DISCUSSION PAPER

FINANCIAL REFORMS, STABILIZATION AND GROWTH
UNDER HIGH CAPITAL MOBILITY: URUGUAY 1974-83

by
Jaime de Melo
October 1985

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UNDER HIGH CAPITAL MOBILITY: URUGUAY 1974-83

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Abstract

This paper draws on Uruguay's financial reforms to address three issues raised in the literature on financial market reforms. The first issue relates to the order of liberalization of the current and capital accounts. The paper shows that Uruguay's path of opening the capital account first was successful so long as exports were given incentives and that the real exchange rate was not allowed to be in disequilibrium from the point of view of long-run real resource allocation. The paper also shows that the relaxation of capital controls which increases the speed of adjustment in asset markets can lead to large swings in real activity when the economy is in short-run disequilibrium.

The second issue relates to the determinants of currency substitution in developing countries. Preliminary estimates suggest that, as in other developing countries, currency substitution in Uruguay responded mostly to changing expectations about devaluation.

Finally, the paper looks for evidence of improved financial resource allocation and growth following financial market deregulation. Statistical evidence suggests that private savings and private investment shifted upwards as a result of the reforms. However, after controlling for other factors, these upward shifts could not be directly related to the syndromes characteristic of financial repression. Rather, the shifts appear to have been induced by the entire reform package that included commodity market deregulation and tax reforms.
i. Introduction

Financial reforms are the distinguishing feature of the Uruguayan liberalization of 1973-82. A tightly regulated financial system had developed in response to a banking crisis in 1965 when several banks failed. Following the 1965 bankruptcies, a bill on banking regulations was passed in 1965 which prohibited entry into the banking system and limited the expansion of remaining branches. A remarkable contraction in the size of the financial market ensued, and regulation of the banking system was to remain until the military takeover in 1973.

The financial reforms of the post-1973 period were to be far reaching. Early on in 1974, domestic residents were allowed to hold unrestricted dollar-denominated accounts in the Uruguayan Banking System (UBS) and the Central Bank (BCU) started to pay interest on required bank reserves. Directed credit programs were progressively lifted and, by 1976, interest rate ceilings, which had been progressively lifted, were abolished so that banks became free to quote interest rates on loans and deposits. In 1977, commercial banks were allowed to pay interest on checking accounts, and CBU relaxed the legislation governing the regulatory status of banking houses by allowing de facto entry and expansion. And, in 1979 both the 8.4% banking tax and the obligatory reserve requirements were abolished. Within a five year span, the UBS was virtually entirely deregulated.

Other reforms in commodity markets were also implemented simultaneously. (A chronology of these reforms appears in the appendix.) Though commodity market reforms were less extensive than financial reforms, they affected the way the economy adjusted in the short and medium run. So did external shocks relating to events in Argentina.  

[1] It is therefore
necessary to take into account the effects of external shocks and other reforms in any study of the outcome of the financial market deregulation.

This paper addresses three issues raised in the literature on financial market reforms. The first issue has only been raised recently and relates to the order of liberalization of the current and capital accounts of the balance of payments. The issue is linked to the trade-offs between real and financial openness: if both accounts are not liberalized simultaneously does it matter which one is liberalized first? The second issue, also raised recently, is the implication of currency substitution (i.e. the holdings of dollars by Uruguayans) on the effectiveness of monetary (and exchange rate) policy for stabilization. The third issue is the best known. It relates to the implications for financial resource allocation and growth of deregulating a financially repressed economy.

The relevance of the Uruguayan reforms to these issues is examined in the remainder of the paper. Section 2 uses a short-term macro model to show how increased capital mobility and the real exchange rate with Argentina affected stabilization policy. Section 3 looks at preliminary evidence on the extent and causes of currency substitution in Uruguay. Finally, section 4 appraises the extent to which financial reforms raised growth by increasing savings and investment. Section 5 presents the conclusions.

2. Short-Run Adjustment with High Capital Mobility Under the Passive and Active Crawling Peg

The situation that had to be corrected when the military took over in 1973 is summarized in table 1. Negative growth, falling export volumes and a rising fiscal deficit (the fiscal deficit reached 4.4 percent of GDP in 1974) characterized the pre-reform period of 1971-1974. The situation was further
Table 1: Macroeconomic Indicators (yearly averages)

<table>
<thead>
<tr>
<th>Period</th>
<th>GDP Growth a/</th>
<th>Terms of Trade b/</th>
<th>Export Volume a/</th>
<th>Real Exchange Rate c/</th>
<th>Argentine CPI Corrected for Exchange Rate Change b/ d/</th>
<th>Fiscal Deficit ( % of GDP )</th>
<th>Inflation a/ ( % per year )</th>
<th>Real Money Supply (M/P) a/</th>
<th>Real Credit to Private Sector b/ e/</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971-74</td>
<td>-0.9</td>
<td>135</td>
<td>-6.8</td>
<td>114</td>
<td>91</td>
<td>0.6</td>
<td>69</td>
<td>127</td>
<td>108</td>
</tr>
<tr>
<td>1975-78</td>
<td>4.1</td>
<td>59</td>
<td>14.8</td>
<td>122</td>
<td>90</td>
<td>2.8</td>
<td>59</td>
<td>103</td>
<td>148</td>
</tr>
<tr>
<td>1979-81</td>
<td>4.7</td>
<td>74</td>
<td>8.9</td>
<td>94</td>
<td>119</td>
<td>0.0</td>
<td>55</td>
<td>110</td>
<td>264</td>
</tr>
<tr>
<td>1982-83</td>
<td>-7.2</td>
<td>57</td>
<td>2.4</td>
<td>154</td>
<td>66</td>
<td>6.7</td>
<td>34</td>
<td>101</td>
<td>444</td>
</tr>
</tbody>
</table>

Sources: Hanson and de Meo (1985, tables 1, 2); BOJ.

/ Annual growth.
/ Real Exchange Rate with Argentina. Index; 1974=100.
/ Nominal exchange rate times the ratio of world inflation (IPI) to the CPI index.
/ Computed as follows (j = Argentina, u = Uruguay): (CPI_j / CPI_u) * (ER_u / ER_j).
/ Dollar credit converted to pesos at end of year exchange rate.
complicated by the sharp fall in the terms of trade that took place following the first oil shock and the closing of the EEC market to Uruguayan beef.

Three phases of adjustment can be distinguished during the reforms. The first phase (1975-78) corresponds to the period when the Uruguayan peso became convertible and interest rate controls were progressively lifted. It is also the period when devaluations were set equal to the difference between domestic and world inflation, i.e. a passive crawling peg was pursued. During this period, taxes on traditional exports were removed and non-traditional exporters benefited from strong fiscal and financial incentives as well as from the passive crawling peg which maintained a constant real exchange rate (see table 1). The second phase (1979-81) corresponds to the period of active crawl with pre-announcement of future values of the exchange rate (the tablita). As in Argentina and Chile, from the start devaluation rates were at least less than the difference between domestic and world inflation. Though this phase lasted until November 1982, only the period 1979-81 is included in that phase because in those years there was also a strong real depreciation vis-a-vis Argentina, which was also following the tablita with even more vigor. During this phase export incentives were also removed, and the financial reforms completed. Finally the third phase 1982-83 straddles the end of the tablita period and the floating exchange rate period. This phase corresponds to the strong recession following the collapse of Argentine demand as the Argentine peso depreciated sharply vis-a-vis the Uruguayan peso and the sharp rise in the fiscal deficit.

To show how the economy adjusted to the financial reforms, I use a short-run model proposed by Bruno (1983). I modify this model to include the effects of a change in the real exchange rate vis-a-vis Argentina on the current account, and on internal demand to reflect the high substitutability
in the commodity market between Argentine and Uruguayan goods because of the proximity of the two markets and the lack of impediments to trade. The key feature of the model that makes it useful to study the adjustment to the opening of the capital account is its assumption that domestic residents hold both domestic and foreign assets which allows one to show the effects of increasing capital mobility and changing expectations on short-run macro equilibrium.

Goods market equilibrium is described by the QQ schedule in \((e, m)\) space in figure 1a. The schedule is downward sloping because an increase in the real money supply \((m)\) raises absorption and leads to excess demand, which is eliminated by a fall in the real exchange rate \((e)\). A fall in \(e\) reduces excess demand in the goods market because imported intermediate inputs enter non-competitively into the short-run supply function: a real appreciation lowers their relative cost and thus increases supply. Because the price level appears on both axes, price movements take place along a 45° vector towards the QQ curve. (Inflation falls as one approaches QQ from below).

An increase in government expenditures shifts QQ outwards and a decline in the terms of trade, which lowers real income, shifts QQ inwards. Because of the high substitutability between Argentine and Uruguayan commodities, demand is a function of the real exchange rate with Argentina. For a given value of \(e\), a fall in competitiveness with Argentina (e.g. because of a strong real exchange rate depreciation in Argentina) will decrease demand as Uruguayans shift their expenditures to Argentina. This leads to an inward shift of QQ.

The balance of payments consists of the current account and the short-term capital account. Balance of payments equilibrium and the components of the balance of payments are depicted in figure 1b. The current
Figure 1a
Goods Market Equilibrium

Figure 1b
Balance of Payments Equilibrium

I = Current account deficit (NX < 0); short-term capital account deficit (ZZ < 0)
II = Current account surplus
III = Balance of payments surplus
IV = Short-term capital account surplus
account is defined as exports of goods plus net tourist receipts minus non-competitive imports. The NX schedule depicts current account equilibrium. The current account is in surplus above the NX line. An increase in export subsidies shifts the NX schedule downward. A deterioration in the terms of trade or an increase in net tourist expenditures shifts the schedule downward.

Residents hold a domestic asset (money) and a foreign asset, Z. The relative demand for the foreign asset is an increasing function of the expected rate of depreciation as in Miles (1978). Total short-term foreign exchange assets held in the economy, B, include dollar deposits held by Argentines. They are assumed to be given at any point in time, though they may adjust exogenously. Because the exchange rate was fixed most of the time, Central Bank reserves, A, are endogenous but are assumed to be given at any point in time. This implies that $Z = B - A$. Different degrees of financial openness are accommodated by assuming that the money market equilibrates while the actual change in the privately held foreign exchange asset, $\Delta Z$, is proportional to the desired change, i.e., $\Delta Z = \beta (Z^d - Z_0)$ where $Z_0$ is the initial level of foreign assets. Relaxing capital controls raises the speed of adjustment in asset markets and, in the limit, when there is instantaneous adjustment, only the capital account matters. Equilibrium in the short-run capital account is given by the ZZ schedule in figure 1b. The schedule is upward sloping because a devaluation raises the peso value of the foreign asset which requires a compensating increase in the money supply to reestablish equilibrium in the asset market. Above the ZZ schedule the short-run capital account is in surplus. An increase in the expected rate of depreciation, $e$, rotates the ZZ schedule counterclockwise. So does a decrease in total short term foreign assets, $B_0$, due for instance to a
withdrawal of Argentine deposits. Finally, an increase in Central Bank reserves, $A_o$, shifts ZZ clockwise.

Finally, the overall balance schedule, KK, is the sum of the current account and the short-run capital account. It lies between the ZZ and NX schedules. Above the schedule there is an overall surplus and below a deficit. The model can now be used to show how Uruguay adjusted to the increase in capital mobility that occurred during the passive crawling peg (1974-78), then under the active crawling peg (1979-82).

2.1 Adjustment Under the Passive Crawling Peg

Figure 2a shows how the economy adjusted to the combination of external shocks and fiscal deficits during the opening of the capital account. Let A be equilibrium around 1972 when the passive crawling peg was instituted and prior to the rise in the fiscal deficit. By the time Uruguayans decided to lift controls on capital flows in September 1974 there was a growing fiscal deficit and deteriorating terms of trade. The net effect of the external shock has been estimated at between 5 percent and 10 percent of average GDP during 1974-78 (see Hanson and de Melo, 1985). The net effect of these two shocks was to shift upwards the NX schedule and to shift inwards the QQ schedule. If there had been no relaxation of capital controls and no incentives to exporters, the new short-run equilibrium would have been at a point like B with a much higher real exchange rate and much lower real money supply.

However, the opening of the capital account mitigated the monetary crunch that usually accompanies stabilization packages (see table 1) and the subsidies to exports mitigated the real exchange rate devaluation. Confidence in the passive crawling peg and relaxation of controls on capital flows
Figure 2a
Short-Run Adjustment with the Passive Crawling Peg

Figure 2b
Short-Run Adjustment with the Active Crawl
shifted the ZZ curve clockwise. Furthermore, the export subsidies shifted down the NX schedule so that the net upward shift in KK schedule was dampened. At the same time falling real wages and increasing investment (see evidence in section 3) reduced the inward shift of the QQ curve. The resulting equilibrium during 1976-78 was at C which was close to the one prevailing before the external shock and the increase in government spending (see table 1).

In this adjustment, the capital account was opened before the current account as redundant protection for import competing sectors remained until 1979 (see Hanson and de Melo, 1985). Fear that opening the capital account first will lead to a real appreciation that will hurt exporters may be unfounded if exporters are given compensating incentives, and there is confidence in the exchange rate regime. The Uruguayan experience thus suggests that doubts expressed about this sequencing of liberalization may be unfounded. Table 1 indicates that exports responded strongly to these incentives and that the passive crawling peg avoided the predicted real exchange rate appreciation. Also, as mentioned above, opening the capital account helped avoid the monetary crunch by bringing an end to capital flight. Indeed, the net errors and omissions item of the balance of payments, reflecting over and under voicing and other forms of capital flight changed drastically. Prior to the reforms it was always negative. (The yearly average was U.S.$40 million or 10% of export earnings over 1970-74.) During 1975-78, the average yearly value of net errors and omissions turned to a positive U.S.$38 million suggesting an end to capital flight. Also, net credit to the private sector, including dollars, was growing rapidly (see table 1), reflecting the dollarization of the economy, which is discussed.
further in section III. It is indeed remarkable that the increased confidence during the opening of the capital account allowed the fiscal deficit to be eliminated while credit to the private sector grew.

2.2 Adjustment with High Capital Mobility under the Active Crawl

When the tablita was instituted in October 1978, the pre-announced rate of crawl was at much less than the differential between internal and external inflation. Since domestic interest rates were deregulated at that time, it became extremely attractive to bring in short-term capital inflows to take advantage of the high peso interest rates under no foreign-exchange risk. This shifted the KK schedule to the right to KK' (figure 2b) while increased demand from higher than usual Argentine tourist expenditures (because Argentina was appreciate rapidly vis-a-vis Uruguay -- see Table 1) shifted the QQ schedule outward to QQ'. Loans were issued in pesos because, due to rising inflation, ex post borrowing costs in pesos were negative. The upward dollarization trend was halted (see figure 3). The economy was moving along the path AB. As long as the Argentine peso appreciated, i.e. until late 1980, the real exchange rate appreciated sharply. Real credit to the private sector also grew rapidly as firms were increasing their indebtedness and consumers were borrowing to purchase importable durables.

When Argentina started depreciating in real terms vis-a-vis Uruguay from March 1981 until Uruguay abandoned the tablita in November 1982, expectations that the preannounced exchange rate schedule was unsustainable increased rapidly, rotating the ZZ curve counterclockwise. Temporary equilibrium would have been along KK" at C if the exchange rate had been allowed to devalue. Since this was not the case, there were heavy foreign
exchange reserves losses to finance the ongoing capital flight with money supply falling and the economy moving toward D. Finally, following Argentina's sharp devaluation of July 1982 which shifted the QQ schedule inwards to QQ" as Uruguayans transferred their demand across the border, the tablita was abandoned in November and the economy eventually settled at E with 15 percent unemployment. In the meantime, owing to the high capital mobility, capital flight was large and has been estimated in the neighborhood of U.S.$2 billion. 6/ Dollarization increased sharply with real M-1 falling by 23 percent between December 1980 and December 1983.

The lesson from the active crawl with high capital mobility is that allowing a sustained real exchange rate appreciation leads to a large current account deficit that can result in large swings in relative prices prompted by portfolio shifts. An earlier abandonment of the active crawl would have brought the economy to C with less capital flight and less unemployment. While the Uruguayan experience is not sufficient to establish a case against opening the capital account before the current account, it suggests caution in pursuing such a course. Either external shocks or mismanagement of the monetary-exchange rate policy unit is likely to result in short-run swings that lead to costly temporary resource shifts away from tradable sectors.

3. Currency Substitution and Capital Mobility

The second issue for which the Uruguayan experience with financial market reforms is relevant relates to the effects of liberalizing the capital account on the efficacy of monetary policy. Recall that as early as September 1974 Uruguayans residents could hold unrestricted amounts of foreign currency. The Uruguayan peso became de facto a convertible currency. Insofar
as Uruguayan holdings of dollars rose beyond what would be needed for international trade transactions and tourism, this would cause a problem for the Central Bank's conduct of monetary policy. The potential for currency substitution, defined as the ability of domestic residents to switch between domestic and foreign fiat money becomes an effective way of avoiding the inflation tax on the holdings of domestic cash balances. The escape from domestic to foreign money also results in a loss of seignorage for the government. Below I examine the causes of the increasing dollarization of the Uruguayan economy and attempt to separate the determinants of Uruguayan residents' holdings of dollars, i.e. I look for the causes of currency substitution (CS).

The dimensions of the dollarization problem are shown in Figure 3. It is immediately apparent that dollarization proceeded very rapidly and that it reached much higher levels than in other countries. For example, in Mexico, the ratio of foreign currency deposits to the total money stock stayed in the 15 percent range until 1982, when it shot up to 25 percent. In Argentina the ratio never exceeded 10 percent. It is also apparent that even though restricted holdings of dollars by domestic residents had been allowed in Uruguay before the reforms, it is only with the lifting of controls towards the end of 1974 that dollar holdings in the domestic financial system started to grow rapidly. Finally, it is also apparent that much of the foreign-currency-denominated deposit growth between 1980 and 1982 was due to deposits held by Argentines. Of course, the rise in Argentinian-held deposits was not due only to the convertibility of the Uruguayan peso. At times it was due to the uncertain conditions in Argentina, but most of the time it was due
to the tablita which removed exchange rate uncertainty while interest rates paid in pesos remained high in real terms. 8/

It is questionable that an increase in dollarization of the magnitude observed in figure 3 reflected only an increase in the demand for foreign fiat money. Indeed, as suggested by figure 4, it is likely that much of the CS that took place reflected the repatriation of dollars held abroad. Not only did the ratio of dollar deposits in Uruguay to dollar deposits in US banks rise until 1982, but the current dollar value of deposits held in US banks which had been rising until late 1976, fell until early 1980. Thus much of the CS by Uruguayans was a portfolio adjustment between dollars abroad and dollars held in the Uruguayan financial system. As argued in section 2, this portfolio shift represented increasing confidence in the economy. 9/ It is also clear that when starting in 1982, confidence in the tablita waned, this trend was reversed and dollar-denominated deposits shifted towards U.S. banks. This trend was to continue throughout 1983 after the flotation of the peso because of the internal financial crisis and the growing insolvency of Uruguayan banks. 10/

Starting with Miles (1978), the approach to CS emphasizes the importance of foreign exchange risk among the diverse reasons for holding foreign currency money balances. In the developed country literature this has served as the basis for the argument that monetary authorities lose national monetary independence under floating rates because the elasticity of substitution is likely to increase during periods of floating reflecting the greater incentive for agents to diversify their portfolios of liquid money assets. In the developing country literature, the emphasis has been on the potential problems for short-run monetary instability that CS can create [Ortiz (1983), and Ramirez-Rojas (1985)] and the crucial variable used to
Figure 3: Dollarization

Dollar Deposits / M2

1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1


($)Residents)/M2 + ($Res.+Nonres.)/M2
Figure 4: Portfolio Shifts
by Uruguayan Residents

$\text{Dep.Ratios at Home & Abroad}$

- $\text{DepUSA / DepUru}$
- $\text{DepUru / N$\text{DepUru}$}$

Time

- $1975:1$
- $1977:1$
- $1979:1$
- $1981:1$
- $1983:1$
explain the demand for foreign money has been the difference between the real rate of return on domestic and foreign money approximated by the expected rate of depreciation.

As discussed above, in Uruguay, the expected rate of depreciation undoubtedly played an important role in determining financial portfolio shifts. However, another potentially important determinant of CS is the rate of return on interest-bearing assets, in particular dollar-denominated bonds which were an important asset in Uruguayan financial portfolios. In the absence of data on these interest-bearing assets, it is not possible to distinguish between capital mobility reflecting portfolio shifts between non-monetary assets and CS reflecting the substitution of foreign for domestic money. 11/

To test for the presence of currency substitution, I assume that the demand for domestic and foreign money is homogenous in wealth so that the ratio of domestic to foreign money \((M_t/P_t)\) is expressed as a function of the expected rate of depreciation \((\varepsilon_t)\) and real income \((y_t)\), the latter variable reflecting the transaction motive for holding foreign money. (The higher real income, the higher transactions with foreigners and hence the greater the demand for foreign money). 12/ Finally, even though portfolio shifts were rapid in Uruguay during the reforms period, I assume, as in other studies that the money market does not clear within a quarter, so the lagged dependent variable is included in the specification. Finally, quarterly dummies (not reported) are included in the equation to account for the strong seasonality in income and in the money supply and the Cochrane-Orcutt procedure is applied to correct for autocorrelation.
Selecting a proper proxy for \((\varepsilon_t)\) is crucial, and the proxy used here is very crude so the results reported below must be viewed as preliminary. I select as the proxy, deviations of the exchange rate from the trade weighted purchasing power parity exchange rate. In the definition of \((M_t/F_t)\) I exclude dollar deposits held by foreigners, but include dollar deposits held by Uruguayans in U.S. banks. 13/

The results were:

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimates of Currency Substitution: 1936 (I) - 1984 (I) a/</td>
</tr>
</tbody>
</table>

\[
\ln \left( \frac{M_t}{F_t} \right) = -3.84 + 0.54 \ln (y_t) - 0.43 (\varepsilon_t) + 0.55 \ln \left( \frac{M_{t-1}}{F_{t-1}} \right) \\
\quad \quad (-1.59) \quad (1.78) \quad (-3.02) \quad (3.95) \\
R^2 = 0.62, \quad F(6,23) = 9.00, \quad \rho = 0.80, \quad \chi = 1.69 (7.28) \\
\]

a/ t-values in parentheses

The sign for \(y_t\) does not support the transactions motive for currency substitution but, as expected, the shift from pesos to dollars is strongly negatively correlated with the exchange rate departures from PPP. Finally, as is usually the case, the lagged dependent variable is highly significant but its value suggests that portfolio adjustments were not fully made within a quarter. These results support the stock adjustment specification to asset markets specified in section 2. 14/
The results in table 2 are very preliminary but the overall evidence in this section suggests that significant portfolio shifts took place in Uruguay after convertibility of the peso. The evidence also suggests that the degree of confidence in the exchange rate policy was the major determinant of currency substitution by Uruguayans.

4. Financial Liberalization, Savings and Investment 15/

The Uruguayan experience is also relevant to the issue of the longer run benefits from financial market deregulation. In their influential works, McKinnon (1973) and Shaw (1973) argued that financial resource allocation is inefficient in "financially repressed" economies. The financial repression syndrome they identify includes one in which fiscal deficits are financed by interest rates ceilings which discourage saving. Fiscal deficits result in financial intermediation between savers and investors being carried out by the government via forced savings mechanisms (including taxation of profits and of the banking system) rather than by the financial system. And because savings which are assumed to be interest sensitive are low because of administratively determined interest rates, nonprice rationing of investible funds occur. Interest rate ceilings also discourage risk taking by financial institutions who opt for traditional low yielding investments because they appear the safest to finance.

Financial repression was prevalent in Uruguay before the 1974 reforms. 16/ The McKinnon-Shaw hypothesis predicts that the financial reforms would have led to a greater role for the financial system in providing intermediation between savers and investors, as well as to a greater volume of savings and investment. The discussion in section 3 already indicated that
the financial reforms increased the role of the financial system as an intermediary as the financial market deregulation led to financial deepening via dollarization. Here I summarize econometric evidence on the effects of the financial reforms on the volume of savings and investment.

Table 3 below reports the results of regressions that test whether the financial reforms raised the savings function, and whether private savings in Uruguay responded to interest rates. Note that in contrast with previous empirical studies and in accordance with the financial repression literature, private (SP) rather than total savings is used. The regressors include income growth (y't) because it proxies for deviations from "permanent" income which standard theory suggests should induce saving rate fluctuations. Lagged saving, (SP_t-1), is included because adjustment may be spread over multiple periods. The real exchange rate, (e_t), is included among the regressors rather than foreign savings because, with the capital account open, agents can borrow abroad and therefore will take into account expectations about future values of the real exchange rate. In particular when the real exchange rate is low and agents do not expect it to remain low in the future, they will dissave to purchase foreign goods while their real price is low. Finally the ex-post real interest rate on deposits, (r_t), and a dummy variable (D_t = 0 through 1974 and 1 thereafter), are included, the first to capture the interest elasticity of savings, the second to capture the effects of the reforms on savings.
The results were:

\[ S^p_t = -.933 + .036 y'_t + -.020 r_t + .048 e_t + 1.75 D_t + .264 S^p_{t-1} \]

\[ R^2 = 0.30 \quad F(5,16) = 2.84 \]

Source: de Melo and Tybout (1986, Table 5)

a/ t - values in parenthesis
endogeneous variables: \( r_t, y'_t \)

The results show that, after accounting for other factors, there appeared to be a mild upward shift in private savings after the reforms but that no interest rate elasticity of savings could be detected. Interestingly, private savings is inversely related to the real exchange rate suggesting that low real exchange rates encourage absorption by making traded goods less expensive and perhaps by creating the perception of an increase in wealth.

Turning to the effects of the reforms on investment, one would expect that private investment \( (I_t) \), would depend not only on expected profits and accelerator-type mechanisms (proxied by the history of demand growth), but also, if there is financial repression, on the liquidity position of firms, since firms would then have to rely more on internal funds for investment (proxied by current \( (M'_t) \) and lagged \( (M'_{t-1}) \) real money growth). To test the significance of these effects, private investment expressed as a fraction of
GDP, \( (i_t) \), was regressed on the above variables, real interest rates, \( (r_t) \), and a dummy variable to test the effect of the reforms on the investment level.

The results were:

\[
\begin{align*}
\dot{i}_t &= (-.483) + .020 \gamma'_t + .285 \gamma'_{t-1} + .014 m'_t \\
&\quad (-.163) \quad (.172) \quad (2.80) \quad (1.04) \\
&\quad -.021 m'_{t-1} + .024 e_t - .011 r_t + 2.20 D_t \\
&\quad (-1.47) \quad (1.67) \quad (-.471) \quad (3.64) \\
&\quad + .555 \dot{i}_{t-1} \\
&\quad (4.83)
\end{align*}
\]

\[R^2 = .82; \quad H = 0.61 \quad F(8,13) = 12.68\]

Source: de Melo and Tybout (1986, table 6).

a/ \( t \)-values in parenthesis

Endogenous variables: \( y', e, r \)

The significance of the coefficients on lagged income and lagged investment suggest that the accelerator mechanism was operating. On the other hand, increases in money stock only had a transitory effect on capital.
accumulation so financial repression effects did not appear to be important. Results from further tests, not reported here, suggest that the Uruguayan economy was not savings constrained in the pre-reform years. Finally, the function clearly shifts upwards in the reform period suggesting that the surge in investment was not wholly due to movements in the explanatory variables in the model. Rather it would appear that the better investment performance was greatly attributable to the other ongoing reforms including the rationalization of the taxation system and the removal of quantitative controls on imports of investment goods. (See the appendix on the reforms for details.)

In sum, controlling for other factors, the reforms induced an upward shift in private savings and in private investment compared with the pre-reform years. This result is consistent with the improved growth performance during the reform years. Indeed, even if one takes into account the recession year of 1983, trend GDP growth was statistically higher during the post 1974 period (1.4% p.a.) than during 1955-73 (1.0 p.a.). But these upward shifts are attributable to the entire reform package that included commodity market deregulation, not just the financial reforms. In particular, private savings were not responsive to interest rates and the low private investment levels of the pre-reform years could not be attributed directly to financial repression effects.

5. Conclusions

This paper has analyzed the Uruguayan experience to assess several issues in the literature on financial market reforms in developing countries. First, I showed that liberalizing the capital account before the current account can be successful when exporters are provided incentives and
the real exchange rate is kept in line with trading partners. But the Uruguayan experience also shows that rapid financial portfolio adjustments in a financially open economy can be destabilizing for long-run resource allocation. Second, I gave preliminary evidence that currency substitution was mostly determined by foreign exchange risk, a result also found in other Latin American countries. Finally, I gave some evidence that the reform package led to some of the predicted results put forth by proponents of financial liberalization. Controlling for other factors, the reforms induced an upward shift in private savings and private investment compared with the pre-reform years.
Footnotes

1/ See Hanson and de Melo (1985) and Blejer and Gil-Diaz (1986) for more extensive interpretation of how the economy adjusted to the reforms and to the external shocks.


3/ Inflation jumped in 1979, in part because of internal price deregulation. This is not shown in figure 2b. For details see Hanson and de Melo (1985).

4/ de Melo, Piscale and Tybout (1985) study the pattern of adjustments at the firm level and give evidence of increasing dollar exposure.

5/ To simplify the graphical presentation, I omit the inward shift in the QQ schedule due to the growing fiscal deficit.

6/ Capital flight estimates are provided in Corbo, de Melo and Tybout (1986).

7/ These figures cited in Ramirez-Rojas (1985) include dollar deposits in the definition of the money supply, whereas the ratios in figure 3 exclude dollar deposits from the definition of the money supply. This distinction does not affect the conclusions in the text.

8/ Hanson and de Melo (1985) review alternative explanations of the high peso/dollar interest rate spread.

9/ On an annual basis, the interest rate on dollar deposits in Uruguay was generally constant at one percentage point above the corresponding LIBOR rate so the portfolio shift reflected other factors than changes in relative returns.
10/ For a brief discussion of the factors that led to the internal financial crisis, see Corbo, de Melo and Tybout (1980).

11/ The distinction between capital mobility and (CS) was first made by Cuddington (1983). Banda (1982) obtained disappointing results in his estimation of portfolio shifts.

12/ In a portfolio balance model, inclusion of \( y_c \) would imply rejecting the usual two-stage budgeting procedure.

13/ Similar results were obtained when dollar deposits held in the US were excluded.

14/ Similar results are obtained by Ramirez-Rojas (1985).

15/ This section is a summary of a more extensive treatment in de Melo and Tybout (1986).

16/ See Hanson and de Melo (1985) and de Melo and Tybout (1986) for a further description of the financial repression syndrome.

17/ See de Melo and Tybout (1986) for the set of instruments used and for structural stability tests.

18/ Traditional savings functions also gave generally insignificant estimates for the interest rate coefficient.
References


Ramirez-Rojas, C. (1985), "Currency Substitution in Argentina, Mexico and Uruguay" (mimeo), International Monetary Fund.

APPENDIX

CHRONOLOGY OF PRINCIPAL REFORMS 1/


June 1968 All prices including salaries are fixed and COPRIN, the agency in charge of controlling prices, has to approve all price increases in each industry.

1969 Contralor de importaciones y Exportaciones abolished.

May 1971 Capital goods imports become subject to prior approval, effectively prohibiting imports.

March 1972 New government takes office after November 1971 elections. Beginning of transition period leading to reforms. Recognition that system of price controls established in 1968 must be relaxed; 100% devaluation.

1972 Inauguration of passive crawling peg, pursued until November 1978; creates double foreign exchange market.


B. Reform Period:

1. Major Events

July 1974 Vegh Villegas becomes Minister of Economy and Finance. He is replaced by Arismendi in July 1976.

Sept. 1974 Capital market is opened and foreign exchange holdings by Uruguayan is allowed for the first time. For capital transactions, the exchange rate is determined freely. For transactions in the goods market, the exchange rate is determined by the crawling peg.

Oct. 1978 Commercial and capital market for foreign exchange are unified. The exchange rate is preannounced 90 days in advance. Treasury bills are guaranteed (buyers of treasury bills can purchase dollars when redeeming treasury bills).

1/ Source: Hanson and de Melo (1985).
Dec. 1978  Tariff reforms are instituted, with a uniform tariff of 35 percent to be achieved by 1985 through a linear tariff reduction.

2. Financial Market Reforms

Sept. 1974  Uruguayan residents can buy or sell assets denominated in external currencies without restrictions, leading to de facto convertibility of the peso. Ceilings on peso-denominated deposits are raised from 15 percent to 30 percent.

May 1975  Foreign investors are allowed to repatriate earnings and capital. Rules dictating allocation of credit begin. Central bank begins to pay interest on reserves required by law.

March-Sept. 1976  Domestic interest rates are effectively freed with the ceiling raised to 62 percent. Rediscount facilities for commercial banks are eliminated.

Mid 1977  The 1965 banking law controlling the number of financial intermediaries is relaxed. The number of casas bancarias rises from one in 1976 to 23 in 1981. Casas bancarias cannot offer checking account services; they are chiefly engaged in intermediating foreign currency funds obtained abroad (from nonresidents) in the domestic financial market.

Nov. 1977  The dual foreign exchange market is unified. Commercial banks are allowed to pay interest on cash accounts.

Oct. 1978  Three-month treasury bills are sold which could be redeemed in dollars. The central bank thus was effectively preannouncing the exchange rate (official unification of dual foreign exchange market).

Nil marginal reserve requirement is introduced and legal reserve requirement unified at 20 percent.

Early 1979  Financial interest subsidies for exports are removed.

May 1979  Subsidized credits to Frigorifios with Banco de la Republica are eliminated. The legal reserve requirement is eliminated.
Reserve requirements for commercial banks for deposits in domestic and foreign currency are abolished. The banking tax is abolished (it amounted to 8.4 percent: 6 percent lender tax and 2.4 percent tax on loan to commercial bank).

Feb.-Sept. 1981 To narrow the persistent cross-currency gap in lending rates, the Central Bank offers implicit exchange guarantees.

3. Commodity and Labor Market Reforms

July 1974 Personal income and inheritance taxes are removed. A uniform 25 percent tax on corporate net profits is established with exports exonerated for up to 50 percent of profits reinvested. Export taxes on beef and wool are removed to compensate for the decline in world prices.

July 1974 Internal prices of nonessential goods begin to be liberalized. At this time 94 percent of CPI still is controlled, as is 75 percent of value added in agriculture. Some barriers to imports are removed. Compulsory external financing for 180 days and prior permission to import capital goods are abolished.

October 1974 A law is enacted to encourage foreign direct investments: the repatriation of profits and capital is guaranteed.

Jan. 1975 Remaining quantitative restrictions are removed.

July-December 13 percent of goods in the CPI basket are deregulated.

Feb. 1976 Prices not in the CPI are liberalized, except those deemed to be produced under monopoly. Later in the year, another 25 percent of prices in CPI are deregulated.

July 1978 A new agency, DINACOPRIN, replaces COPRIN. The major objectives of DINACOPRIN include the promotion of competition of the economy and greater flexibility in setting prices.

Aug. 1978 Another 13 percent of CPI basket is decontrolled, as is the meat market.

Feb. 1979 Tariff reductions are accelerated to prevent "exaggerated" price increases. There is a return to some price controls (such as clothes and private schooling)
March 1979  The list of goods and services with prices fixed administratively is reduced.

Sept. 1979  To fight inflation, further tariff reduction with price liberalization.

Nov. 1979  Tax reform
- Uniform 18 percent VAT for nonessential commodities
- Reduction of social security charges
- Elimination of 8.4 percent banking tax
- Elimination of exoneration of profit tax on exports
- Elimination of subsidized credits to exporters

June 1980  DINACOPRIN fixes car prices because there is no foreign competition. By June 1980 29 percent of prices in the CPI are still controlled (16.1 percent excluding price of public utilities). For agricultural prices, 65 percent were controlled in December 1973. In December 1979 only 14 percent are controlled.

June 1982  A 10-percent surcharge tax is imposed on all imports, and there is a 10 percentage point increase in reintegros.