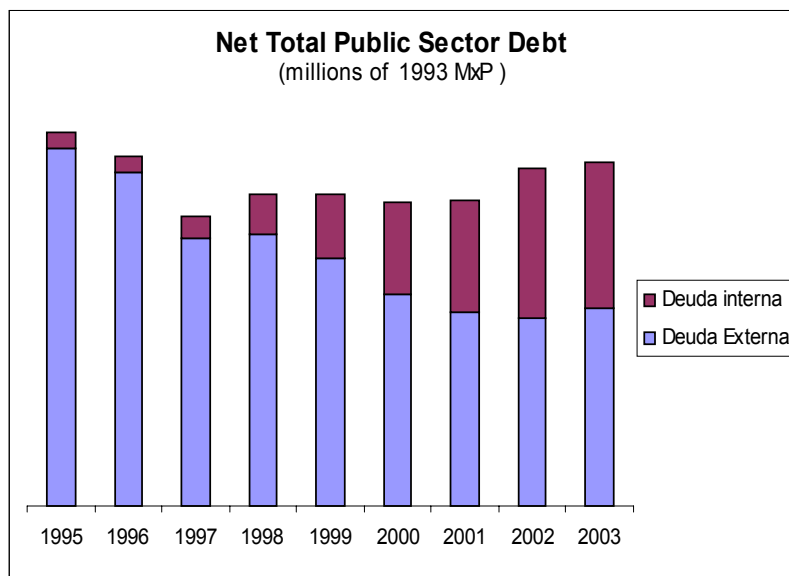

Also as a proportion of GDP, total debt is manageable –as we will show later- since it reaches for 2003 only 47.1 %. However, it is well known that Mexico has additional financial requirements as it has bailout different sectors including the banking system and many toll roads, included in the figures. Furthermore, since 1997 the government has made use of private investment

to carry out direct investment for infrastructure projects in the energy sector through a hybrid scheme of direct infrastructure investment projects with postponed impact on expenditure[6] (the so-called Pidiregas). While recording in the financial balance takes place when payments actually start, the Public Sector Borrowing Requirement (PSBR) records the resources involved.

Table 3 presents the PSBR and its structure as a proportion of GDP for the year 2001-2003. As it can be observed in addition to the direct debt of public sector there are other contingent liabilities coming from the banking and toll road bailouts, and the reform of private pension schemes. Note that PSBR has decreased recently.

Table 3
Public Sector Borrowing Requirements (PSBR)

	2002	2003	2002	2003
	(Millions of pesos of1993)		Percentage of GDP	
1. Traditional Balance	-19,811.75	-10,268.50	-1.23	-0.15
2. PIDIREGAS	-12,909.98	-17,573.84	-0.80	-0.26
3. IPAB	7,453.76	-4,852.64	0.46	-0.07
4. Budgetary Adequacies	-3,981.05	-1,820.38	-0.25	-0.03
5. Highways Fund (FARAC)	-6,958.69	-750.86	-0.43	-0.01
6. Debtors Program	1,360.34	127.19	0.08	0.00
7. Development Banking and other Funds	6,792.48	-6,305.72	0.42	-0.09
8. PSBR*	-42,962.41	-41,444.73	-2.66	-0.61
9. Non-recurrent revenues	11,450.90	11,306.64	0.71	0.17
10. PSBR excluding non-recurrent revenues**	-54,413.31	-52,751.37	-3.37	-0.78

* 8 = (1+2+3+4+5+6+7)

** 10 = (8-9)

Sourcee: SHCP

There are, nevertheless, some other not recognized contingent liabilities that the Mexican public sector may face in the near future. These include public enterprises (PEMEX, CFE, IMSS, ISSSTE), sub national governments, and federal government bureaucracy pension deficit. It is hard to estimate exactly the level of these liabilities as different estimations exist, but these may surpass the GDP for one year. For example, Table 4 shows different estimations of these liabilities.

The most conservative figure suggests that the level may be at 85 % of GDP, while the average suggests that this figure adds 120 %. Some other calculations indicate 156 %.

---

[6] When the Project is concluded is delivered to the public sector, which pays for the contracted obligations, in theory using the revenues the project generates. From this perspective the project should be budget neutral. However, the private sector does not bear the risk of the project. Because of this it has a de jure preferential status concerning future disbursements, and should be considered as a contingent liability.

Table 4

Contingent Liabilities (% of GDP)		
Concept	**Conservative Estimate**	**Non-Conservative Estimate**
ISSSTE (Federal Bureaucracy)	50	60
SNG Pensions Systems	12	31
Public Enterprises	20	60
Public Universities	3	5
TOTAL	**85**	**156**

Source: CIDE, World Bank, IMF, and Own.

As it can be appreciated, to verify whether the public sector borrowing requirements are fiscally sustainable, it is necessary to consider all potential contingent liabilities. The not-recognized contingent debt could in principle decrease if pension reforms are carried out in the short run; in case these are delayed for a long time, the possible scenario could be even worse.

In short, one of the main issues of concern regarding Mexican fiscal policy and its adjustment is the sustainability of public finances. This problem has been addressed by many studies and for several countries, being the seminal Hamilton and Flavin (1986) and later refined by Wilcox (1989), Buiter (1990), Ahmed and Rogers (1995), Uctum and Wickens (1996) and Talvi and Végh (2000). These propose different methodologies to determine whether there is fiscal sustainability or not. It is not the purpose of this essay to examine all of these. We will use Talvi and Végh (2000) for the Mexican case because it is a basic and useful structure to determine fiscal viability and provides us with the framework to easily measure sensibility of main parameters[7].

Talvi and Végh (2000) depart from a one period public sector budget restriction that includes the possibility of money creation, which we omit hereafter:

$$B_t - (1+i) B_{t-1} = G_t - Z_t \qquad (1)$$

where B_t denotes the stock of public debt at time t, G_t is the public expenditure at time t, Z_t is the total revenues at t, i is the –constant– nominal interest rate between periods t-1 and t.

When deflating and expressing in terms of GDP, we obtain:

---

[7] Santaella (2000) and CIDE-ITAM (2003) use this methodology to test for the Mexican case. Here we update his calculations as estimations and recognition of new contingent liabilities have arisen since then. Solis and Villagómez (1999) test for fiscal sustainability in México, using Uctum and Wickens (1996) and conclude that fiscal policy is sustainable for the period 1980-1997. As we will see they did not considered all contingent liabilities as they showed up later on.

$$\widetilde{b}_t = \left(\frac{1+r}{1+\theta}\right)\widetilde{b}_{t-1} + \widetilde{g}_t - \widetilde{z}_t \tag{2}$$

where lower case letters denote real variables; a tilda denotes variables expressed as a proportion of GDP; the real interest rate is defined as r = ((1+i)/(1+π)) – 1; and θ is the –constant- rate of growth of GDP. Now, define $\widetilde{g}_t - \widetilde{z}_t$ as the real primary deficit as a proportion of GDP, δ, then equation (2) can be written as:

$$\widetilde{b}_t = \left(\frac{1+r}{1+\theta}\right)\widetilde{b}_{t-1} + \delta_t \tag{3}$$

From (3) it is possible to define the concept of fiscal sustainability and derive an indicator which renders this definition operational. The intertemporal budget constraint for the government can be then computed by iterating forward equation (3) up to the n period, thus b_{t+n} can be expressed as:

$$\left(\frac{1+\theta}{1+r}\right)^n \widetilde{b}_{t+n} = \left(\frac{1+r}{1+\theta}\right)\widetilde{b}_{t-1} + \sum_{j=0}^{n}\left(\frac{1+\theta}{1+r}\right)^j \delta_{t+j} \tag{4}$$

For a large n, and assuming that r>θ, the LHS tends to zero and is the condition that says the government debt must equal to zero in a present value sense. Hence equation (4) may be rewritten as:

$$\widetilde{b}_{t-1} = -\sum_{j=0}^{\infty}\left(\frac{1+\theta}{1+r}\right)^{j+1} \delta_{t+j} \tag{5}$$

This equation indicates that the present discounted value of net revenues (RHS) must equal the initial stock of government debt. Talvi and Végh argue that δ is a path which satisfies equation (5). Hence they define a permanent primary deficit, δ*, as the constant level of the primary balance whose present discounted value as of period t is equal to the present discounted value of the path of actual primary balance:

$$\sum_{j=0}^{\infty}\left(\frac{1+\theta}{1+r}\right)^j \delta_t^* = \sum_{j=0}^{\infty}\left(\frac{1+\theta}{1+r}\right)^j \delta_{t+j} \tag{6}$$

Solving for δ* and combining with equation (5) we get:

$$-\delta* = \left[\frac{r - \theta}{1 + r}\right]\tilde{b}_{t-1} \tag{7}$$

This is the condition for sustainability and is interpreted as the primary surplus (-δ*) that must equate the effective real interest payments on the initial stock of government debt. Clearly fiscal policy is not sustainable if this equation is greater than zero; and sustainable otherwise.

Note that in case fiscal policy is not sustainable ex ante, something ex post will need to occur to ensure that intertemporal budget constraint is satisfied. This includes an increase in tax revenues, a decrease in public expenditure, inflation or even an outright default.

Finally, before presenting the simulations, it is important to highlight that the IMF has calculated a "corrected primary balance" for Mexico which correct many flow of funds associated to liabilities such as Pidiregas, and other bailouts such as that of highways and so on. These figures are not published by the federal government, thus as in CIDE-ITAM (2003) we use that reported in the Mexico study by the IMF. In this, this organization estimates that the "corrected primary balance" for the year 2000 was 1.8 % of GDP, while for 2001 it was 0.8 %; finally for the year 2003 it was estimated around 0.3 % of GDP. With this in mind, we now proceed to our calculations.

We use equation (7) to simulate different scenarios for México. The Table 5 shows the primary surplus required for two different levels of debt. First, we set the level of debt at 47 % of GDP as it is observed in 2004. The second debt level is set at 170 % of GDP and it takes into account the average level of all contingent liabilities discussed above plus the recognized level of indebtedness.

Table 5
Required Permanent Primary Balance for Levels of Debt

Debt	Primary Balance	Growth Rate	Interest Rate
47.00%	0.97%	3.00%	5.00%
170.00%	1.77%	4.00%	5.00%
47.00%	0.49%	5.00%	6.00%
170.00%	5.26%	3.00%	6.00%
47.00%	0.98%	4.00%	6.00%
170.00%	1.79%	5.00%	6.00%
47.00%	1.44%	2.00%	5.00%
170.00%	6.94%	2.00%	6.00%

As it may be observed, simulations are somehow sensible to variables. The worst possible scenario arises when growth is as low as 2 % and interest rate is set at 6 %; under this the "corrected" primary surplus would need to reach as high as 6.94 % of GDP (compared to average of 0.77 % for the last three years). On the other hand, the most conservative —unrealistic— scenario is

when contingent liabilities do not show up and growth is set at 5 %; under this circumstance primary surplus needed is as low as 0.49 %.

This result suggests that there exist a sustainable fiscal framework for the actual "recognized" level of indebtedness (47.1 %). However, should contingent liabilities arise in the near future (and will, for sure), there is no fiscal sustainability. It is true that pension deficit does not show up overnight, but a higher required primary balance to keep sustainability for 20 years implies resource reallocation from poverty alleviation and public infrastructure programs in a poor country like Mexico.

Alternatively, equation (7) can be used to obtain the maximum level of debt for different primary surplus figures. Table 6 show some possible scenarios. As in CIDE-ITAM (2003), we set the primary surplus at two different levels: 0.30 % the one obtained in the last year and 0.77 the average for the Fox Administration.

Note that the maximum level of debt is very sensible to the permanent primary surplus percentage. According to this table the current primary surplus of 0.3 % combined with a rate of growth of 4 % would allowed a 14.4 % of debt level (with respect to GDP). On the contrary, attaining the average surplus of 0.77 % and a growth rate of 4 % would allow a debt level of nearly 75 % of GDP. This result also suggests that disregarding contingent liabilities fiscal policy is sustainable; and again, should the contingent liabilities arise then there is no fiscal sustainability, though results are very sensible to variables.

Table 6
Max. Debt Levels for Diff. Primary Surplus

Debt	Primary Balance	Growth Rate	Interest Rate
14.6%	0.30%	3.00%	5.00%
73.9%	0.77%	4.00%	5.00%
28.5%	0.30%	5.00%	6.00%
24.9%	0.77%	3.00%	6.00%
14.4%	0.30%	4.00%	6.00%
73.2%	0.77%	5.00%	6.00%
9.8%	0.30%	2.00%	5.00%
18.9%	0.77%	2.00%	6.00%

Considering the above discussion, it is very likely that contingent liabilities will show up in the very near future. Furthermore, under the new fiscal intergovernmental relations it is also necessary to consolidate the public sector debt. It is important to pinpoint that the above direct debt level is only federal and do not consider Sub National Government (SNG) direct and indirect debt. For these reasons it is necessary that an important change in

fiscal policy takes place in the near feature, namely, an increase in tax revenues, and also to set a fiscal rule that includes the SNG[8]

Even though that the Mexican tax system is neutral and progressive, tax collection is among the weakest in the world and among OECD countries. Mexican federal government collects 10.8 % of GDP excluding oil revenues and around 18 % including social security contributions, SNG tax collection and oil fees. The latter contrasts with 38 % for OECD countries during the 1997-2001 period.

On the other hand, total expenditures account for nearly 20 % of GDP, but oil revenues still play an important role at financing those. This poses two main problems. First, oil revenue dependency may affect inflation in accordance with the fiscal dominance hypothesis. Second, oil revenues have induced to a what has been called a pseudo Fiscal Dutch Disease; this consists in the relaxation of tax collection by authorities because oil revenues fill the fiscal pressures, but at the same time it causes strong vulnerability of public finances to fluctuations in international oil prices, which affect financial planning as well as continuity of public sector programs. Next we address the first point.

3.- Oil Revenues Dependency and Aggregate Demand

Mexico still depends on oil revenues, as Figure 3 suggests. In Mexico the main channel that links oil revenues to total expenditure is the price of oil that is set *ex ante* for estimating the oil revenues and, thus, based on these, the government adjusts its expenditures. If this price turns out to be higher *ex post* than the one originally set, then the excess oil revenues and the excess of non-oil revenues -if any- form "the total net excess revenues".

---

[8] Hernández, *et al.* (2001) have shown that the Mexican federal government has a long tradition of bailing out states, which may put in danger federal fiscal balances.
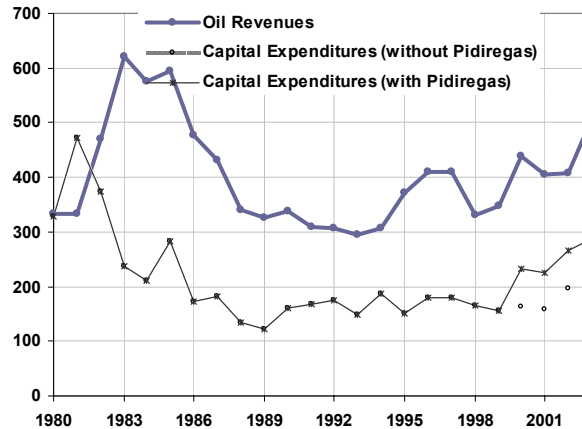
Figure 3
Oil and Non-Oil Revenues
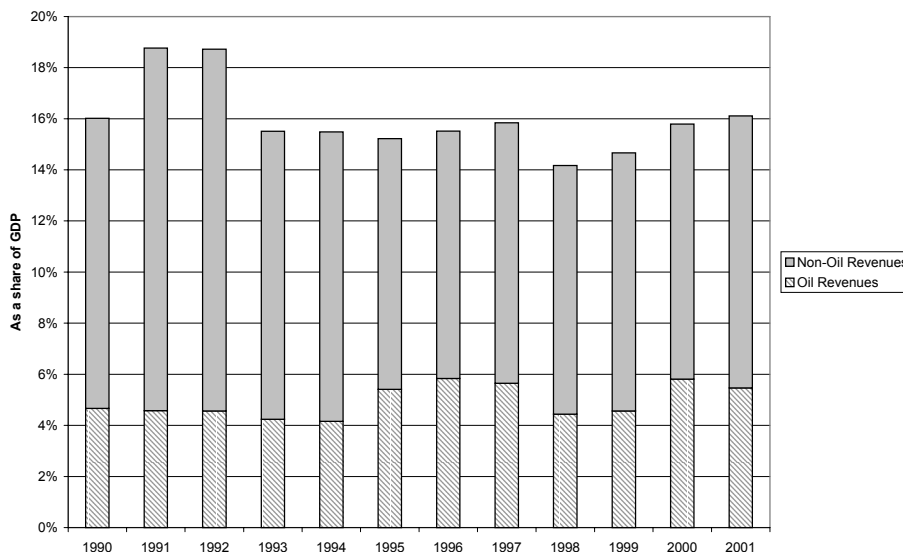
Source: SHCP

Before this revenue is distributed it is used to finance non-programmed expenditures that surpass the ones included in the budget (for example, financial costs if different from programmed). Moreover, since the distribution focuses on total net excess revenues, they may be zero even if excess oil revenues exists.

Total net excess revenues are allocated according to a predetermined distribution formula which has varied year by year in the last three years, but a common trend is that a vast amount of them are allocated to public expenditures, while only a small fraction is directed to the Oil Stabilization Fund. In particular, in 2003 this Fund received only 8.6 % of total excess revenues, and its balance was only 558 million US dollars (less than 0.1 % of GDP). In sum, oil revenues affect directly (through programmed budget) or indirectly (through allocation of total net excess revenues) public expenditures and only a scant amount are assigned to the Stabilization Fund.

Considering the public finance principle that non-recurrent revenues should be invested in activities that yield a future return –social or economic— so that benefits are distributed among different generations by smoothing consumption over time, it is important to point out that in the Mexican case it seems that they mostly have financed current, rather than capital expenditures, as suggested by Figures 4 and 5.

Figure 4
Oil Revenues and Capital Expenditures*
(Billions of constant pesos)

Source: SHCP.

Figure 5
Oil Revenues and Current Expenditures
(Billions of constant pesos)
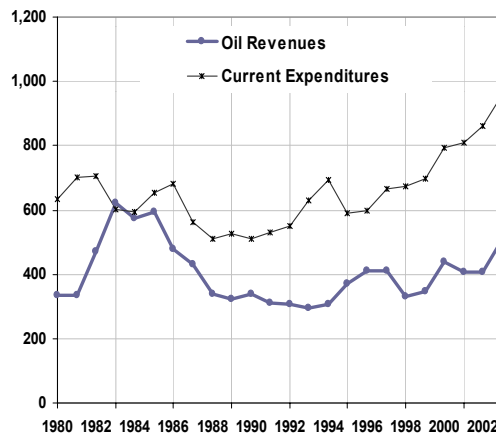
Source: SHCP.

In order to formally show the relationship suggested by figures, we performed univariate cointegration tests to oil revenues (OILREV), on the one hand, and total, capital and current expenditures (TOTEXP, KEXP, CUREXP, respectively), on the other. Period for test is monthly from 1984:01 to 2004:06. The results of the Johansen cointegration test are not presented here[9] to save space. These suggest a cointegration between oil revenues and current expenditures, whereas the capital expenditures is not cointegrated with oil revenues. Not only do these results suggest that a painful cut in

---

[9] All variable proved to be integrated of order 1. The Augmented Dickey Fuller tests are provided upon request.

expenditures may occur in the event of adverse shocks in oil prices but also that a considerable proportion of oil revenues is been assigned to finance current expenditures (recurrent item), which may impinge adversely public finances in a medium term horizon.

In accordance with these results, during the previous years we have witnessed an increase in government expenditures associated with the surge in oil revenues. Despite of this, the government has only attained low budget deficit with primary balances in the neighborhood of 2 % of GDP since 1998 and a constant reduction of PSBR. Nonetheless the transitory character of the extraordinarily favorable oil price may exert a pressure on the fiscal stance and hence on inflation once such source of revenue contracts if expenditures can not be reduced at the same pace.

To measure the real impact of fiscal stances on aggregate demand it is necessary to estimate the so-called "expanded operational balance (EOB)" (due to Blejer and Cheasty, 1991) which is an indicator designed to register those components of public finances that may have an impact on aggregate demand.[10] This EOB in the case of Mexico includes expenditure variables that are not considered in the economic balance, such as Pidiregas; and more importantly it does not include as revenues, items such as oil duties paid by foreigners, since they do not represent an outflow to domestic demand. See the Annex A for details of the calculation of the EOB for the Mexican case.

The different balances are presented in Figure 6. The general behavior of the EOB differs from that of the other two public balance concepts (economic and primary). In particular, the EOB shows a stronger increasing trend than the one of the primary balance since 1996. It is also interesting to note that in 2003, the economic deficit declined while the primary surplus registered an improvement, results that can be interpreted as a declining pressure of fiscal policies on the economy. However the EOB showed a quite different pattern as it jumped from 4.1 to 6.3 % of GDP. Therefore, contrary to what alternative fiscal measures might suggest, increasing oil related revenues, of which high proportion come from abroad, have facilitated government expenditures, exerting a further upward pressure in domestic demand and hence on inflation. This result is in line with the cointegration analysis presented above.

---

[10] The operational balance is defined as the primary surplus minus real interest payments.

Figure 6
Indicators of Fiscal Policy Stance
(As a percent of GDP)
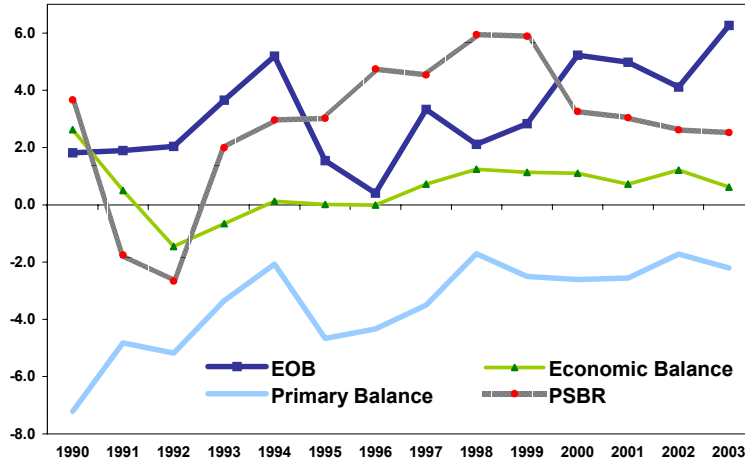
Note: negative values represent budget surpluses.
Source: Ministry of Finance and Banco de México.

So a second important challenge of fiscal policy is to control these pressures on inflation. This supports the fiscal dominance hypothesis. A challenge for the Mexican case is to rely less on oil revenues and more on taxes and, in addition, to redirect oil revenues to long term capital expenditures to spread out intergenerationally the benefits of this "windfall" and to increase the reserves of the Stabilization Fund. The first phenomenon is also known in the Mexican case as the "fiscal Dutch disease" where excess oil revenues have made fiscal authorities more relaxed at collecting tax revenues, and further, at making at effort to pass a fiscal reform (for details, see Hernández and Zamudio, 2004).

4.- Some Microeconomics: The Three Structures of Mexican Fiscal Policy

It is common to examine fiscal policy in LDCs in terms of its macroeconomic impact as we have just done. Nevertheless, in LDCs the study of its structure has surprisingly been done much less and has only begun. For example, the 1994 Mexican crisis provided a good lesson on the importance of the structure of public debt: even though the level of indebtedness was very reasonable, its structure was too concentrated in indexed-short term debt. Thus, the debt

structure in terms of: (i) internal versus external; (ii) short versus long term; and (iii) indexed versus nominal, became very relevant.[11]

There are, however, two other components of fiscal policy: public revenues and expenditures, which structure is likewise fundamental and has been less examined. The structure of public revenues is important because it may affect growth and welfare, income distribution, resource allocation and macroeconomic stability. Thus public revenues distribution include: (i) oil versus non-oil revenues; (ii) tax versus non-tax revenues; (iii) distribution of tax and non tax revenues in terms of tax to income or consumption, and so on. So this structure becomes important to be evaluated in terms of the elements described above.

On the other hand, the structure of public expenditures may also affect welfare, growth, income distribution, poverty alleviation, among other things. Here the distribution includes: (i) current versus capital expenditures; (ii) social versus investment expenditure; (iii) distributions among sectors such as education, health, poverty reduction, and so on.

Each of these structures presents, naturally, trade offs, but its design requires consistency among them, especially between public revenues and expenditures, which is fundamental to determine the real incidence. So the criteria to evaluate each sub-policy include a number of factors: is the public revenue distribution the adequate one? Does it distort resource allocation? Does is affect income distribution? And so on. On the other hand, questions regarding the structure of public expenditures include: does it redistribute income and opportunities? Does it promote growth through provision of public infrastructure and investment in human capital?

There is no "optimal structure" of these three fiscal variables and not much theoretical research has been done in this respect.[12] Disregarding its level, we can say that there are general principles for revenues and expenditures. Some of them include, among others:

- Tax systems should distort the less resource allocation so that they do not affect efficiency.
- Tax systems should be simple and stable so that revenues do not highly depend on items such as oil revenues
- Tax systems should be progressive (this is nowadays very debatable, more on this later)
- Social Public expenditures should be redistributive
- Public expenditures should provide basic infrastructure to enhance the competitiveness of the country.

[11] There is a vast theoretical and empirical literature on this. Missale (1997) surveys most of it. For the Mexican case, see Hernández and Villagómez (2000).
[12] There is some effort on optimal structure of public debt. See Missale (1997).

In this section we address some of these questions. It is our argument that the "three structures" of fiscal policy should be well designed together with any fiscal reform –or even in spite of the absence of one.

4.1.- *Public Revenues*

As said, Mexico presents a very low tax revenue level, one of the lowest in the world and the lowest among OECD countries. At the same time we have shown that the structure between oil to non-oil revenues is not the ideal as one third is collected through the first source (Figure 3). This makes public revenues highly volatile affecting the planning of expenditures. But it is also important to take a look at the structure of the tax revenues. This is important because there is some literature that has shown that taxes on consumption, though its regressivity, are easier to collect and more powerful as are harder to be avoided or evaded, whereas taxes on income, though in principle progressive, are easier to be avoided and evaded by the highest percentile, and hit mainly to middle class as they are captive.

    Mexican tax structure is presented in Table 7 below, and excludes oil revenues, social security contributions and SNG tax revenues. As it can be seen, the system is based, as in many countries, on corporate and personal income tax and the value added tax (VAT). Combined, this two taxes account for more than 80 % of total tax collection. Tax rates are competitive internationally especially with NAFTA countries, but collection is low. The Corporate and Personal Income tax is only 4.9 % of GDP as compared to the average of the OECD countries, 13.5 %. The VAT reaches only 3.8 % as compared to the 6.9 % of GDP for OECD countries. On the other hand, VAT productivity[13] is only 0.22 as compared to 0.40 for OECD countries[14].

---

[13] This is obtained by dividing VAT tax collection (as a percentage of GDP) by the tax rate.
[14] South Korea presents a 0.35 VAT productivity and also has many different treatments in its rate.

Table 7

Non Oil Federal Government Tax Revenues	
Non-Oil Tax Revenues (Federal Government)	**10.3**
Corporate and Personal Income Tax	4.9
VAT	3.8
Non-Oil Excise Tax	0.5
Import Tax	0.6
Others	0.5
Non-Oil Rights	**0.5**
TOTAL	**10.8**

Source: SHCP, 2002

Low tax revenues are hard to explain as many elements mixed with each other. Some have argued that the system is complex, others that the authority is inefficient at collecting, while many others have argued that there is a significant corruption. A formal study of tax evasion/avoidance has concluded that it is a mixed of all elements. For example, this study found that 38 % of potential VAT revenue is forgone either because of tax avoidance or tax evasion; this amount is equivalent to 2 % of GDP. On the one hand, this study showed that tax avoidance benefits from the excess of special treatments in VAT, and on the other, evasion is due to a deficient administration[15] and corruption. It is not the purpose of this paper to detailed this, but a more complete discussion can be found in Hernández and Zamudio (2004).

Hence, the structure of Mexican tax system should be reconsidered, and dependency on oil revenues should diminish further. As we will argue later, authorities (both Legislative and Executive Branches) should consider the possibility of relying more on taxes on consumption as these are more powerful in terms of revenue-raising capacity. This idea is based on the high concentration of autonomous income in Mexico, which implies that public expenditures has an exceptionally high potential redistributive capacity in comparison to less-concentrated distributions and to tax instruments.

In sum, Mexican tax collection is low and the system is complex, whereas necessities are immense. These are examined next.

---

[15] For example, incentives are perverse for tax collectors.

4.2.- Public Expenditures

The structure of public expenditures is important in many ways. First, it may determine whether the fiscal policy as a whole (revenue plus expenditure) is adequate in terms of incidence even if tax system is regressive. Second, it may enhance growth through the provision of public infrastructure.

Figure 7 shows the recent evolution of the federal government's total expenditures[16] by economic classification. Transfers increased dramatically over the past decade, mostly going to subnational governments, pension systems and public enterprises. The first big increase came in 1992–93, when federal teachers were transferred to the state governments; accompanying this transfer was a reduction in the federal wage bill and an increase in transfers from the federal to state governments to pay for teachers' salaries. Transfers jumped again in 1997–98, when part of the health system and social infrastructure expenditures were decentralized and Ramo 33 was created to aggregate all the earmarked *aportaciones* to the subnational governments. This increase in transfers was accompanied by a reduction in capital expenditures, (central government) wages, goods and services, general services, and others. Debt service declined dramatically as a consequence of debt restructuring during the Salinas administration. Goods and services, which are the smallest category in the budget, declined, but this level of expenditures probably is not sustainable, given their importance for complementing investment and personnel expenditure in order to actually deliver services.

Furthermore, capital expenditures have diminished their participation in total federal government expenditures. This graph does not include state-owned enterprises.

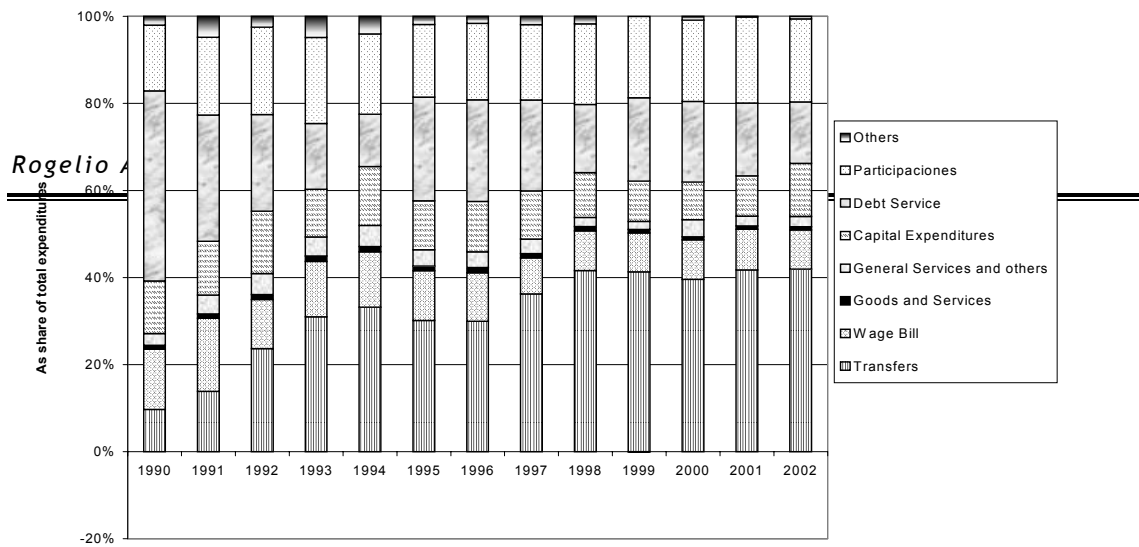[16] It excludes the state-owned enterprises expenditures.

Figure 7
Economic Composition of Federal Government Expenditures

Source: SHCP

This story is no different for state owned companies. Figure 8 presents budget distribution for them. Capital expenditures are low and are being displaced over time by pension expenditures. Should these systems are not reformed; the problem of crowding out investment may be even higher.
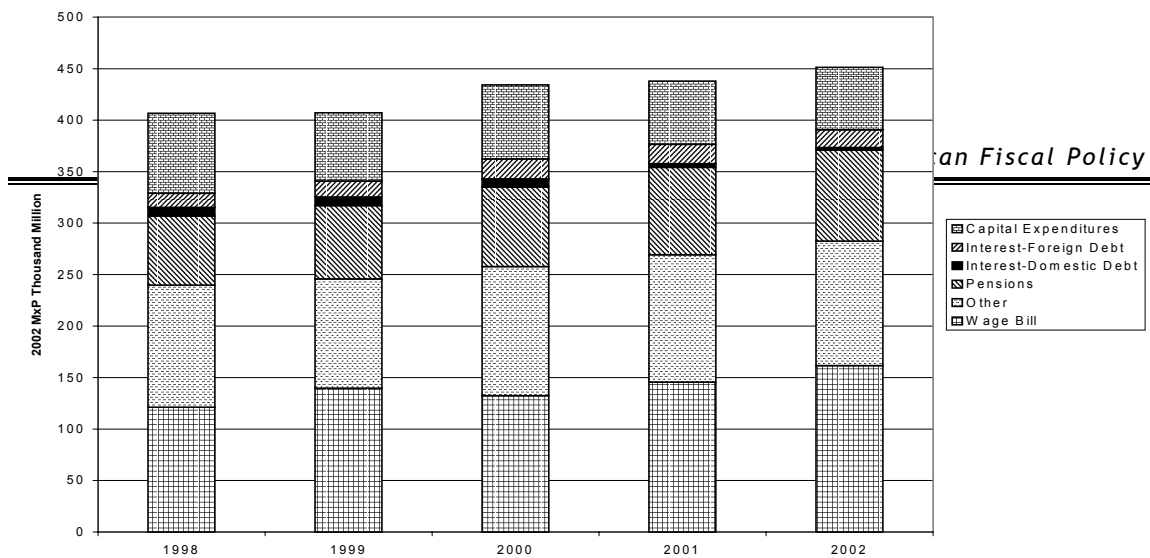
Figure 8

Expenditures of State-owned Enterprises

Source: SHCP.

The above implies that the structure of public expenditures by its economic classification is hurting capital expenditures. This could suggest that Mexico may be prioritizing social expenditures over investment in order to enhance human capital and to improve the distribution of income. Next we proceed to examine both, the loss of participation of capital expenditures in total expenditure and to evaluate social expenditure to establish whether the above presumption is right.

Public Infrastructure

The provision of infrastructure services has declined substantially as total infrastructure investment in Mexico dropped from an average of over 2 % of GDP in the previous two decades to around 1 % in the late 1990s (this figure only includes "productive public infrastructure"). Of the major Latin America, Mexico now has one of the lowest levels of total infrastructure investment as a percentage of GDP. By comparison, total investment in infrastructure in Chile was between 5 and 6 % of GDP in the late 1990s, Colombia 6 to 7 % and in Brazil around 2 % (Easterly and Servén, 2003).

The low levels of infrastructure investment in Mexico have been driven mainly by the decline in public investment (Figure 9 present the total public investment, though in the 1970s and a good part of 1980s there existed numerous public enterprises). Improving the access and quality of infrastructure service, especially for the poor, and thus contributing to overall competitiveness, will require not only increase infrastructure investment levels, but also more effective institutional frameworks; in order to improve the efficiency of investment allocation and subsequent operations.

Figure 9
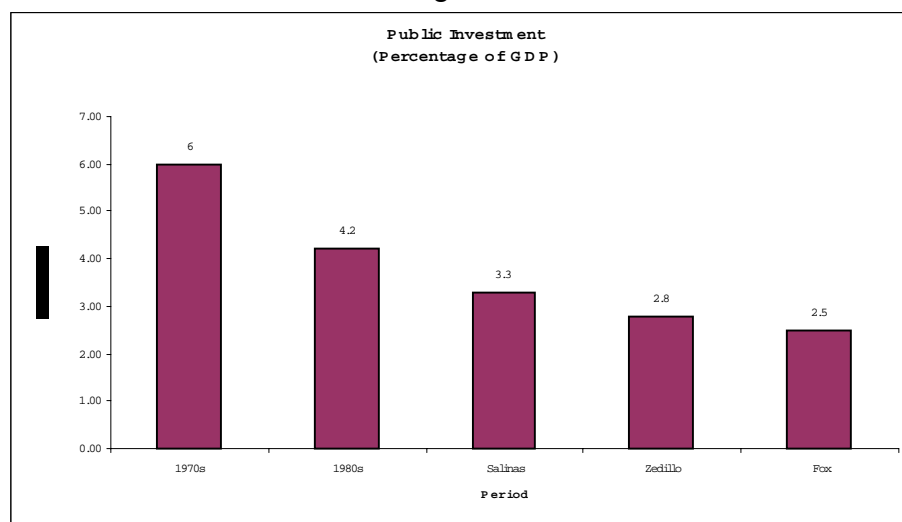
Inefficient infrastructure services have reduced Mexico´s international competitiveness and hampered economic growth by driving up production costs. After production, with an estimated 18 % of GDP being spent on logistics, Mexico's competitiveness as an exporter is falling behind countries which sell a similar array of products. The high cost of logistics can be traced to modal congestion (roads, bridges, seaports, and border and other inland terminals) as well as the inefficiencies of "soft" transport infrastructure such as customs clearances.

In general we can say that basic infrastructure such as investment in electricity, transportation and water has lagged behind both in terms of level of public expenditure and in quality. Take transportation as a good example of this, as many analysis of public investment concentrates only in electricity and oil related one.

Table 8 presents the road density of several countries. Note that Mexico possesses a low road-density of 0.17 as compared to that of Spain of 1.31. This clearly reflects a lag in type of infrastructure. Furthermore, the quality is low as the figure 10 shows; observe that paved roads is only 33 % of the total road infrastructure in comparison to 99 % of Spain and Thailand.

Table 8
Road Infrastructure Density

	Area (Miles of Km2)	Roads (km)	Density (km/km2)
Spain	506.00	663.79	1.31
Greece	132.00	117.00	0.89
Portugal	92.00	68.73	0.75
USA	9.62	6.30	0.65
Malasia	330.00	65.87	0.20
Brasil	8.54	1.72	0.20
China	9.59	1.69	0.18
Mexico	1.95	329.53	0.17
Chile	757.00	79.60	0.11
Thailand	513.00	57.40	0.11
Canada	9.97	901.90	0.09
Argentina	2.78	215.47	0.08

Figure 10
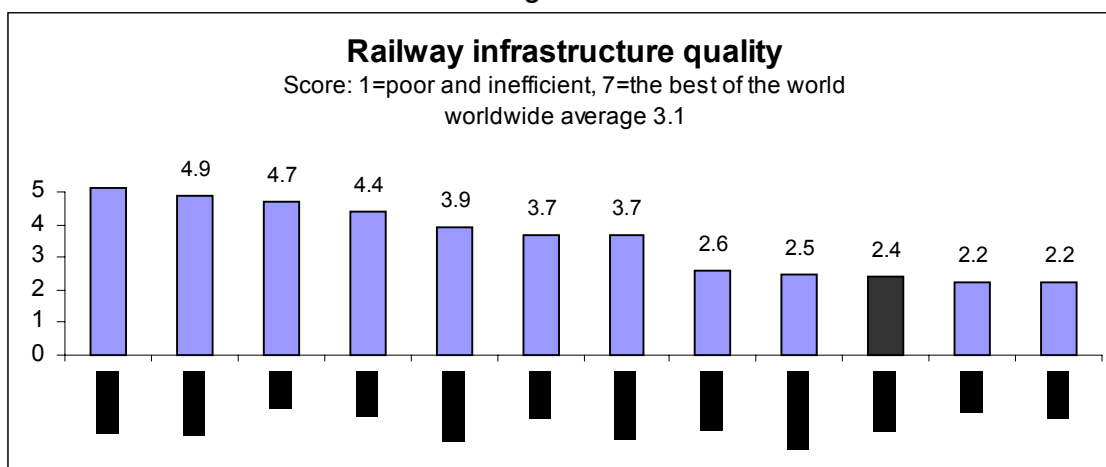
Proportion of paved road of the total road infraestructure
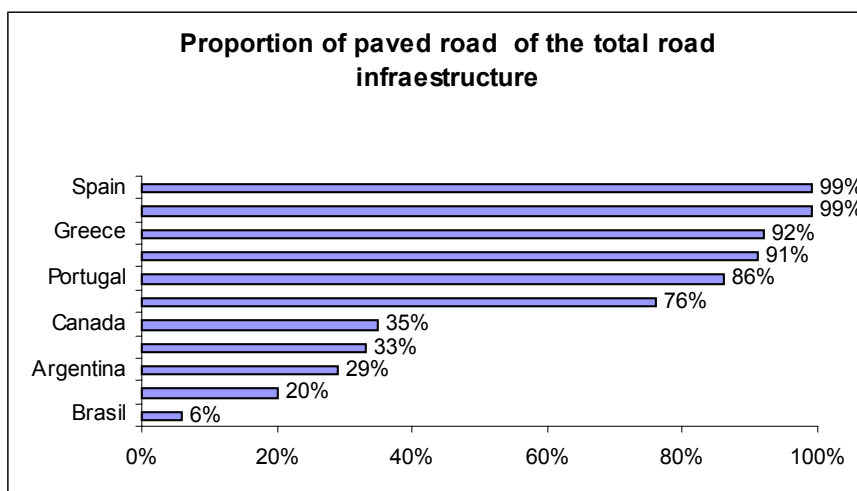
Source: World Economic Forum, "The Global Competitiveness Report, 2003-2004
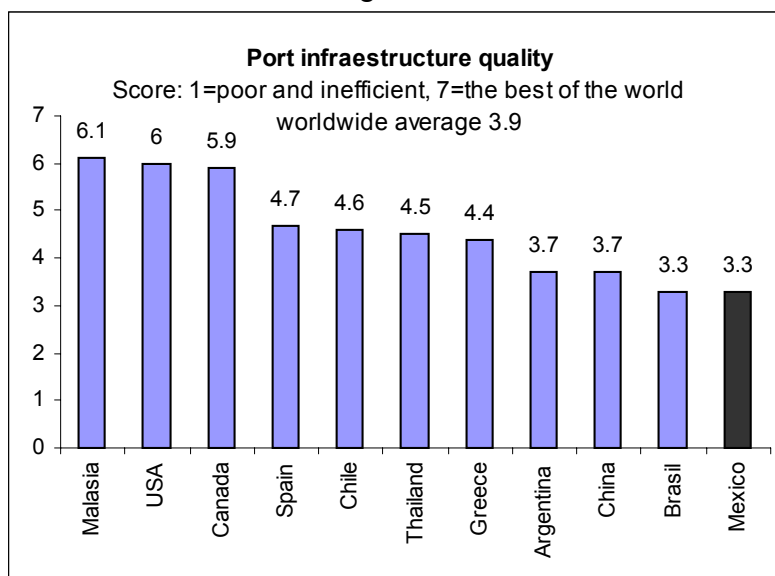
Moreover, road pricing policies, which overcharge small and medium-sized enterprises, may also be hindering growth by reducing the potential of those enterprises to contribute to economic activity. For example, prices per km may reach as high as 0.30 cents US DLLS in some important roads.

Figure 11

Railway infrastructure quality
Score: 1=poor and inefficient, 7=the best of the world
worldwide average 3.1

Source: World Economic Forum, "The Global Competitiveness Report, 2003-2004"

Figure 12

Port infraestructure quality
Score: 1=poor and inefficient, 7=the best of the world
worldwide average 3.9

Source: World Economic Forum, "The Global Competitiveness Report, 2003-2004"

With respect to the other modes of transportation, international competitiveness indicators suggest that Mexico is lagging behind other countries as well, as it is shown in Figures 11 and 12. In railroads, according to the Global Competitiveness Report for 2002, Mexico presents a quality indicator below average. With respect to ports the country is also below average.

There is evidence that electricity, water and oil sectors are also lagging behind in quality and quantity.

Finally, pricing policies of public infrastructure services are another challenge to be addressed, not only for raising resources but also for improving incentives in the sector. A good example of this is the electricity subsidies, which are regressive and, on the other hand, regionally inadequate distributed, distorting relative prices across regions, then affecting comparative advantages as Levy (2001) has shown.

Table 9 presents the distribution of the residential electricity subsidy over this period, estimated by the World Bank using ENIGH data on household expenditures and the electricity tariff schedules. Between 1996 and 2000 the distribution of the subsidy became more equal, as a result not of a change in the tariff structure but of the gains in coverage in the first eight deciles. The important gain in progressivity achieved between 2000 and 2002 is explained largely by the change in the tariff structure, which lowered the subsidy significantly for the top decile. Thus, while the growth in the federal subsidy in the first period was distributed fairly equally (although biased against the poorest quintile), the contraction in this subsidy in 2000–02 was absorbed by

the middle and (especially) high-use consumers in deciles eight to nine and ten, respectively.

The 2002 residential tariff revision intended to reduce the overall volume of subsidies and to target them to lower income households. Therefore, price increments were directed at only deciles 8, 9, and 10. But, subsidies remain concentrated in deciles 6-9. Beyond predetermined consumption thresholds, the full service cost was to be charged to consumers. The target was the top 5% of consumers but as a consequence of the introduction of tariff 1F in mid 2002 and pressures to reassign localities (still ongoing) to those summer season tariffs which provide larger subsidies, only 2.6% of residential consumers wound up paying the full cost (DAC) tariffs. Thus, while the 2002 tariff revision slightly addressed regressivity at the very top end, the share of subsidies going to the non-poor population (i.e., those above poverty line 3), remains high, estimated at 64%. The total volume of residential subsidies in 2002 declined by 5% from the prior year, but the magnitude remains large, at MxP 31 billion in 2002, about equal to total revenues residential customers actually paid for electricity service. These sums place electricity subsidies among Mexico's largest welfare programs.

Table 9
Distribution of Residential Electricity Subsidy, 1996–2002

| | Average incidence | | Marginal incidente | | | |
| | | | Change of distribution (percentage points gained) | | Distribution of change (participation in change) | |
	2000	2002	1996–2000	2000–02	1996–2000	2000–02
Change in expenditure					22.5%	-4.9%
1	2.7%	3.4%	0.5%	0.7%	6.0%	-10.6%
2	4.3%	4.8%	-0.5%	0.5%	2.9%	-5.5%
3	6.0%	6.3%	0.7%	0.2%	10.6%	1.1%
4	6.9%	7.2%	-0.3%	0.3%	6.6%	1.9%
5	8.9%	9.8%	0.6%	0.9%	12.4%	-8.5%
6	9.6%	11.4%	0.7%	1.8%	14.0%	-26.0%
7	11.5%	12.1%	0.8%	0.6%	15.5%	-0.2%
8	13.5%	13.1%	0.4%	-0.4%	15.3%	21.0%
9	16.4%	16.4%	-1.6%	0.0%	6.8%	16.8%
10	20.1%	15.6%	-1.3%	-4.6%	10.0%	109.9%

Concentration coefficient	0.294	0.242	(-9.5%)	(-17.7%)

Source: *ENIGH and World Bank*

In sum, provision and quality of public infrastructure should be increased to catch up with previous levels and with international standards.[17] Other private participation schemes should also be studied to fill this gap as well.
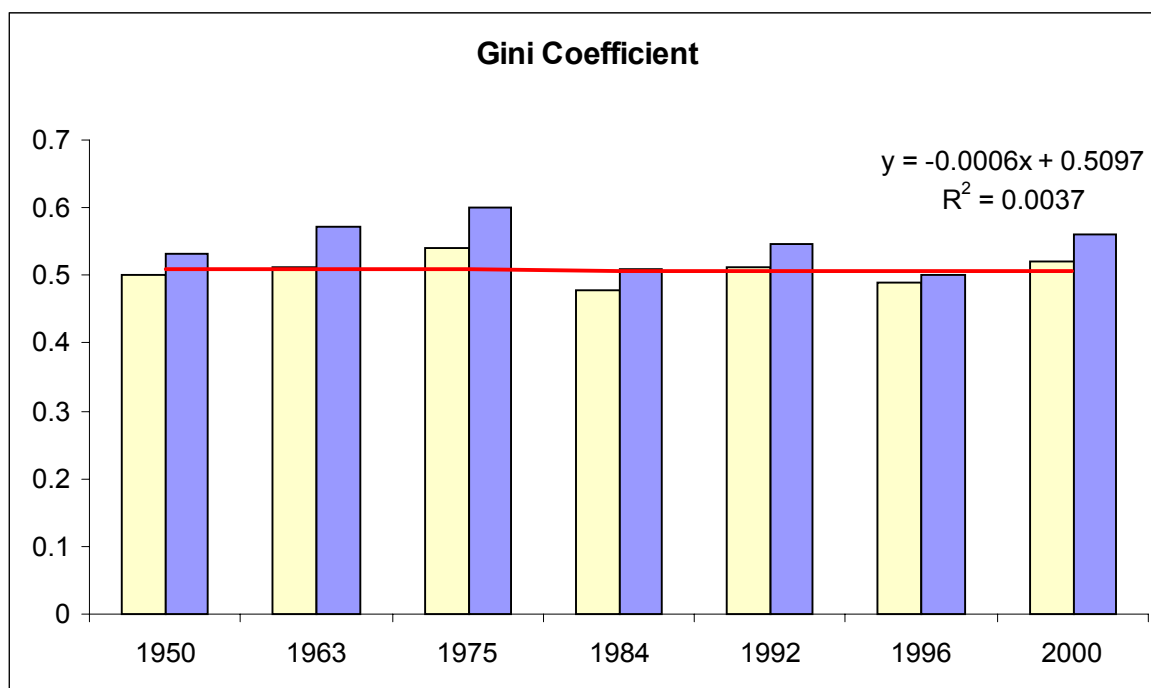
Poverty and Income Inequality

The other public expenditure element is social expenditure. In principle this should be evaluated by its incidence and quality. This leads the study to poverty alleviation and income inequality. We consider this as an important element of any fiscal policy for many reasons. First, fiscal policy has proven to be an effective tool in closing the gap of income (and capabilities) inequality and in poverty alleviation. Second, it may yield important directions for public policies. Third, it is important in transparency and accountability of different governments. Finally, because targeted and efficient social expenditure may generate growth through the enhancement of human capital (see Lindert, 2004).

In what follows we provide a brief review of fiscal policy and poverty indicators in Mexico. According to the new methodology designed to follow poverty indicators over time, in Mexico 20 % of population are extremely poor (i.e. 1 of every 5 persons) and 53 % are poor[18] (i.e. 1 of every 2 people). On the other hand, the poorest 10 % of population produces only 1.3 % of total income, while the richest 10 % grab the 40 % of it. This yields a Gini coefficient of 0.53. Furthermore, Gini coefficient has been persistently high over time as it can be appreciated in Figure 13. Thus, Mexican income inequality has been a constant phenomenon in the country.

Figure 13

---

[17] For a complete discussion on this, see World Bank, 2004.
[18] This is defined as poverty "in opportunities" or capabilities.

Gini Coefficient

$$y = -0.0006x + 0.5097$$
$$R^2 = 0.0037$$

(Bar chart showing Gini Coefficient values for years 1950, 1963, 1975, 1984, 1992, 1996, 2000, with a y-axis from 0 to 0.7. A red horizontal trend line is drawn near 0.51.)

This raises the question whether Mexican fiscal policy has played a role on this. There is some literature that argues that fiscal policy is an important tool at redistributing income –and capabilities (see Annand and Ravaillon, 1997; Sen, 2001; Lindert, 2004) through social expenditure. So incidence of this policy becomes important.

The redistributive instruments available to governments in this regard may be classified as (a) *monetary instruments*, including taxes and direct monetary transfers, and (b) *transfers in kind*, involving the public financing and (commonly) provision of specific goods, mostly education and health services.

Although these types of instruments correspond closely with the redistributive strategies noted, the two classifications do not map perfectly one another. Monetary transfers redistribute current income, while the provision of public health and education services promotes equitable access to human capital and thus the future capacity to generate autonomous income (in addition to educational and health achievements for their own sake). However, monetary instruments may also be used to promote equitable access and improve capacity if they are conditioned on relevant investments on the part of households. Similarly, the public provision of education and health services has an impact on the distribution of current disposable income by liberating private household expenditure for other ends.

Both types of instruments play important redistributive roles in Mexico. In mature welfare states, dramatic reductions in the inequality of disposable income are achieved through massive monetary transfers. In Mexico, such transfers represent a small proportion of redistributive expenditure, barely modifying the overall distribution of income. However, their exceptionally effective targeting mechanisms, together with their conditionality on the use of basic education and health services, imply important redistributive impacts on the rural poor. Moreover, expenditures on education and health represent the government's principal instrument for redistributing income. Next we examine very briefly both sides of fiscal policy for Mexico.

On the revenue side, Mexican tax system has been regarded as neutral and progressive (Dalsgaard, 2000). Hernandez and Zamudio (2004) have proven this using the 2002 national income-expenditure survey. As expected Corporate and Personal Income tax is progressive (not presented here). The VAT incidence is presented in Table 10. Observe that the VAT is proportional considering products at cero rate and exempted. Were this removed, the system clearly would be regressive as the third column suggest.

Table 10

Decil	Percentage of Total Collection	Net Payment wrt personal income (%)	Including Exempted Products as part of Income (%)	
I	1.451	11.4	5.221	
II	2.367	10.7	4.890	
III	3.339	10.4	5.053	
IV	4.256	10.0	5.069	
V	5.563	9.3	5.330	
VI	6.969	9.0	5.371	
VII	8.955	8.6	5.527	
VIII	10.923	8.8	5.310	
IX	15.291	8.1	5.181	
X	40.887	6.5	5.774	

Based on ENIGH, 2002

This regressivity of a general tax on consumption (i.e. taxing food and medicines) has been debated for not changing the current system. Whilst this tax the whole system is progressive in relative terms as it is shown in the next Table 11.

Table 11
Total Tax Incidence

Total Incidence	
Decil	Relative Incidence
1	0.90%
2	3.60%
3	5.70%
4	7.20%
5	8.10%
6	9.80%
7	10.50%
8	11.20%
9	12.70%
10	16.90%
ENIGH, 2002	

The problem with special treatments on VAT is that this kind of subsidies are regressive and diminish tax collection in an important way. Mexico is no exception. The following Figures 14 and 15 show that nearly 48 % of the whole

universe of products and services are exempted (or taxed at zero rate)[19] and because of this the implicit subsidy of this treatment is highly regressive. According to Figure 14 for each peso exempted to the poorest 20 % of population, nearly 5 pesos is exempted to the richest 20 %. So it is also important to pinpoint that the subsidy, as it is general, is highly regressive. Hernandez and Zamudio (2004) estimated that this subsidy accounts fro nearly 2 % of GDP.
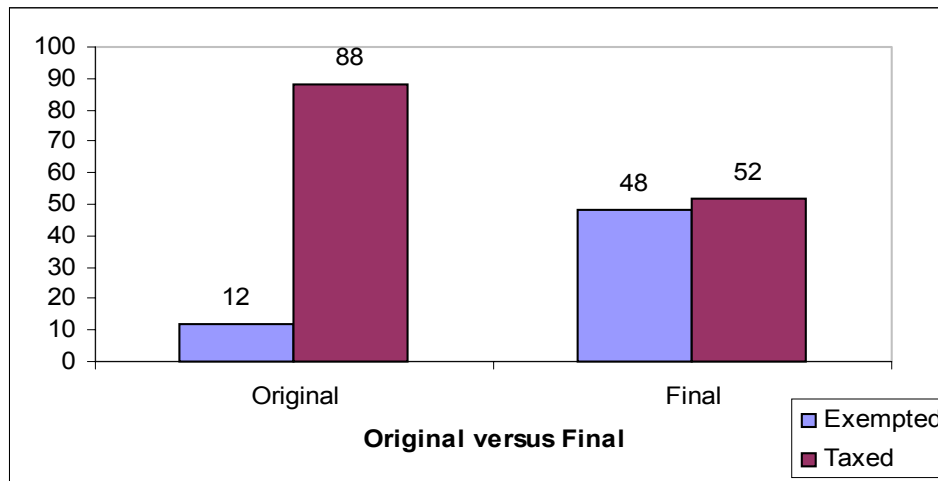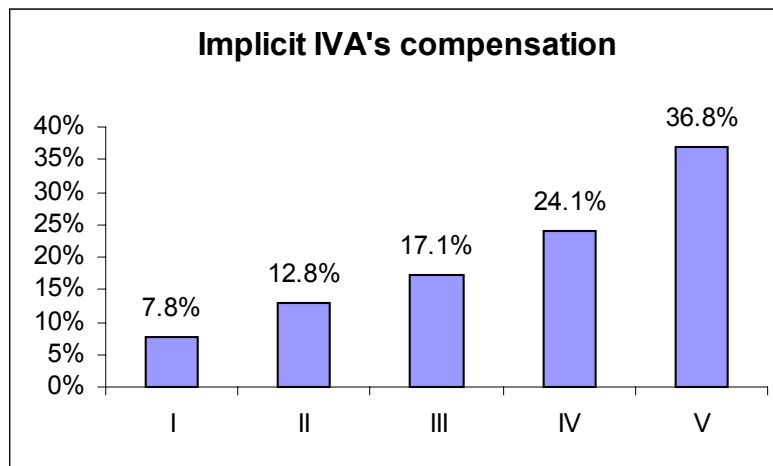
Figure 14

Figure 15

---

[19] Observe that the original proposition of exempted products included only 12 % of the universe of products and services. After the loopholes and court trials this figure was raised to 48 %.

On the other hand, as in Engle and Galetovic (1999) we argue that incidence of fiscal policy has to consider both sides of the coin, that is, it should also include to the picture the expenditure side.

On the expenditure side, not only has Mexican social expenditure been low as compared to international standards, but also has been rather proportional as it is shown in Table 12. To reach to this conclusion we used the national income-expenditure survey together with presidential addresses and the official statistics presented by the ministry of finance. The incidence is presented in the next Table 12.

Table 12

	Incidence of Social Expenditure			
Quintile	Total Social Expenditure	Health Expenditure	Education Total Expenditure	Tertiary Education Expenditure
1	18.2	17.6	18.4	0.7
2	20.5	23.9	19.6	6
3	21	24.4	20.1	10.5
4	20.8	21.8	20.5	25
5	19.4	12.3	21.4	57.9

ENIGH, Scott, 2001

Note that public expenditure on tertiary education is expectedly highly regressive. So adding up the revenue and the income side of the fiscal policy, we found that even though it is progressive in relative terms, this progressivity is low as compared to other countries succeeding in this sense, as the Chilean case. The Table 13 suggests that this is the case. Observe that in Chile, 36 % of social expenditures is directed to the poorest 20 % of population, whereas only 4 % of it to the richest 20 % of people.

Table 13

|	Chile			
Quintile	Social Exp.	Health Exp	Education Exp (total)	Tertiary Educ
1	36	50	34	23
2	28	35	27	16
3	20	21	19	22
4	12	6	13	20
5	4	-12	8	20

Source Scott 2003

The next step is to evaluate different social government programs in terms of their incidence. The World Bank (2004) recently carried out such an analysis.

They use a concentration index to measure absolute progressivity of social expenditure programs. Annex B presents this definition.

Figure 16 presents concentration coefficients for all the programs nationally. They included for reference Ginis for autonomous expenditure. Perhaps the most striking observation is the wide range of coefficients, from 0.6 (ISSSTE pensions) to -0.6 (Oportunidades). The great majority of programs are regressive in absolute terms. Following Oportunidades at some distance, health services for the uninsured, basic education, and Procampo are the only other programs that are progressive in absolute terms.

Figure 14
Concentration Coefficients, National, 2000, 2002
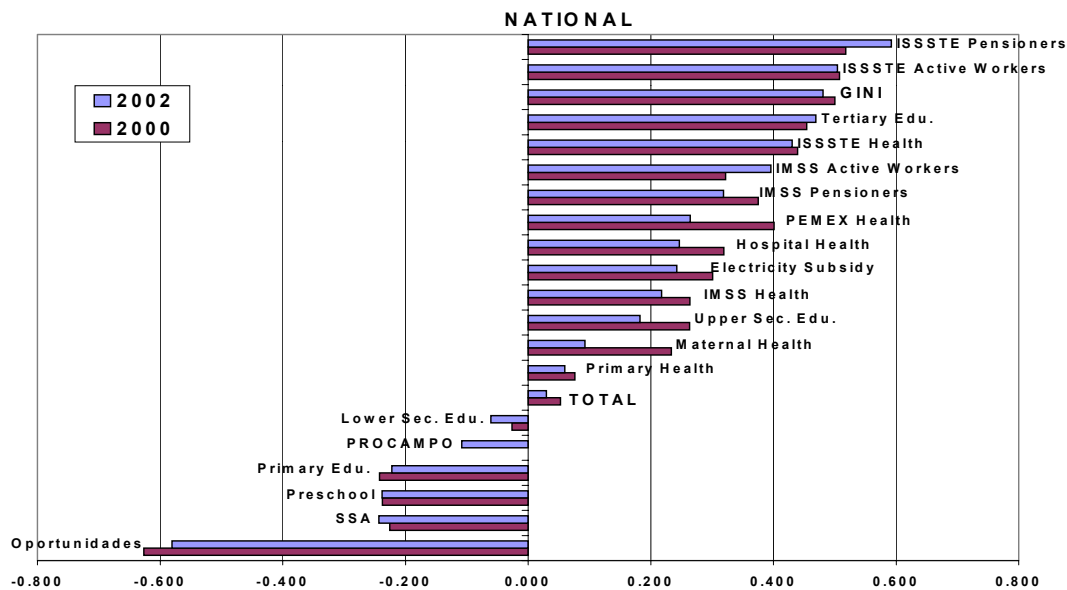
Note: Procampo is not reported in 2000 because the sample of beneficiaries captured by the 2000 survey is not representative.
Source: Scott 2004.

In general, the distribution of these programs is notably less regressive (more progressive) in urban than in rural sectors, indicating that most of the equity achieved nationally is due to the intersectoral allocation of programs rather than to particular success in targeting within the rural sector.Although Oportunidades is still the most progressive program within the rural sector, the distance separating it from preschool and primary school services is marginal. The targeting efficiency of expenditure on rural primary schools is comparable to that of Oportunidades transfers (Figure 17).

Figure 17
Distribution of Oportunidades Transfers and Students in
Primary Education in the Rural Population, 2002
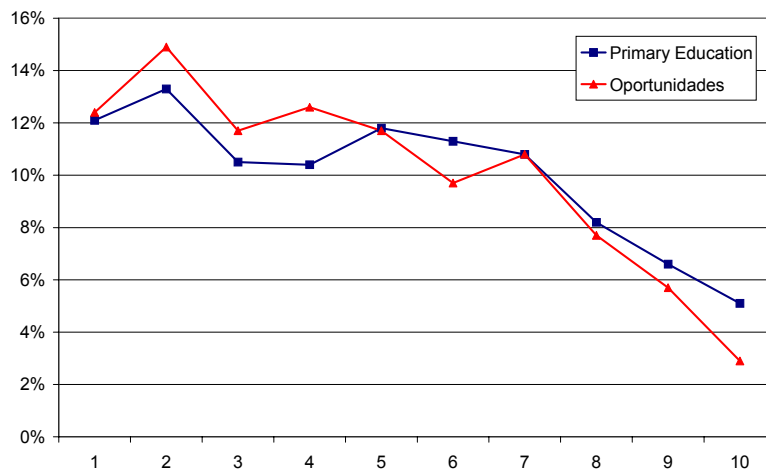
Source: World Bank (2004).

In short, Mexican social public expenditure needs to strength progresivity so as income may be better redistributed. Mexico needs to considered fiscal policy as a whole and not only from the tax revenue side. Fiscal policy is broader than that as we have shown here. This is the third challenge.

Conclusions

This essay has shown that Mexico's public finances are being managed adequately. There are however some issues of concern. The first one is the accumulation of contingent liabilities, which reach above 120 % of GDP. The second is the excessive dependence on oil revenues as opposed to tax collection, which may even pose pressures on inflation targeting. Finally, the structure of social expenditure and tax system is also deficient. The fiscal authorities should make an effort to raise tax revenues and to work on an efficient fiscal policy structure, namely, expenditure, revenues and debt.

Annex A

Calculation of Expanded Operational Balance

The EOB includes on the expenditure side:
- Domestic purchases of goods and services, both by the Federal Government and by state-owned enterprises (including off-budget sector). It also includes the sub-national governments' expenditures tagged to federal revenue-sharing programs.
- Personal transfers (which constitute a source of income to private agents).
- Total investment in buildings, domestic equipment and machinery including off-budget investment projects (PIDIREGAS).
- The real component of domestic interest payments, including transfers to the deposit insurance fund (IPAB) and debtor relief programs (ADE).[20]
- Government compromised payments that will be paid in the following fiscal year (Adefas).

On the revenue side the EOB includes:
- Taxes.
- Non-oil duties and domestic oil duties (i.e., excludes oil duties paid by foreigners).
- Social security contributions.
- Federal domestic sales of goods and services (including off-budget sector).

Finally, the financial intermediation of development banks and public trust funds is also included due to the fact that credit granted by these institutions may not reflect market conditions and is destined to sectors that, given the elevated risk associated to their investment projects, would only have access to credits at very high rates or, indeed, no access at all. On the other hand, the Ministry of Finance has traditionally published the economic and the primary balances originally pursuing a similar end.

---

[20] This is obtained by subtracting the inflationary adjustment of the principal from nominal interest payments.

Annex B

Absolute and Relative Progressivity: Concepts and Measures

The concept of absolute progressivity requires transfers (taxes) to decrease (increase) with income (expenditure) in absolute terms, while the concept of relative progressivity requires transfers (taxes) to decline (increase) as a proportion of income. While the concept of relative progressivity is generally used in relation to taxes, the distribution of benefits from public expenditure is more commonly described in terms of absolute progressivity.

Measures of progressivity can be derived analogously to measures of income inequality from Lorenz curves —known as concentration curves in this context— defined on the distribution of transfers (taxes) using pre-transfer (tax) income or expenditure as the relevant ordering concept. For a large set of measures (Lambert 1993), a transfer is unambiguously progressive in the absolute sense if its concentration curve lies above the diagonal and is progressive in the relative sense if its curve lies below the Lorenz curve for autonomous income or expenditure.

The most common measure of absolute progressivity is the concentration coefficient (C), or quasi-Gini, which is a Gini measure derived from these curves. C is defined in the (-1, 1) interval, where, in the case of transfers, negative (positive) values represent progressive (regressive) allocations.

A widely used measure of relative progressivity is Kakwani's index (K), defined as the difference between C and the Gini coefficient for autonomous income. K is defined in the (-2, 1) interval, again with negative (positive) values corresponding to progressive (regressive) transfers.

The redistributive impact of the transfer, measured by the difference between the Gini before and after the transfer, can be shown (Kakwani 1977) to be directly proportional to K and the average transfer rate (transferred resources as a proportion of autonomous household income), γ:

$$\Delta G = K \frac{\gamma}{(1+\gamma)},$$

Redistributive efficiency (RE) can be measured as the elasticity of this impact with respect to the scale of resources absorbed by of the transfer:

$$RE = \frac{\Delta G / G}{\gamma}.$$

References

Anand, S. y M. Ravallion (1993), "Human Development in Poor Countries: On the Role of Private Incomes and Public Services", en *Journal Of Economic Perspectives*, Vol. 7, No. 1.

Blejer, M. and A. Cheasty (1991), "The Measurement of Fiscal Deficits: Analytical and Methodological Issues", *Journal of Economic Literature*, Vol. 29, No. 4, pp 1644-1678.

Buiter, W. (1997), "Aspects of Fiscal Performance in some Transition Economies under Fund-Supported Programs", International Monetary Fund Working Paper No. 97/31, IMF.

Buiter, W. (2004), "A small corner of intertemporal public finance. New developments in monetary economics: two ghosts, two eccentricities, a fallacy, a mirage and a mythos", CEPR, discussion paper 4407, June.

Canzoneri, M., R. Cumby and B. Diba (2002), "Should the European Central Bank and the Federal Reserve Be Concerned about Fiscal Policy?", Paper presented at the Federal Reserve Bank of Kansas City's symposium on Rethinking Stabilization Policies, August.

Carlstrom, Ch. And T. Fuerst (2000), "The Fiscal Theory of the Price Level". Federal Reserve Bank of Cleveland, Economic Review, Quarter 1.

Christiano, L. and T. Fitzgerald (2000), "Understanding the Fiscal Theory of the Price Level", Federal Reserve Bank of Cleveland, Economic Review, Quarter 2.

CIDE and ITAM (2003), *Análisis de las Finanzas Públicas en México,* Editado por Foro Consultivo de la Ciencia y el Consejo de Ciencia y Tecnología. México D.F.

Dalsgaard, T. (2000), "The tax system in Mexico: a need for strengthening the revenue-raising capacity", OECD Economics Dept. Working Paper ECO/WKP(2000)6, OECD.

Dupor, B. (2000), "Exchange rates and the fiscal theory of the price level" Journal of Monetary Economics 45.

Guidotti, P. (2002), "On Fiscal Rules in Latin America". Presented at the IMF/World Bank Conference on Rules-Based Fiscal Policy in Emerging Market Economies.

Hamilton, J. Y M. Flavin (1986), "On the limitations of government borrowing: a framework for empirical testing", *American Economic Review*, 76, pp. 808-819.

Hernández Trillo F. and Alejandro Villagómez (2000), "The Structure of Public Debt in México", IADB working paper R-42, Also in *Revista de Análisis Económico*, Summer, 2001, Chile.

Hernández Trillo, F. Alberto Díaz C. and Rafael Gamboa (2001), "Bailing-out States in Mexico", In *Eastern Economic Journal*. Summer.

Hernandez Trillo, F and Andrés Zamudio C. (2004), *Evasión Fiscal en México: el caso del IVA,* Sistema de Administración Tributaria, México, www.sat.gob.mx

International Monetary Fund, (2002), "Assessing Sustainability", Policy Development and Review Department, mimeo.

Kocherlakota, N. and Ch. Phelan (1999), "Explaining the Fiscal Theory of the Price Level", Federal Reserve Bank of Minneapolis, Quarterly Review, Fall.

Levy, Santiago and Georgina Kessel (2001), "El sur también existe", *Economía Mexicana Nueva Epoca.* México.

Lindert, Meter (2004), *Growing Public: Social expenditure since the XVIII Century,* Cambridge University Press, Great Britain.

Liviatan, N. (2003), "Fiscal Dominance and Monetary Dominance in the Israeli Monetary Experience", Bank of Israel, Discussion Paper,17, November.

McCallum, B. (2003), "Is the Fiscal Theory of the Price Level Learnable?" NBER, Working paper 9961, September.

Missale, A. (1997), "Managing the Public Debt: The Optimal Taxation Approach", *Journal of Economic Surveys.* 11(3): pp. 235-265.

OECD (1999), *Mexico Economic Survey.*

OECD (2003), *Mexico Economic Survey.*

Reinhart, C., K. Rogoff y M. Savastano (2003), "Debt Intolerance", *Brookings Papers on Economic Activity.*

Santaella, J. (2001), "La viabilidad de la política fiscal: 2000–2025" *Gaceta de Economía,* Special issue Una Agenda para las Finanzas Públicas de México, ITAM, pp. 37-65.

Scott, John (2001), "Algunas consideraciones sobre la incidencia del gasto social en México", Documento de Trabajo, CIDE.

Sen, Amartya (2000), *Development as Freedom.* Anchor, NY.

Sidaoui, J. (2003), "Implications of fiscal issues for central banks: Mexico's experience", BIS papers #20, *Fiscal issues and central banking in emerging economies.*

Sims, C. (1994), "A simple model for the study of the determination of the price level and the interaction of monetary and fiscal policy", Economic Theory.

Solís, F. and A. Villagómez (1999), "La sustentabilidad de la política fiscal en México", *El Trimestre Económico*, vol. 66.

Talvi, E. and C. Végh (2000), "La viabilidad de la política fiscal: Un modelo macro básico", in E Talvi and C Végh, eds., *¿Cómo armar el rompecabezas fiscal? Nuevos indicadores de sosteniblidad*, Inter-American Development Bank, Washington, DC.

Uctum, M. Y Wickens (1996), "Debt and deficit ceilings, and sustainability of foscal policies: an intertemporal analysis", Federal Reserve Bank of New York. Research Paper # 9615.

Wilcox, D. (1989) "The sustainability of government deficit: implications of the present value constraint", Journal of Money, Credit and Banking, 21, pp. 291-306.

World Bank (2004), Mexico Public Expenditure Review, Mimeo, July.

Woodford, M. (1995), "Price Level Determinacy without Control of a Monetary Aggregate", Carnegie-Rochester Series on Public Policy.

_____ (1996), "Control of the Public Debt: a Requirement for Price Stability?", NBER, Working Paper 5684.

_____ (2001), "Fiscal Requirements for Price Stability", NBER, Working Paper 8072, January.