GOVERNMENT REVENUE FROM FINANCIAL REPRESSION

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ABSTRACT

This paper presents an analysis of the theoretical
underpinnings and the relevance of the phenomenon of financial
repression from a public-finance perspective. The analysis
explicitly accounts for the interaction between capital controls
and financial repression. The proposed empirical estimate of the
revenue from financial repression is based on the difference
between the domestic and the foreign cost of borrowing of the
government. The correlations of the revenue from financial
repression with inflation, exchange rates and per-capita income
are discussed.

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1 Introduction

Most developing countries impose controls on international capital flows, coupled with controls on domestic financial intermediaries. These phenomena have been extensively studied in development economics, and are labelled "financial repression". Analyses of the effects of financial repression, like those by McKinnon (1973), Shaw (1973) and Fry (1988), point to the inefficiencies arising from controls on international asset trade and domestic financial intermediaries and set forth clearcut policy prescriptions, which have been followed, under the auspices of international institutions, by a number of countries. These prescriptions envisage a removal of controls on international asset trade, together with the removal of price and quantity rationing in domestic financial intermediation.[1]

While the theoretical analyses of the effects of controls on financial markets are clearly correct, their direct applications to policy have neglected the presence of important additional distortions in the economy. More satisfactory approaches to financial liberalization should explicitly account for these pre-existing distortions, including the ones associated with government spending and taxes. In particular, considering the effects of government revenue constraints and the distortions associated with different forms of taxation would provide a more complete assessment of the costs and benefits of financial controls and financial liberalization.[2]

In this paper we provide empirical evidence to highlight the interactions of financial controls and tax policies. Indeed, we regard government-imposed controls on domestic financial markets as a form of taxation, and we estimate the amount of revenue that developing countries have obtained from it. Our approach is a natural extension of the ideas of Phelps (1973) and his followers, who pioneered the study of government policies and their distortions from the perspective of public finance.[3] We do not, in this paper,

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[1] Recent work has stressed the importance of the appropriate sequencing of liberalization policies. See for example Buffie (1985), Corbo and de Melo (1987) and Edwards (1984).

[2] See, for analysis of public-finance aspects of the distortions in financial markets, Chamley and Hussain (1988), Dornbusch and Giovannini (1988), Dornbusch and Reynoso (1989), Easterly (1989), Giovannini (1988), Tornell (1988). For public finance analyses of trade protection in LDCs see in particular Mitra (1987) and Heady and Mitra (1987).

[3] Fischer (1982), for example, estimates the government revenue from the inflation tax.

attempt to provide any normative statement on whether or not liberalization is a desirable strategy to follow.[4] Our more limited objective is to point to the first-order impact of liberalization policies on government budgets. The size and nature of government revenue from financial repression will indicate the extent to which liberalization policies affect public finances, and will raise the question of adjusting the budget by changes in taxation or government spending.

Section 2 illustrates the budgetary impact of financial repression. The exposition highlights the linkage with international capital controls, and characterizes the choice between these distortions and other types of taxes available to governments. Section 3 describes the methodology of the empirical analysis, and our data set, which comprises 24 countries, over the 1972–1987 period. Section 4 presents the results of the empirical analysis, while Section 5 offers some concluding remarks. The Appendices explain the calculations and report all data sources used in the empirical work.

2 Interest-Rate Distortions and Public Finances

In this section we illustrate the effects of "financial repression" on government budgets, and ask whether or not it could arise from optimizing behavior by governments. "Financial repression" is not a precise concept since the controls on financial markets imposed by developing countries' governments are typically the sum of price and quantity restrictions. A typical set of restrictions includes the prohibition on domestic residents from holding financial assets abroad, coupled with compulsory quotas of government bonds in financial intermediaries' portfolios. Since these quantitative restrictions are not administered efficiently (both prices and quantities are typically fixed), they give rise to monopoly profits which do not accrue directly to the government. Hence the conditions that make quantity restrictions equivalent to price restrictions are likely not to occur in most developing countries.

To illustrate the effects of financial repression we set aside the

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[4] This would require working out the general-equilibrium effects of liberalization, including the effects on the volume and composition of tax revenue.

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above-mentioned inefficiencies of its administration, and therefore assume that it works like a tax, whose revenue (at least in the first case we look at) is entirely appropriated by the government.[5] This approach is justified by the objective of emphasizing the effects of financial repression on the government budget and considering financial repression as part of an overall optimal taxation problem.

2.1 Financial Repression as Optimal Tax Policy

The essential features of financial repression are the distortions on the intertemporal terms of trade faced by private individuals, and the distortions in their portfolio allocation decisions. These features are best highlighted in the standard two-period Fisherian model of an open economy. Consider an economy populated by identical consumers-investors maximizing a utility function of first- and second-period consumption. Government spending, which occurs in the first period only,[6] also yields utility (but the utility function is separable in consumption and government spending). In the first period individuals purchase the consumption good, domestic assets and foreign assets. In the second period they use the net-of-tax return on their investment, and their second-period endowment, to purchase the consumption good. Since the country is small, its own savings and investments do not affect the world rate of interest. The model is cast in real terms. The absence of nominal aggregates like the exchange rate rules out important non-neutralities from the interaction of nominal interest rate ceilings and the rate of currency depreciation and inflation—which will be discussed below in section 2.2—but does not affect the generality of the results.

We consider first the extreme case where individuals' endowment is fixed and exogenous, but the government has no means of raising revenue, except through the distortions resulting from financial repression. The government spends only in the first period, and finances its spending by borrowing domestically and abroad. Financial repression is thus represented by a tax τ on the second-

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[5]The effects of partly relaxing this assumption are also discussed.

[6]Government spending in both periods does not change the nature of the problem in any interesting way, but complicates the exposition slightly. Hence it is ruled out.

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period value of foreign assets owned by domestic residents.[7]

The consumers' problem is:

$$\max_{C_1, C_2} U(C_1, C_2) + v(G) \tag{1}$$

subject to:

$$C_1 = E_1 - (A + B) \tag{2}$$
$$C_2 = E_2 + A(1 + r^*)(1 - \tau) + B(1 + r), \tag{3}$$

for given E_1, E_2 (endowment income in the two periods), r^* (the world rate of interest), r (domestic interest rate), τ, and G (government spending). A represents holdings of foreign assets, while B are domestic government bonds. Note that in a two-period setting like this there is no important distinction between interest payments and principal repayment, and to simplify the algebra we assume the tax is levied both on interest and principal. Since there is no uncertainty or transactions costs, investors require the same after-tax return on all available assets, domestic and foreign (assets are perfect substitutes). Equilibrium in private agents' portfolios implies:

$$(1 + r^*)(1 - \tau) = 1 + r. \tag{4}$$

In other words, the tax on foreign interest income proportionally lowers the interest paid on domestic liability. Equation (4) illustrates the concept of financial repression adopted in this paper. Financial repression is a distortion that drives the domestic rate of interest below the world rate. This distortion affects public finances, and can be studied within an optimal-tax framework.

The problem (1)–(3) implies the familiar first-order condition, highlighting the effects of financial repression on the intertemporal terms of trade faced by private agents:

$$U_1(C_1, C_2) = (1 + r^*)(1 - \tau)U_2(C_1, C_2) \tag{5}$$

where the subscripts on U indicate partial derivatives with respect to the first and the second argument of the U function, respectively. The distortion apparent in equation (5) has been the subject of

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[7]Once again, the absence of imperfections and uncertainty does not induce differences between gross and net holdings of foreign assets.

much theoretical and empirical work, stressing the effects of financial repression on savings (see, for example, Fry (1982, 1988) and Giovannini (1985)). The recent evidence pointing to low elasticity of intertemporal substitution in consumption suggests that the welfare cost of this distortion should not be very high.[8] Solution of the system (2), (3), (4) and (5) gives the optimal consumption-savings decision of individuals, for given values of the tax. Notice that, since domestic and foreign investments are perfectly substitutable and yield the same net return, their shares in private portfolios are indeterminate. The solution of the consumption problem only tells us how much consumers will save (total accumulation of assets), but not the composition of the portfolios. B can be chosen freely by the government: any choice of B implies a choice of A by the private sector. The sequence of government budget constraints in periods one and two, respectively, is:

$$G \;=\; B + F \tag{6}$$
$$F(1 + r^*) + B(1 + r) \;=\; A(1 + r^*)\tau \tag{7}$$

Government spending occurs only in the first period, and is financed by domestic borrowing (B) and foreign borrowing (F). In the second period tax revenue has to equal the costs of servicing domestic and foreign loans (equation (7)). The net cost of foreign loans equals r^*, while the net cost of domestic loans, from equation (4), is $r^*(1 - \tau) - \tau$.[9] Solving (7) for F, and substituting it into (6) we have:

$$G = (A + B)\tau \tag{8}$$

Equation (8) says that interest-rate distortions generate a revenue to the government that is proportional to the total stock of assets held by investors in the first period. The optimal choice of τ can now be easily determined:[10] the government chooses G to maximize (1) subject to the private-sector budget constraints (2) and

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[8]On the other hand, financial repression might give rise to much more serious production distortions, associated with suboptimal investment in domestic productive activities.

[9]The second term is the tax on the principal. In this two period model, however, the distinction between gross $(1 + r^*)$ and net (r^*) payments is not meaningful, since capital is worthless in the second period.

[10]Since spending occurs in the first period only, dynamic inconsistency is ruled out by construction.

(3), its own constraint (8), and the private sector's intertemporal decision rule (5). The first-order condition is:

$$\frac{dv}{dG}\frac{d[(A+B)\tau]}{d\tau} = U_2(A+B)(1+r^*),\qquad(9)$$

it equalizes the marginal welfare cost of the tax with the marginal welfare gain.[11]

This model highlights the basic effects of financial repression on the government and consumers, but also raises several issues. First, financial repression may not be enforced by levying an explicit tax on domestic-residents' foreign-asset income. Developing countries' governments restrict international capital flows—thereby forcing a differential between foreign and domestic interest rates—but are not in general able to raise *any* revenue from income produced by domestic residents' foreign investments,[12] and, as we argued above, they might not be efficiently allocating the rents arising from any quantitative restrictions. These problems can be tackled by assuming that financial repression and capital controls still induce a wedge between domestic and foreign interest rates, but the government is unable to obtain revenue from this implicit tax on foreign investments' income: the quota rents become a deadweight loss.[13] The government's intertemporal budget constraint (8) is thus transformed:

$$F + B = B\tau$$

With a tax rate less than 100 percent the government would in this case want to borrow domestically at a lower rate to lend abroad ($F < 0$), in order to gain from the interest-rate differential.

This result leads to the second issue—namely, that consideration of a more general model, featuring several alternative revenue sources together with financial repression, might modify the optimal choice of financial repression characterized above. Would financial repression still be chosen by a government that followed optimal public finance rules?

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[11] The effects of the tax on savings disappear from the first-order condition, by the envelope theorem.

[12] Indeed, those very foreign investments are often motivated by the desire to evade or avoid domestic taxes. See, for example, Tanzi (1983).

[13] Alternatively, one could rely on an explicit model of international tax evasion, whereby the fraction of revenue lost to foreign investments would be determined endogenously.

Such model of an open economy with (possibly many) production technologies and (possibly many) sources of government revenue falls within the model optimal taxation with international trade surveyed, for example, by Dixit (1985, section 3.2).[14] In the presence of constant-returns-to-scale domestic production technologies, and maintaining the constraint that lump-sum income—or first-period endowment—cannot be taxed directly, the standard *production efficiency* theorem (Diamond and Mirrlees (1971)) applies: taxes can drive wedges between the marginal rate of substitution of any two commodities in consumption and the marginal rate of transformation, but they should not distort the marginal rate of transformation away from the foreign rate of transformation, which is represented by the world relative price of any two commodities. Specifically, assume that second-period goods can be produced with domestic technologies that use labor and capital, and that investment transforms first-period goods into productive capital. Then the marginal rate of transformation of first-period goods into second-period goods would equal the domestic rate of interest, and production efficiency implies that taxes should not drive a wedge between the latter and the world interest rate—the foreign marginal rate of transformation of first-period goods into second-period goods. Under these conditions output is maximized at world prices,[15] and production efficiency implies that, when there are no constraints on the choice of taxes by the government, financial repression should be avoided.

This result has two implications: first, financial repression might be justified as an efficient means to raise government revenue only if there are constraints on the types of taxes that governments can impose. We discuss these constraints below. Second, the elimination of financial repression is a justifiable policy when the government can indeed rely on a relatively broad tax base, and an efficient system of imposition. In other words, financial liberalization might require a fiscal reform to cover the revenue shortfall. The revenue from financial repression—and hence the amount of

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[14] The intertemporal nature of the model discussed here is of course fully consistent with the Arrow-Debreu setup employed by Dixit.

[15] Notice, from equation (7), that the relevant relative price of second-period goods for the government is the world rate of interest.

additional revenue to be raised after the liberalization of financial markets—is estimated in Section 4.[16]

We conclude this section with a discussion of the factors that might justify the imposition of financial repression as a means of taxation. The first is the presence of costs in the administration of alternative forms of taxation. Gordon and Levinsohn (1989), for example, suggest modeling the administrative costs associated with the use of different tax bases as fixed costs: in order to set up the necessary bureaucracy to organize, administer, and monitor a given tax, the government has to incur an initial "capital" expense. In some countries, and for certain taxes, this initial expense may be very high. Income taxes or value-added taxes, for example, can be costly to raise in developing countries.[17] Using the models discussed above one could show, trivially, that when the fixed costs required to levy other taxes are high enough, the government uses only financial repression.[18] The second factor justifying the use of financial repression is the application of distributional criteria by the government. Redistribution objectives can be achieved by taxing the return to capital, thereby inducing the production distortions illustrated above, and transferring income away from capitalists to wage earners. Finally, political considerations may favor the less transparent means of taxation that is characteristic of financial repression.

2.2   The Financial Repression Tax and the Inflation Tax

The discussion in the previous section has relied on models where money has no role. In practice, however, financial repression is typically the result of nominal interest rate ceilings that are well below the prevailing rate of inflation and currency depreciation. It

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[16]This revenue is implicit, since, as the discussion above has illustrated, it is really reflected in a fall in budgetary expenditures, rather than in an increase in revenues.

[17]Indeed, many countries (including industrial countries) estimate income taxes based on tangible wealth holdings of the taxpayers (see OECD (1988)). A more accurate, voluntary system of tax assessment with the backup of government audits might not be viable in many poor countries. Value-added taxes require an efficient system of border adjustments, as well as a sophisticated method of tax assessment based on individual producers' returns.

[18]Deviations from production efficiency are justified also when domestic production gives rise to pure profits, that are not easily taxable by the government. See Giovannini (1988) for an illustration.

is often argued, based on this fact, that the distortions in the real interest rates arising from inflation should be included in the definition of the inflation tax. This argument is incorrect, however, since the inflation-tax base is high-powered money, while financial repression affects the portfolio of non-monetary assets held by domestic residents, and the base for the financial-repression tax we concentrate on is government debt. Indeed, the models discussed in the previous section show that the presence of inflation in the economy is by no means a necessary condition for governments to be able to extract revenue from financial repression. Therefore it is appropriate to distinguish financial repression from the inflation tax.

The potential complementarities between the financial-repression tax and the inflation tax should, however, be stressed. First of all, the interest savings on government liabilities can be obtained following an inflation policy that—given nominal interest rate ceilings— implies very low real interest rates: we will consider below to what extent this proposition is borne out in the data. Second, the presence of a limited array of financial instruments and negative real interest rates increases, other things equal, money demand—i.e. the inflation tax base.[19] Another form of financial repression, the imposition of reserve requirements, directly increases the inflation tax base (by increasing demand for high powered money, whenever required reserves are in cash).[20]

For all of these reasons, it is to be expected that the inflation tax is used together with financial repression in developing countries. The complementarity between these two forms of imposition, however, will break down at very high rates of inflation. In these cases the real return on domestic investments is so heavily depressed that there is flight towards safety—represented for example by gold, dollars or other foreign assets—even if that entails substantial costs, and risks of penalties. These phenomena have been documented, for instance, by Makinen and Woodward (1990): the flight towards safety dries out financial markets *and at the same time* produces a

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[19]See Dornbusch and Giovannini (1988). In addition, it might be possible to produce examples where the production distortions induced by the inflation tax are offset by the low domestic real interest rates that result from financial repression.

[20]In several countries, required reserves are in terms of government securities.

drop in money demand: financial repression and the inflation tax become substitutes.

3 Data and Calculations

The discussion above suggests that we can measure the government revenue from financial repression as the difference between the foreign cost of borrowing and the domestic cost of borrowing. This difference is an implicit tax on domestic lenders that is often implemented with a combination of international capital controls and requirements for domestic financial institutions (often public) to hold government debt at less than market interest rates. Thus the tax revenue from financial repression equals the differential between the foreign and domestic cost of borrowing multiplied by the stock of domestic government debt.

This measure of government revenue from financial repression is a conservative one since it relates to central government only, excluding the central bank, state and local government, and government-owned enterprises whose low interest payments on their liabilities also represent budgetary savings, although indirect ones. The domestic and foreign borrowing costs are measured *ex post*. That is, the foreign borrowing cost includes the dollar interest rate on external debt, the realized change in the value of the domestic currency *vis-à-vis* the dollar, and the change in value of liabilities in currencies other than the dollar (the "dollar revaluation effect" to be described in detail below), while the domestic interest cost is the domestic-currency interest rate on domestic debt.

The sample is composed of countries considered to be "developing" at some point during the period covered, which is 1972 through 1987. Given the basic approach explained above, the selection criteria have been (i) the existence of significant foreign commercial borrowing by the central government—indicated by a stock of commercial debt outstanding and disbursed (DOD) of about $ 200 million or more[21]—and (ii) the availability of data on the stock and cost of central government domestic debt. A total of

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[21]Foreign commercial debt is defined as LIBOR-based borrowing in creditor categories 2 (financial institutions) and 6/7 (bonds floated on international financial markets) of the World Bank Debt Reporting System.

38 countries can be identified by criterion (i). Criterion (ii) reduces the coverage to 24 countries, and entails dropping primarily countries in Africa and Latin America. In addition, data are available for only part of the time period chosen for any one country.

The Appendices contain a detailed description of the data sources. The general strategy was to rely to the maximum extent possible on the same statistical sources, including the World Bank *Debtor Reporting System* (DRS) and the IMF *Government Financial Statistics*.

The same approach is used to measure foreign and domestic interest costs–namely, the calculation of an effective interest rate. For the foreign interest rate, total annual dollar interest payments (INTP$) plus the change in interest arrears as reported to the DRS by the debtor (INTA$) are taken as a percentage of average annual dollar DOD. Arrears are included because we assume that countries face given world rates of interest, thus including arrears allows us to obtain an estimate of the "normal" cost of borrowing.[22] The DRS includes in interest payments any front-end or other fees where these are known: there were no rescheduled interest payments on commercial debt in the years and countries included in our sample. Thus the nominal effective dollar interest rate ($EFFINT\$$) is:

$$EFFINT\$(t) = \frac{[INTP\$(t) + INTA\$(t)]}{[(DOD\$(t-1) + DOD\$(t))/2]}$$

where $DOD\$(t)$ indicates dollar debt outstanding and disbursed at the end of year t, and the average debt outstanding and disbursed during the year t is estimated through linear interpolation.[23] LIBOR-based borrowing of the central government only is used to determine the foreign cost—except for Algeria, Greece and India, where LIBOR-based borrowing of public corporations is used as a proxy.

For the domestic interest rate, annual local-currency interest payments on central government domestic debt ($INTP$) are taken

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[22] To the extent that actual arrears are greater than reported arrears, the normal cost of foreign borrowing—and hence the government revenue reported below—will be understated.

[23] It is possible to perform a rough check of the accuracy of our method by comparing the effective interest rate we obtain with LIBOR. This comparison indicates that our estimates covary closely with LIBOR. Discrepancies are likely to arise because our estimates, correctly, include any commercial fees as part of the cost of the loan, and other reasons discussed elsewhere in this section.

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as a percentage of the average domestic debt outstanding. Typically, governments do not incur arrears on their domestic debt; but, to the extent that they do, arrears are another form of financial repression, and are correctly included with out effective-interest-rate method. Thus the nominal effective domestic interest rate ($EFFINT$) is:

$$EFFINT(t) = \frac{INTP(t)}{[(DOD(t-1) + DOD(t))/2]}$$

where $DOD(t)$ denotes total—including holdings of monetary authorities—domestic debt outstanding and disbursed (expressed in domestic currency).[24] The taxable status of interest on internal government debt is ignored, since it can differ by debt holder as well as by debt instrument. Furthermore, it is arguably more transparent to consider revenues and expenditures separately (and therefore preferential treatment becomes a separate tax expenditure).

An alternative to the calculation of these effective interest rates would be to compute the weighted value of the contractual interest rates on foreign and domestic debt, taking into account the outstanding stock and maturity of each category as well as changes in the applicable interest rate over time. Much of the information required for this method is however lacking, especially on the domestic side, where in many countries a breakdown of all the different types of government bonds, together with their contractual interest rates, is simply not available. Hence the potential for error of our method is much smaller. Independently of problems of data availability, our effective rates can differ from contractual rates for two reasons. First, there might be fluctuations in the timing of interest payments and in the declaration of foreign arrears. And second, there may be differences between the actual average stock outstanding and our estimates based on the average of end-of-period stocks.

In addition to the foreign interest rate on dollar-denominated debt, there are two other components to the foreign cost of borrowing. One is of course the average annual change in the value

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[24]The holdings of monetary authorities are included in the calculations of the effective interest rate because the treasury normally pays interest to the central bank on interest-bearing debt.

of the domestic currency *vis-à-vis* the dollar, which is used to aggregate country debt data. This indicates the change in the local-currency value of the stock of external dollar-denominated debt. The other is the revaluation (in dollars) of external debt denominated in non-dollar currencies. It is captured by subtracting net dollar disbursements from the change in dollar DOD (adjusted for any rescheduling) from the beginning to the end of the year.[25]

Finally, the government revenue from financial repression is calculated by computing the differential between foreign borrowing costs and the domestic borrowing cost, times the average annual stock of domestic debt. In this calculation, an important adjustment has been made to central government domestic debt, namely, the elimination of debt held by the monetary authorities. Even though the central bank receives interest on its holdings, the acquisition of government debt is financed by increases in the money supply, and not borrowing within a resource-constrained environment. Thus it has little to do with the existence or absence of financial repression and is different from, rather than a substitute for, foreign borrowing. Moreover, the interest rate paid on government debt held by the central bank is not really a cost, since interest receipts contribute to central bank profits which are typically returned to the budget.

Aside from restricting the government sector to central government, there are three other reasons why the estimates of the revenue from financial repression we report may be understated. First, we disregard the second-order effect of changes in the exchange rate on foreign interest payments. Second, arrears on foreign debt may be understated. And third, the stock of non-interest-bearing domestic government debt may be underreported: its inclusion would lower the estimate of the effective interest rate, thus raising the implicit tax on domestic lenders. It would also increase the estimate of the financial-repression tax base, thus raising the revenue from financial repression.

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[25]These items can be positive or negative but have typically added to the foreign cost of borrowing. Both of these non-interest elements represent accrued cost, of which only part is amortized annually.

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4 Results

As we explained above, the measure of the revenue from financial repression used here is the *ex-post* differential between foreign and domestic interest rates, times the stock of government debt held outside the central bank. This measure, however, cannot be used as a formal statistical test of the presence or absence of financial repression. The reason is that surprise exchange-rate changes would significantly affect the relative cost of domestic debt even in countries where financial markets are relatively free, and capital controls are virtually absent. In a small sample, our estimate of revenue from financial repression would be biased towards rejection of the null hypothesis (absence of controls) whenever devaluations have occurred—and have been greater than anticipated. In the cases where devaluations have not occurred, or have been less than anticipated, our measure would be biased in the opposite direction, since domestic liabilities would, in the sample, be more costly than foreign liabilities: this is the well-known "peso problem".[26] We refrain from carrying out formal statistical testing also because the time coverage of the countries in the sample varies widely. In any case, however, the data we report do represent budgetary savings to central governments—whether voluntary or involuntary.

Tables 1 and 2 contain the estimates of the annual revenue from financial repression for each of the countries, in the years for which data are available. We measure this revenue both as a fraction of GDP (table 1) and as a fraction of total central government revenue (table 2). The tables also report the average revenue by country across years. The last column on the right of table 1 reports the average financial repression *tax rate*, that is the difference between foreign and domestic interest costs.

Table 1 shows that revenue from financial repression has ranged from 0 in Indonesia, where domestic government debt is held exclusively by the central bank, to 6 percent of GDP in Mexico and Zimbabwe, where the effect of unanticipated exchange-rate changes probably plays an important role, due to the short sample. In seven countries it exceeds 2 percent of GDP, and in five countries

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[26]See Lizondo (1983).

it exceeds 3 percent. The significant cross-country variation is accompanied by substantial time-variation.

Table 2 shows that financial repression has been as high as 40 percent of government revenue in Mexico (where in 1987 it was as high as 83 percent of GDP, see below for discussion), and about 20 percent in India, Pakistan, Portugal, Sri Lanka, and Zimbabwe. In general, tables 1 and 2 suggest that in many countries a financial liberalization will generate a substantial budgetary problem, and should be accompanied by a fiscal reform aimed at substituting for the revenue loss.[27]

The possible effects of financial liberalization can be gauged from table 3, reporting the breakdown of ownership of domestic government debt. For completeness, the table includes central-bank holdings, even though those are not included in the calculation of the financial-repression tax base. The second column in the table includes holdings of deposit money banks only—a subset of domestic financial intermediaries. The table shows that, for the years where we have data, on average 24 percent of total government domestic debt, and 37 percent of domestic debt in the hands of the public, is held by deposit money banks. The holdings of other financial institutions are included in the column labelled "other", but unfortunately could not be singled out for lack of data. Financial intermediaries, and among them deposit money banks, typically offset artificially low rates on their assets by paying low rates on their liabilities—savings and time deposits: this is an example of the translation of the financial repression tax. In these cases the effect of a financial liberalization is an increase in the cost of liabilities to financial intermediaries, since domestic residents can access higher-yielding portfolio investments elsewhere. In absence of an increase in interest rates on government securities, financial intermediaries would thus risk bankruptcy, and would possibly require public bailout. Hence the likely budgetary impact of financial liberalization is either the cost of the bailout of these intermediaries, or an increased cost of debt servicing, which would occur if government securities were mostly short-term.

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[27] On this topic, see, for example, Thirsk (1990). This conclusion is based on the assumption that the world rate of interest paid by the government on its foreign debt is exogenous, *i.e.* the small country assumption.

Tables 4 and 5 report the two components of the revenue from financial repression: interest-rate differentials and changes in exchange rates (inclusive of the "dollar revaluation effect"). In the majority of countries the time-variation of exchange-rate changes account for most of time-variation of the gains from financial repression. This is confirmed by the decomposition of the variance (over the sample for each country) of financial repression: on average the variance of the exchange-rate component is three times the variance of the interest-differential component.[28] We do not report separate data on the dollar revaluation effect since it is small (less than one-half of one percent) for most years and for all countries if averaged over time. This is due to the fact that in the majority of countries almost all foreign commercial debt is denominated in dollars.[29]

The evidence in tables 4 and 5 is suggestive of the way financial repression works in practice. Domestic interest-rate ceilings are maintained with high rates of currency depreciation and high domestic inflation. With free capital markets, this source of revenue would be limited, since expectations of exchange-rate changes would be reflected in the differential between domestic and foreign interest rates. Table 6 reports information about the geographic and time distribution of financial-repression tax revenue. The data in the table should be interpreted cautiously, since the non-uniform time coverage of the countries in the sample makes regional averages contain different time periods in different regions, while time-averages contain different countries in different subperiods. Yet table 6 seems to reveal a number of suggestive facts, worthy of closer inspection in future research: financial repression appears to be more relevant in African countries (excluding North Africa), and least important in Asian countries. It is also much more evident in the recent years (1979–1987), than in the early part of the sample. This last phenomenon is associated with the growth of fiscal imbalances among LDCs in the 1980s.

In section 2.1 we showed that financial repression would not be used by an optimizing government, if all the assumptions of the

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[28]The results of this variance decomposition are available from us on request.

[29]We verified this by looking at data on the currency of denomination of external debt from the World Bank DRS. Detailed data on the dollar revaluation effect are available on request.

Diamond-Mirrlees optimal tax problem are satisfied, and in particular if a government does not face costs in the use of certain types of taxes. We also argued that in poorer countries these costs are likely to be more significant; therefore taxes that distort production—like financial repression—might be used more frequently. To verify this proposition we compute the correlation between per-capita income and the revenue from financial repression.[30] Figure 1 shows cross-country correlation coefficients, computed for each year in the sample-period. Once again, note that since the time-coverage of each country differs, the number of elements in each year differs as well: for each year, the figure reports the sample size in parenthesis.

The correlation between per capita income and financial-repression tax revenue as a fraction of GDP tends to be positive, even though it is very low for all years, except 1985. The correlation between per-capita income and financial-repression tax revenue as a percentage of total government revenue is instead often negative. The latter is closer to our predictions, while the former is not. The difference between the two histograms is in part explained by the positive correlation between total tax revenue as a fraction of GDP and per-capita income: with higher per-capita income total tax revenue increases more than the revenue from financial repression, and therefore the financial-repression tax revenue accounts for smaller fractions of total tax revenue.

To highlight the contribution of each country in Figures 2 and 3 we report scatter plots of time averages—which should also to some extent dampen the effects of exchange-rate surprises. Figure 2 shows a positive but very small covariation of the revenue from financial repression as a fraction of GDP and per-capita income, while figure 3 show a negative covariation between the revenue from financial repression as a fraction of total revenue and per-capita GDP. On the whole, Figures 1 to 3 do not seem to indicate the existence of a clearly-noticeable inverse relation between per-capita income and financial-repression, even though we find that the latter decreases somewhat in importance as a source of tax revenue in richer countries. We would expect results that more

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[30] Per capita income is per-capita GDP expressed in US dollars.

strongly support our predictions if the sample included industrial countries.

The relationship between inflation and financial repression was discussed in section 2.2. Here we report the correlations between the financial-repression tax revenue and both inflation and changes in nominal exchange rates. As shown in figures 4 and 5, the correlations are all positive, except for the years 1984 and 1985. A comparison of the two figures seems to suggest that the revenue from financial repression is however more highly correlated with the change in the nominal exchange rate than with the rate of inflation.[31]

Figures 6 and 7 report the scatter plot of the time-averages. The figures show the presence of two outliers: Mexico and Brazil. In the former country both inflation and the revenue from financial repression are very high; in the latter country the inflation rate is very high but the revenue from financial repression is lower than in the rest of the sample. The Mexico data cover the period 1984–1987, during which there were extensive trade and foreign exchange controls. The very high government revenues from financial repression in the last two years of this period follow the drop in oil prices in 1985. They are due to the substantial and largely unanticipated inflation and exchange-rate devaluation.[32] The Brazil data cover the period 1983–1987. They reflect the flexible exchange rate regime, as well as the sophistication of the country's financial markets.[33] The combination of high inflation and low financial repression in Brazil is suggestive of the difficulties of rasing revenue from financial repression in countries where markets are relatively free and surprise exchange-rate devaluations are not possible. This

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[31] An issue we have not addressed directly is the correlation of financial repression with the *real* exchange rate, that is the nominal exchange rate corrected for the relative price levels. The reason for this omission is that, in the absence of short run "surprises" in exchange-rate changes, we have no strong theoretical priors about what this correlation should be. Of course, when exchange–rate surprises are taken into account, we expect this correlation to be high due to short–run price stickiness, and the fact that financial repression is correlated with the nominal exchange rate. Indeed, we have found that the year-to-year variation of financial repression is relatively highly correlated with the change in the real exchange rate. When we compute time-averages, we find that the cross–country correlation of financial repression and the change in the real exchange rate is about 30 percent—for both measures of revenue.

[32] See Easterly (1989). He finds that the total tax on financial intermediation was 2 percent of GDP in 1985, and 9 percent in 1986.

[33] See, for example, Ghosh (1990) for a description of financial markets in Brazil.

high elasticity of the financial repression tax base to the tax rate, would manifest itself at very high rates of inflation—as we argued above in section 2.2.

Finally, to illustrate the extent to which domestic interest rates do not reflect subsequent exchange-rate changes we plot in figure 10 the cross-country correlations between interest-rate differentials (dollar interest rates on foreign debt minus domestic currency interest rate on domestic debt) and exchange rate changes (percent increase in the price of the dollar in domestic currency terms). If domestic interest rates were allowed to reflect expectations about exchange changes, and these expectations were on average correct, this correlation should be negative, and close to -1. We find instead that over many years in the 1970s the correlation is positive and rather large. It turns negative, and close to -1 in the 1980s, in part because of the inclusion of an outlier, Brazil, whose experience is discussed above.

5   Summary and Concluding Remarks

This paper has presented an exploratory analysis of the theoretical underpinnings and the empirical relevance of the phenomenon of financial repression from a public-finance perspective. We have shown that financial repression is not an efficient policy when countries face no constraints in the use of different forms of taxation. However, whenever there are costs of administering certain types of taxes or whenever income distribution becomes an objective of the government, an implicit tax on domestic financial markets may be part of an optimal taxation program. We also argued that there should be complementarities between the financial-repression tax and the inflation tax. Throughout, we relied on explicit open economy assumptions, and stressed the interactions of capital controls and financial repression.

Our empirical investigation suggests that the revenue from financial repression can be quite substantial: the unweighted cross-country average is about 2 percent of GDP and 9 percent of total government revenue (excluding the revenue from financial repression), but varies significantly across countries. Hence, reforms

aimed at liberalizing financial markets and removing capital controls will in many countries pose the following questions: what is the size of the budgetary impact of the liberalization, and how can the revenue shortfall resulting from the liberalization be dealt with?

We also uncovered convincing evidence of some complementarity between inflation and financial repression: in general countries with higher rates of inflation, and therefore higher rates of currency depreciation, tend to raise more revenue from financial repression. This occurs because the relative costs of domestic borrowing is influenced by the rate of depreciation of the domestic currency, since domestic nominal interest rates are normally fixed administratively.

This *prima-facie* evidence on the quantitative importance of financial repression opens in our view important questions for research and policymaking. First, it would be useful to carry out a theoretical assessment and empirical estimation—based on general-equilibrium analysis—of the production distortions generated by financial repression. Second, from the policymakers' viewpoint, it is important to identify, at the country level, those reforms of tax systems that would replace financial repression with more efficient means of raising revenue.

Appendix A Data Sources

In order to achieve maximum cross-country comparability, we try to use the same statistical sources. Calculations of the foreign cost of borrowing are based on external debt statistics from the World Bank *Debtor Reporting System*. To the extent possible, stocks of central government domestic debt and holdings of these stocks by the monetary authorities and deposit money banks are taken from the IMF *Government Financial Statistics* (GFS). This is possible for 8 countries, and the preferred concept of consolidated central government is used for all these countries except Jordan, where only budgetary data are available. GFS data on total interest payments are broken down into their foreign and domestic components by locating a country-specific source with this information. Total interest payments from this country source approximate, but do not always equal, the GFS total.

For another 7 countries, country-specific data on the domestic debt stock are quite close—within ten percent—to GFS data, and the domestic interest payments used are consistent with this debt stock. For another 6 countries, domestic debt stocks are significantly different—more than ten percent—from GFS data (higher for 3 and lower for 3) but are the only central government domestic debt figures for which associated interest payments could be identified. Finally, GFS has no data on domestic debt for 3 countries (Algeria, Mexico and Portugal) and therefore direct comparison with GFS standard definitions is not possible. Again, budgetary data are occasionally used when consolidated accounts, which include social security and extra-budgetary funds, are not available. Country-specific sources for these data and central government revenues are shown in Appendix B. Data on GDP, population, and the GDP deflator are also taken from GFS, and exchange rates are from the IMF *International Financial Statistics*.

Below we describe in detail the calculations performed to obtain the government revenue from financial repression, and the sources used for each country. For each country we prepared a worksheet, whose columns contain the years for which data is available, and rows contain the items reported below.

LINE # ENTRIES	SOURCE OR FORMULA
1. Total domestic debt outstanding and disbursed	IMF *Government Finance Statistics* (GFS) and Country Source A
2. Domestic Debt held by Monetary Authorities	GFS and Country Source B
3. Interest payments on # 1: a) Total from GFS b) Domestic c) Foreign d) Total of b) and c)	 a) GFS b) Country Source C c) Country Source C d) # 3a and # 3b
4. Effective Domestic Interest Rate	# 3a divided by $(\#1(t) + \#1(t-1))/2$
5. Total Central Government Libor-based External Debt (US$,000)	World Bank Debtor Reporting System (DRS) Table 2 Creditor types 2,6, & 7
6. Marginal Foreign Central Government Interest Rate on # 5	World Bank DRS
7. Average Effective Foreign Central Government Interest Rate	Interest payments from DRS Table 2 plus change in reported interest arrears (from DRS intermediate spreadsheets) divided by annual average of # 5
8. Exchange Rate, Average Annual *LC*/$	*International Financial Statistics* (IFS)
9. Percent change in # 8	$(\#8(t) - \#8(t-1))/\#8(t-1)$

10. Dollar Revaluation Cost — World Bank DRS Table 2, column 9 (adjusted to eliminate the effects of reschedulings) at t divided by column # 1 at $t-1$

11. Foreign Cost of Borrowing — $\#7 + \#9 + \#10$

12. Cost Difference — $\#11 - \#4$

13. Revenue from Financial Repression — $\#12 * [(\#1(t) - \#2(t)) + (\#1(t-1) - \#2(t-1))]/2$

14. GDP — IFS

15. Total Central Government Revenue — GFS and Country Source D

16. Revenue as percent of GDP — $\#13/\#14$

17. Revenue as percent of total tax revenue — $\#13/\#15$

18. GDP Deflator — IFS

19. Inflation — Percent change in # 18.

20. Per Capita Income — IFS

Appendix B   Country Sources

Country Source A

Algeria	Data base from World Bank country desk.
Brazil	Data base from World Bank country desk.
Colombia	*Informe Financiero Vagencia de 1984*, published by the Controlor General; GFS.
Costa Rica	1971–1981, from *Situation Fiscal de Costa Rica* January 1983; published by the Departmento de Estudios Economicos; 1981–1984 from GFS and the *Boletin Estadistico* published by Banco Central de Costa Rica.
Greece	Economic Research Division, Central Bank of Greece.
India	The Reserve Bank of India, Occasional Papers June 1987, pp. 63-64 (figure referred to as GAIL)
Jamaica	*Statistical Digest*, Bank of Jamaica Research & Dev't Division, various years.
Jordan	1985-1987 from the *Monthly Statistical Bulletin* published by the Central Bank of Jordan, January 1989.
Malaysia	*Ministry of Finance Economic Report*, 1981–82 & 1986–87; GFS.
Mexico	*Report to Congress*, 1989 and data from World Bank country desk.
Panama	*Informe del Controlor General de la Republica*, October 1983 and March 1988.
Papua New Guinea	*Quarterly Economic Bulletin*, Bank of Papua New Guinea, September 1988.

Philippines	*Budget Receipts & Expenditures Pursuant to the Program of Government as Approved by the President*, various years.
Portugal	*Banco de Portugal, Report of the Board of Directors for the Year*, various years.
Thailand	*Thailand Statistical Yearbook*, 1981, 1984 & 1987–88; published by the National Statistical Office.
Tunisia	World Bank country data.
Turkey	Quarterly report submitted by the World Bank Resident Representative and country desk data base for consolidated central government.
Zimbabwe	Ministry of Finance, *Financial Statements*, annualized.

Country Source B

Algeria	Same as Source A
Brazil	Same as Source A
Costa Rica	Same as Source A, Table entitled Credito Bruto.
Greece	Same as Source A.
India	Reserve Bank of India, *Report on Currency & Finance*; 1986-87 Edition, Statements 90 & 86; 1978-79 Edition, Statements 79 & 83
Mexico	Same as Source A.
Papua New Guinea	Same as Source A.
Portugal	Same as Source A.
Tunisia	Same as Source A.
Turkey	Same as Source A.

Zimbabwe   Same as Source A.

Country Source C

Algeria   Same as Source A less foreign interest payments
                per DRS.

Brazil   Same as Source A.

Colombia   Same as Source A.

Costa Rica   Same as Source A.

Greece   Same as Source A.

India   Same as Source A, pp. 72–73.

Indonesia   Same as Source A.

Jamaica   *Financial Statements & Revenue Estimates as
                Presented to the House of Representatives*, com-
                piled by the Ministry of Finance and Planning
                (various years).

Jordan   Central Bank of Jordan, *Monthly Statistical Bul-
                lettin.*

Korea   *Korea Statistical Yearbook*, 1987, p. 505, pub-
                lished by the National Bureau of Statistics.

Malaysia   *Ministry of Finance Economic Report*, various is-
                sues.

Mexico   Same as Source A.

Morocco   Unpublished data from the Morocco Ministry of
                Finance, per World Bank country desk.

Pakistan   *Budget in Brief*, Gov't of Pakistan, Finance Di-
                vision, Islamabad (various years).

Panama   Same as Source A.

Papua New Guinea	1984-1987 From the Bank of Papua New Guinea *Economic Bulletin*; 1975-1983 *PNG Ministry of Finance Estimates of Revenue & Expenditure.*
Philippines	Same as Source A.
Portugal	Same as Source A.
Sri Lanka	Country Economic Memorandum; Report #4482-CE; entitled *An Interim Assessment of Experience & Priorities*, May 4, 1983.
Thailand	Same as Source A.
Tunisia	Same as Source A.
Turkey	Ministry of Finance per World Bank country desk; also unpublished spreadsheet provided by World Bank Country Desk.
Zaire	Data from IMF country desk.
Zimbabwe	Same as Source A.

Country Source D

Algeria	Same as Source A.
Brazil	IFS for 1983–86; country desk for 1987.
Mexico	Same as Source A.
Panama	GFS through 1985, IFS thereafter.
Tunisia	Same as Source A.

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Table 1: Financial Repression Tax Revenue
(Percent of GDP)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	AVERAGE	IMPLICIT TAX RATE
Algeria			5.0	0.6	4.5	2.5	0.9	3.0	4.0	7.0	6.3	5.3	5.8	6.1	2.4	6.8	4.30	10.6
Brazil												4.7	-1.0	0.0	-0.8	-0.5	0.48	13.4
Colombia									0.2	0.2	0.2	0.3	0.4				0.24	22.4
Costa Rica	0.1	0.1	2.6	1.0	0.3	-0.6	1.2	-0.3	-1.6	18.2	5.6	2.2	1.4				2.33	25.1
Greece			1.2	1.2	0.9	0.2	-0.1	0.5	2.8	5.6	3.5	4.8	3.8	6.3			2.53	16.0
India									-0.1	3.1	3.5	3.3	3.5	3.9			2.86	11.0
Indonesia					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.00	0.0
Jamaica									1.3		1.5						1.38	7.4
Jordan							-0.6	0.5	0.5	2.4	1.4	0.8	1.6	0.7	-1.0	-0.4	0.60	7.2
Korea				0.5	-0.0	-0.1	-0.1	-0.1	0.5	0.7	0.8	0.6	0.4	0.6	-0.1	-0.6	0.25	6.0
Malaysia			1.6	-3.5	2.5	-0.9	-1.9	-1.5	1.5	3.1							0.12	0.5
Mexico													0.5	0.8	10.8	11.0	5.77	45.8
Morocco						0.3	-0.6	-0.1	1.1	5.5	2.9	3.7	4.7	3.3			2.31	16.1
Pakistan											3.6	2.9					3.23	25.3
Panama						0.1	0.3	0.5	1.3	1.3	2.1	0.9	0.9	0.6	0.3	-0.6	0.69	4.4
Papua New Guinea										0.4	1.1	0.9	0.7	0.8	-0.5	-0.7	0.40	5.6
Philippines				0.4	0.2	-0.0	0.2	0.1	0.2	0.5	0.6	1.3	1.6	0.3	0.0		0.45	11.9
Portugal							0.5	0.7	0.7	5.6	5.7	4.8	4.8	3.4	-6.3		2.22	15.8
Sri Lanka										4.7	2.2	3.3					3.40	14.5
Thailand					-0.0	0.0	0.0	0.1	0.5	1.2	0.9	0.2	0.5	1.7	-0.9		0.38	4.3
Tunisia							-0.1	0.3	1.4	3.5	3.5	2.1	2.4	1.3	-0.5	0.9	1.49	13.4
Turkey					1.5				6.9	1.8	1.9	1.5	2.3	1.9	0.8	0.6	2.20	55.8
Zaire			0.1	0.2		0.4	0.2	1.3	0.7				0.3	0.0	0.0		0.46	54.5
Zimbabwe										5.8	4.6	9.1	6.7	7.4	-0.5		5.52	19.5
Country Average:																	1.82	17.7

Note: The Implicit Tax Rate is the annual average of the difference between the foreign and domestic costs of borrowing by the government.

SOURCE: Country worksheets as described in Appendices A and B.

Table 2: Financial Repression Tax Revenue
(Percent of Central Government Revenue)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	AVERAGE
Algeria			11.7	1.4	12.1	6.1	2.5	8.1	10.6	16.1	16.9	14.2	14.6	16.2	7.9	21.5	11.42
Brazil												18.2	-4.3	0.0	-3.7	-2.3	1.57
Colombia									1.2	1.7	1.6	2.5	3.5				2.11
Costa Rica	0.9	0.7	14.2	5.8	1.9	-3.6	6.3	-1.8	-8.8	102.3	32.2	9.8	6.2				12.76
Greece			4.6	4.3	3.0	0.6	-0.4	1.5	9.1	19.2	10.4	12.5	10.6	17.6			7.76
India									-0.9	25.3	27.8	26.6	26.8	28.6			22.38
Indonesia					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.00
Jamaica									4.4		5.1						4.74
Jordan							-2.3	2.3	2.5	9.7	5.2	2.8	6.2	2.6	-3.6	-1.3	2.40
Korea				3.2	-0.0	-0.4	-0.4	-0.3	2.8	3.6	4.4	3.0	2.3	3.2	-0.3	-3.4	1.36
Malaysia			7.9	-15.4	11.6	-3.7	-8.1	-6.8	5.8	11.1							0.31
Mexico									4.6	20.7	10.8	14.3	3.4	4.6	68.1	82.6	39.65
Morocco						1.2	-2.4	-0.3					18.4	12.8			8.89
Pakistan											22.7	18.3					20.50
Panama						0.3	1.2	1.8		4.9	7.5	3.0		2.0	1.1	-2.1	2.49
Papua New Guinea										2.0	5.4	4.3	3.1	3.7	-2.2	-3.0	1.90
Philippines				2.9	1.6	-0.2	1.2	1.1	1.3	4.4	5.0	11.0	15.0	3.0	0.4		3.88
Portugal							1.9	2.5	2.2	17.0	17.6	13.5	14.2	10.3	-16.9		6.93
Sri Lanka										27.1	13.4	17.2					19.24
Thailand					-0.3	0.1		0.8	3.7	8.1	6.4	1.4	3.2	10.8	-6.0		2.57
Tunisia								0.9	4.8	11.9	11.0	6.7	7.0	4.1	-1.4	3.1	4.79
Turkey									31.1	8.0	7.1	7.6	15.3	10.6	4.4	3.1	10.89
Zaire			0.4	0.7	8.5	2.4	1.3	7.2	3.0				1.2	0.2	0.1		2.48
Zimbabwe										22.9	15.8	30.4	21.0	26.3	-1.6		19.13

Country Average: 8.76

Table 3: Distribution of Holdings of Government Domestic Debt
(Percent)

	Time Period (a)	Central Bank	Deposit Money Banks	Other	
Algeria	1974-87	18.7	56.2	25.1	
Brazil	1983-87	46.9	N/A	53.1	(b)
Colombia	1980-84	47.3	N/A	52.7	(b)
Costa Rica	1972-83	19.0	20.1	61.0	
Greece	1974-81	21.7	26.2	52.2	
India	1980-85	23.1	7.4	69.5	
Indonesia	1976-80	100.0	0.0	0.0	
Jamaica	1980/1982	60.3	14.1	25.7	
Jordan	1978-87	46.3	36.0	17.7	
Korea	1975-87	23.9	37.5	38.6	
Malaysia	1974-81	4.4	23.2	72.4	
Mexico	1984-87	53.7	19.1	27.2	
Morocco	1977-85	10.6	56.2	33.2	
Pakistan	1982-83	43.5	26.5	29.9	
Panama	1977-78	0.0	33.7	66.3	
Papua New Guinea	1981-87	18.3	49.6	32.1	
Philippines	1975-86	51.6	23.0	25.4	
Portugal	1983-86	46.9	10.7	42.4	
Sri Lanka	1981-83	32.4	20.2	47.4	
Thailand	1976-86	43.0	34.3	22.7	
Tunisia	1978-87	0.0	55.0	45.0	
Turkey	1980-87	40.3	N/A	59.7	(b)
Zaire	1974-80, 84-86	92.8	6.8	0.4	
Zimbabwe	1981-86	16.8	18.4	64.8	
Country Average: (c)		34.6	27.3	38.0	

Note: (a) Years over which average holdings are calculated. Due to data limitations on holdings of deposit money banks, the time period may differ from tables 1 and 2.

(b) Includes holdings of deposit money banks

(c) Excludes Brazil, Colombia, and Turkey.

SOURCE: Country worksheets as described in Appendices A and B.

Table 4: Financial Repression Tax Revenue due to Interest Rate Differentials
(Percent of GDP)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	AVERAGE
Algeria			2.5	2.9	2.3	2.1	1.7	4.4	4.0	3.5	4.4	3.6	4.3	4.8	4.4	3.2	3.44
Brazil												-4.6	-10.0	-14.4	-8.4	-11.4	-9.75
Colombia									0.0	0.0	0.0	0.0	0.0				0.03
Costa Rica	0.1	0.1	0.4	0.2	0.3	-0.6	1.2	-0.3	-1.6	1.0	1.2	1.3	0.6	-0.3			0.31
Greece			1.0	0.3	-0.9	0.0	-0.1	0.3	0.6	1.2	0.6	0.0	-0.2	0.1			0.22
India									0.8	1.0	1.2	1.5	0.5	0.0			0.85
Indonesia					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.00
Jamaica									1.1		1.5						1.30
Jordan							0.4	0.8	0.6	1.6	0.8	0.5	1.0	0.3	0.6	0.2	0.67
Korea				0.1	-0.0	-0.1	-0.1	-0.1	-0.3	0.2	0.4	0.2	0.2	0.1	-0.1	-0.2	0.02
Malaysia			1.8	0.5	0.6	0.1	-0.1	0.3	1.6	1.1							0.73
Mexico													-0.9	-2.1	-5.8	-10.5	-4.81
Morocco						0.1	0.2	0.6	1.0	1.7	0.9	0.9	0.6	0.6			0.75
Pakistan											1.2	1.4					1.31
Panama						0.1	0.3	0.5	1.3	1.3	2.1	0.9	0.9	0.6	0.3	-0.6	0.69
Papua New Guinea																	
Philippines				0.1	0.1	-0.0	0.2	0.1	0.1	0.3	0.2	0.1	0.1	-0.0	-0.3	-0.3	0.07
Portugal							-0.5	-0.1	0.4	1.3	0.6	-0.9	-0.7	-1.2	-2.8		-0.44
Sri Lanka										1.0	0.3	0.1					0.46
Thailand						0.0	0.0	0.1	0.5	0.7	0.4	0.2	0.2	-0.3	-0.4		0.13
Tunisia							0.2	0.5	1.4	1.2	1.4	0.4	0.7	0.4	0.1	0.1	0.64
Turkey									0.6	0.2	0.3	0.3	0.1	0.0	-0.7	-1.2	-0.04
Zaire			0.1	0.2	0.1	0.2	0.2	0.1	0.1				0.0	-0.0	-0.0		0.11
Zimbabwe										3.7	2.9	0.6	-0.4	-1.4	-1.5		0.65

Country Average: -0.11

SOURCE: Country worksheets as described in appendices A and B.

Table 5: Financial Repression Tax Revenue due to changes in the Exchange Rate
(Percent of GDP)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	AVERAGE
Algeria			2.5	-2.3	2.0	-0.1	-1.5	-1.0	-0.1	4.2	2.5	1.8	1.8	0.4	-3.4	1.7	0.59
Brazil												9.3	9.0	14.4	7.6	10.9	10.24
Colombia		0.0							0.1	0.1	0.1	0.3	0.4				0.21
Costa Rica	0.0									17.3	4.4	0.9	0.7				2.02
Greece			2.2	0.8	1.8	0.1	-0.0		2.3	4.4	2.9	5.0	5.0	4.8			2.28
India			0.2	0.8					-0.7	2.3	2.3	1.8	3.4	2.6			1.95
Indonesia					0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.00
Jamaica									0.2		0.0						0.08
Jordan							-0.9	-0.2	-0.1	0.9	0.5	0.3	0.6	0.4	-1.6	-0.6	-0.07
Korea				0.4	0.0	0.0	0.0	0.0	0.8	0.5	0.4	0.4	0.3	0.5	0.1	-0.4	0.23
Malaysia			-0.4	-0.2	2.0	-1.1	-1.9	-1.7	-0.2	2.0							-0.18
Mexico													1.4	2.8	16.6	21.4	10.59
Morocco						0.2	-0.8	-0.7	0.1	3.8	2.0	2.7	4.1	2.7			1.57
Pakistan											2.3	1.5					1.92
Panama						0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Papua New Guinea																	
Philippines				0.4	0.1	-0.0	-0.0	0.0	0.1	0.0	0.7	0.9	0.5	0.8	-0.2	-0.5	0.32
Portugal							1.1	0.8	0.3	0.2	0.4	1.2	1.5	0.3	0.4		0.38
Sri Lanka										4.3	5.1	5.7	5.6	4.2	-4.4		2.51
Thailand										3.7	1.9	3.2	0.3	1.9	-0.5		2.94
Tunisia							-0.3	-0.2	-0.0	0.5	0.5	0.0	1.7	0.9	-0.7	0.6	0.25
Turkey										2.3	2.2	1.7	2.2	1.8	1.4	1.6	0.81
Zaire			0.0	0.0	1.3	0.2	-0.0	1.2	6.3				0.3	0.1	0.0		2.22
Zimbabwe									0.5	2.2	2.7	8.7	7.3	8.5	1.0		5.06

Country Average: 1.93

SOURCE: Country worksheets as described in appendices A and B.

Table 6: Average Annual Savings by Region and Time Period
(Percent of GDP)

	1972-78	1979-87	1972-87
AFRICA	0.5%	3.0%	3.0%
ASIA	-0.0%	1.4%	1.1%
EMENA	0.7%	2.7%	2.2%
LAC	0.4%	2.2%	1.8%
Average of Total	0.3%	2.1%	1.8%

Figure 1:
Per-Capita Income and Financial Repression
Cross-Section Correlations
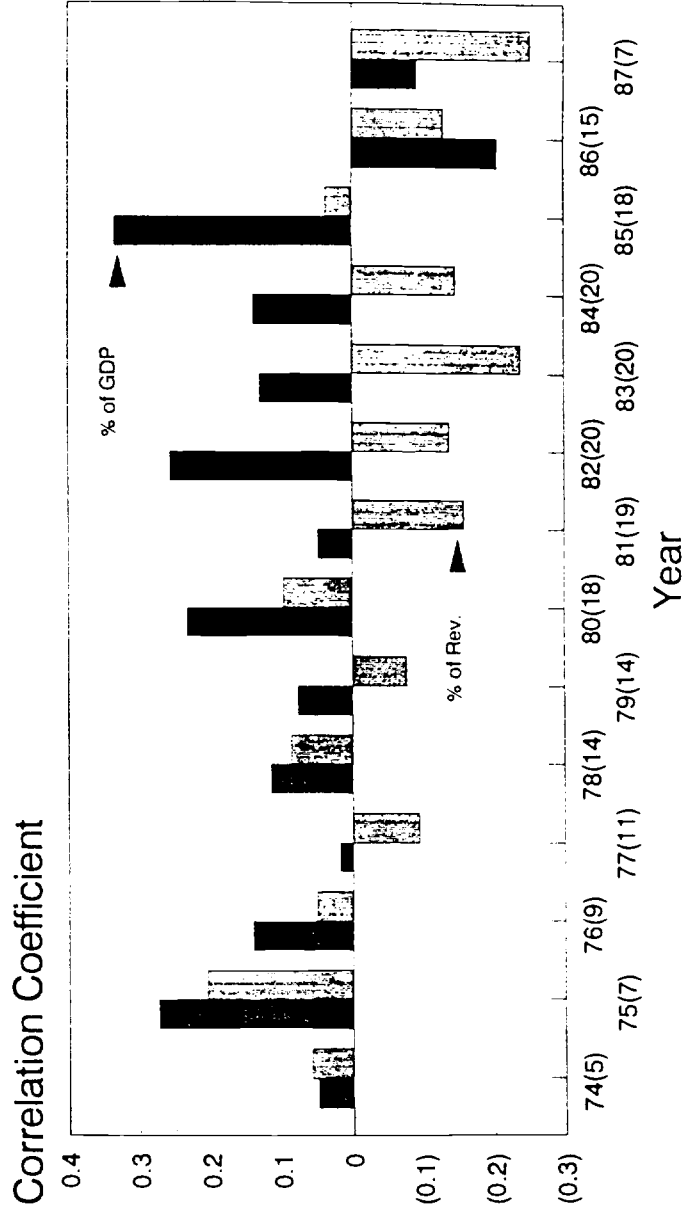
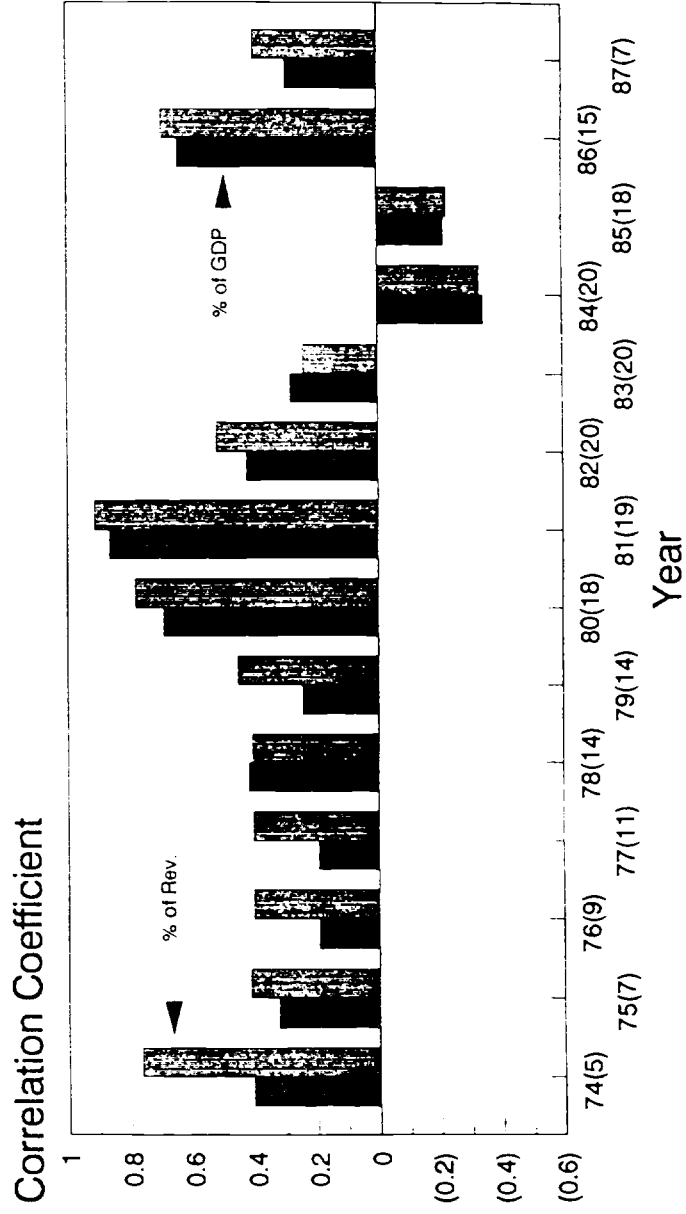The number of countries in each year is in parentheses.

Figure 2:
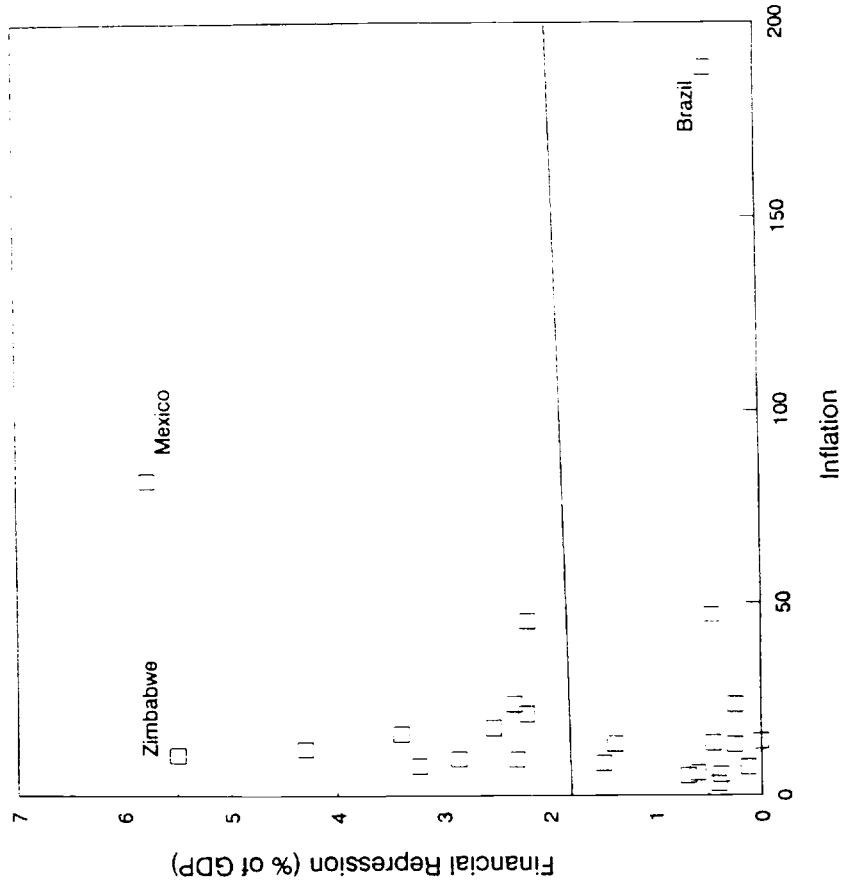## Per-Capita Income and Financial Repression (% of GDP)
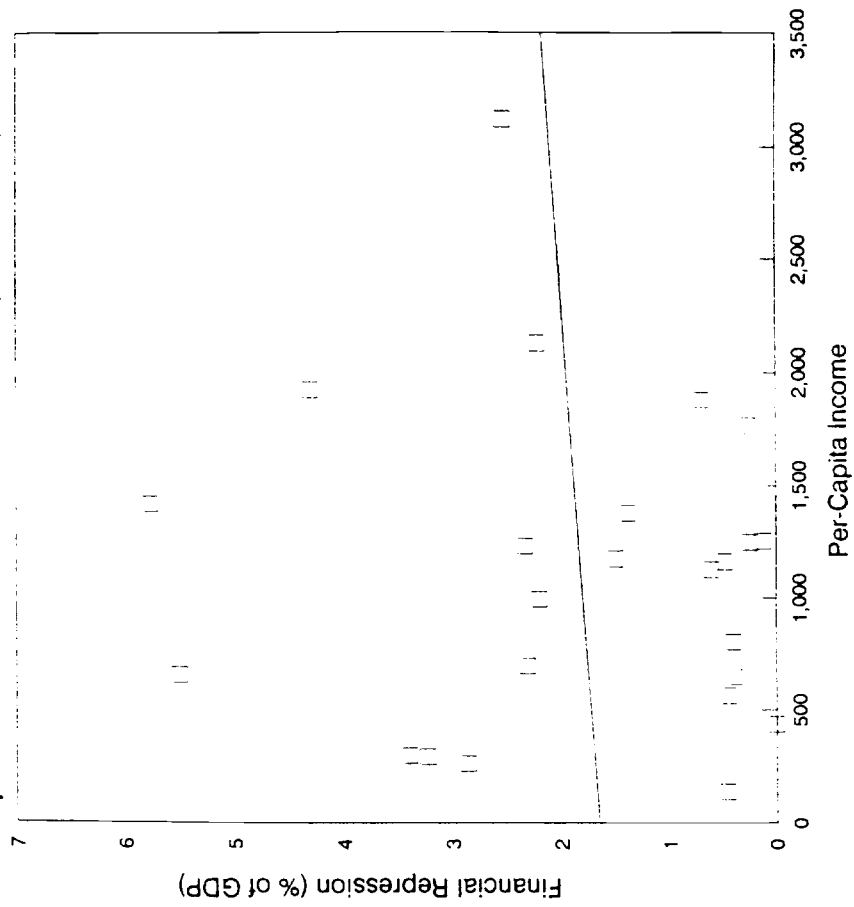
Figure 3:

Per-Capita Income and Financial Repression (% of Revenue)
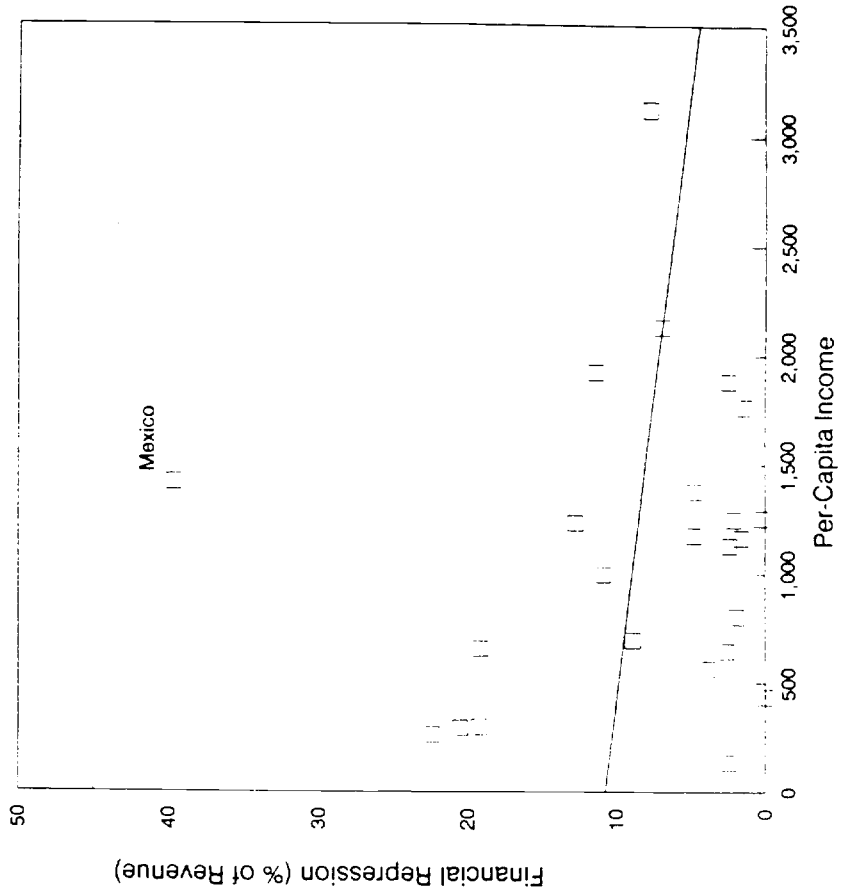
Figure 4:
Inflation and Financial Repression
Cross-Section Correlations

Correlation Coefficient
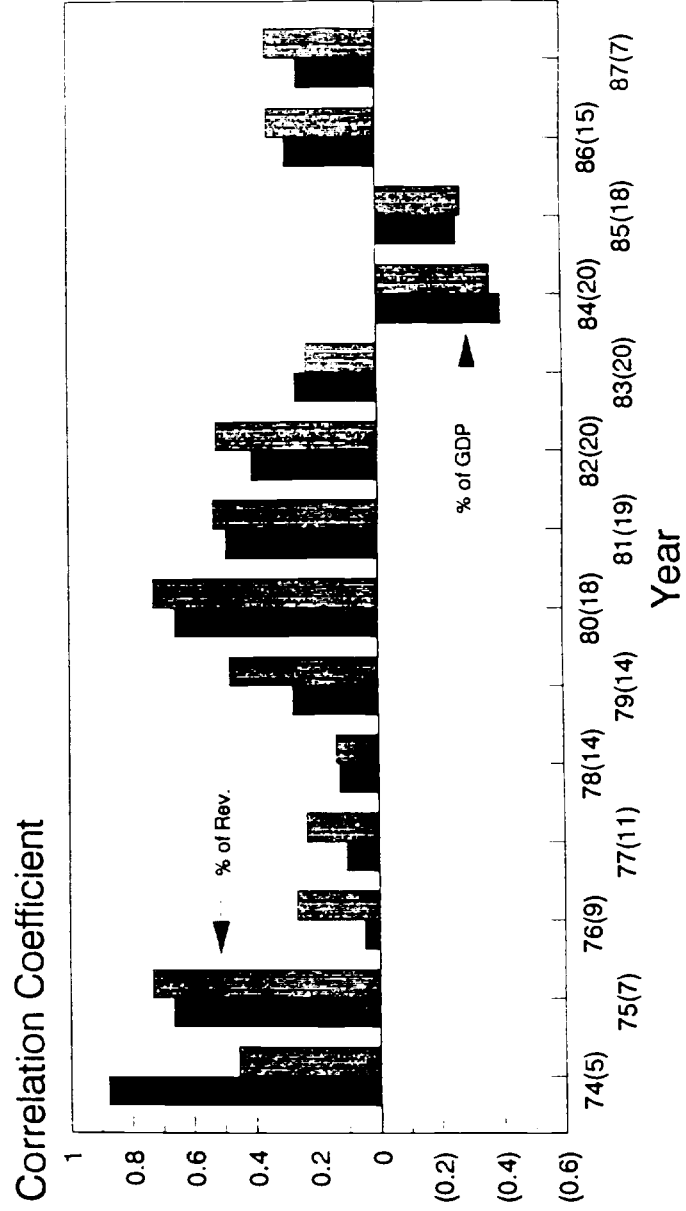
Year

The number of countries for each year is in
parentheses.

Figure 5:
Exchange-Rate Changes and Financial Repression
Cross-Section Correlations

The number of countries for each year is in parentheses.

Figure 6:
Inflation and Financial Repression (% of GDP)

Figure 7:
Inflation and Financial Repression (% of Revenue)
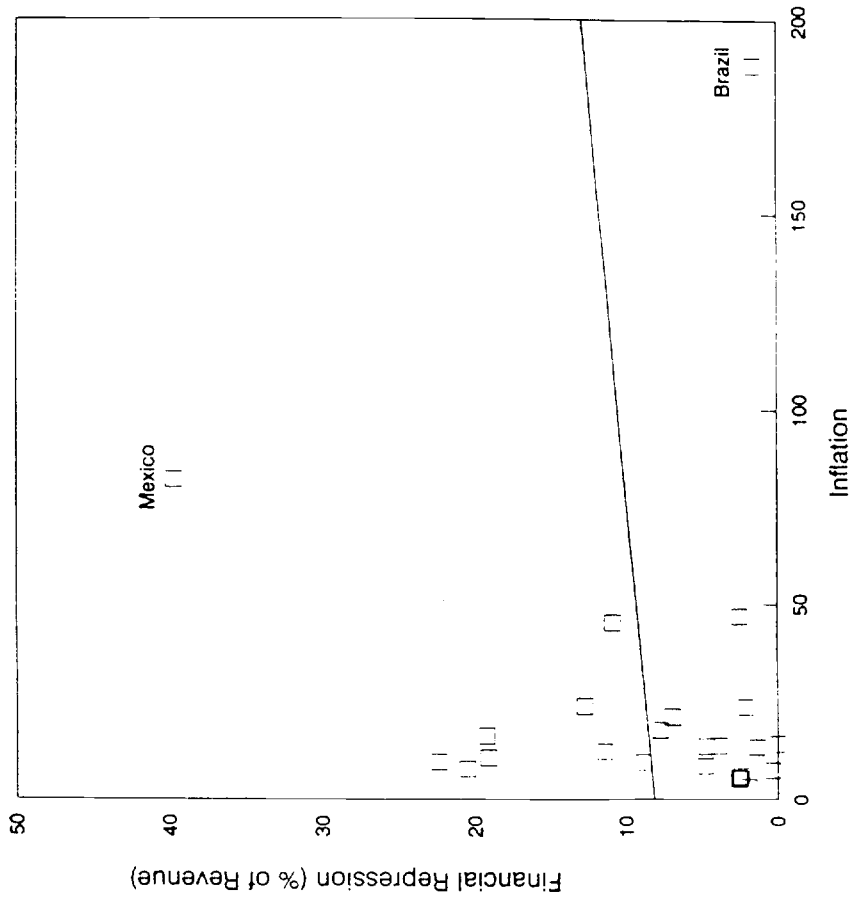
Figure 8:

Exchange-Rate Changes and Financial Repression (% of GDP)
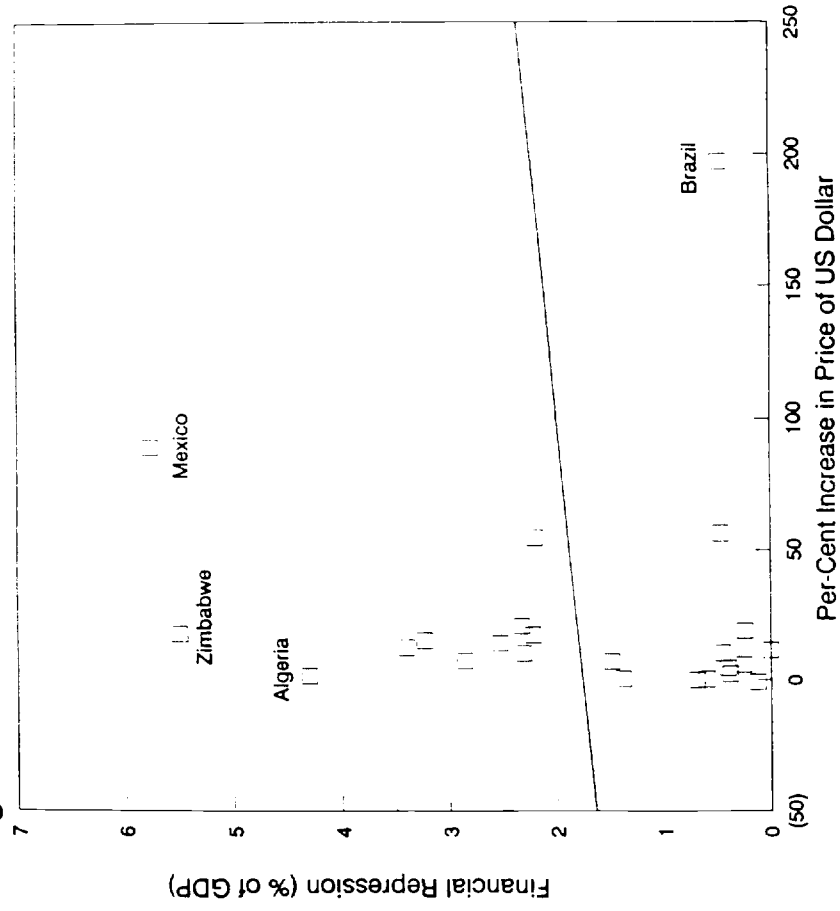
Figure 9:

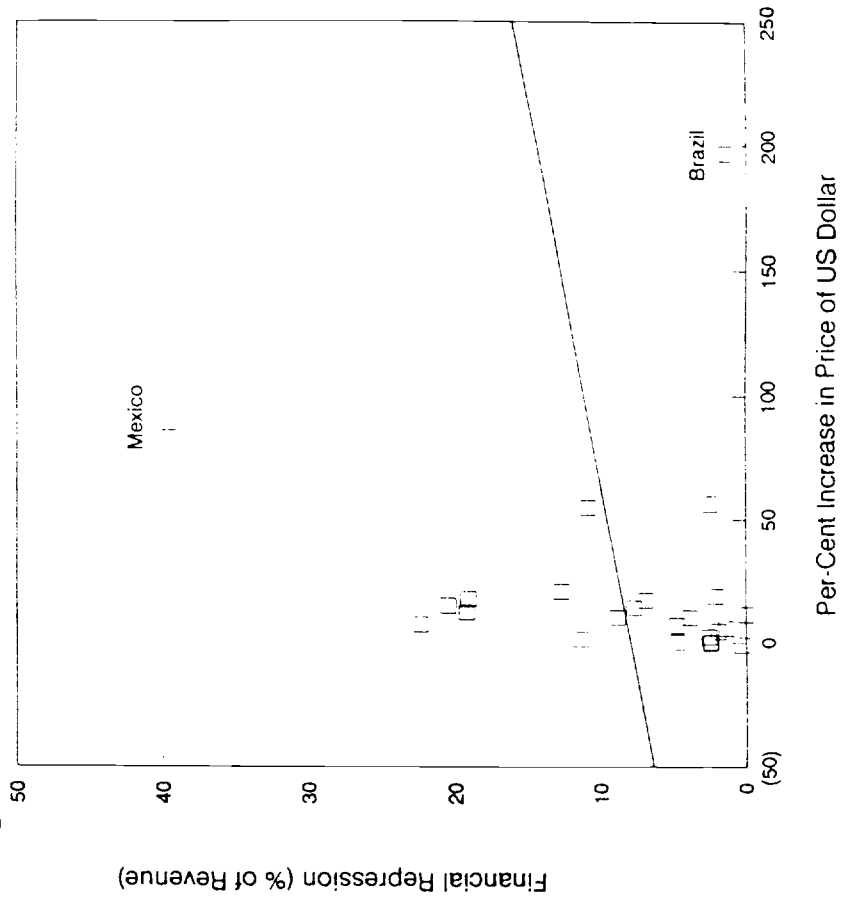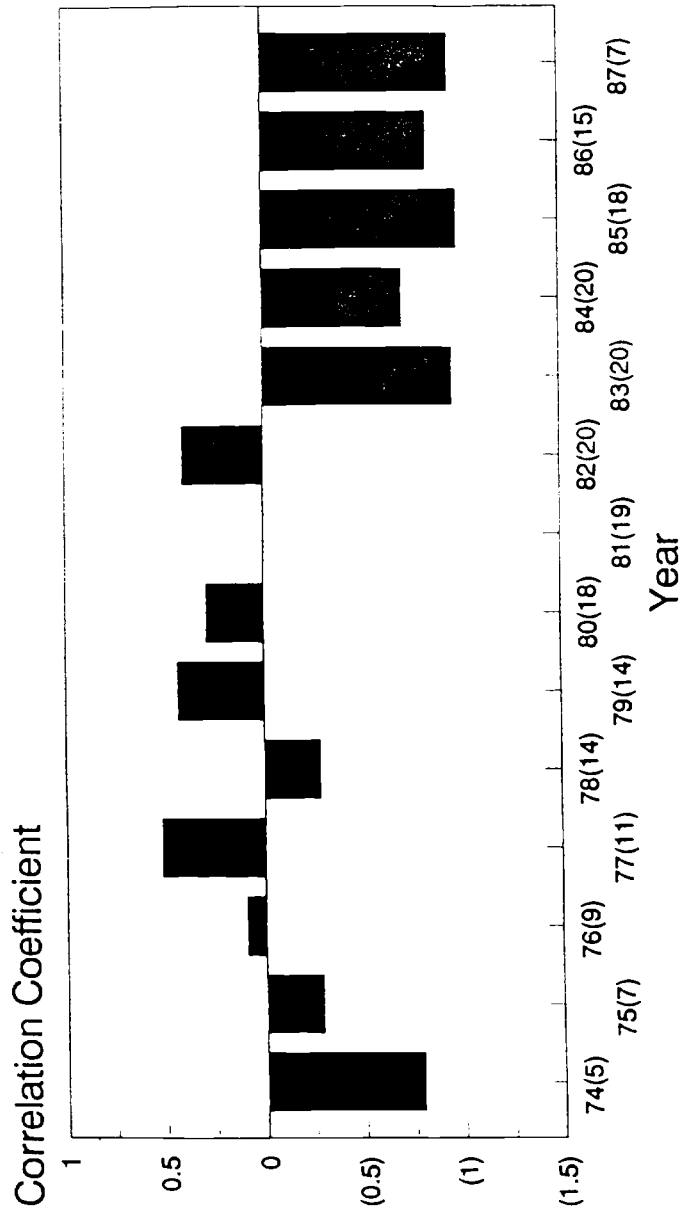Exchange-Rate Changes and Financial Repression (% of Revenue)

Figure 10:
Exchange-Rate Changes and Int.Rate Differentials
Cross-Country Correlations

The number of countries for each year is in
parentheses.