

Policy, Research, and External Affairs

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Macroeconomic Adjustment  
and Growth

Country Economics Department  
The World Bank  
January 1991  
WPS 579

# Chile's Experience with Stabilization, Revisited

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The cost of stabilization in chronic-inflation countries is high, whether it is paid up front (with fiscal shock) or delayed (in exchange-rate-based stabilization). And eliminating the fiscal deficit is a necessary but not a sufficient condition for controlling inflation. The breaking of inertia calls for a coordination device in the transition toward price stability

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This paper — a product of the Macroeconomic Adjustment and Growth Division, Country Economics Department — is part of a larger effort in PRE to understand stabilization policies in developing countries. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Emily Khine, room N11-061, extension 39361 (52 pages).

Corbo and Solimano evaluate Chile's stabilization policies since the early 1970s, examining four episodes:

- The high inflation at the beginning of the military regime, when inflation was close to 800 percent a year.
- The orthodox stabilization program of 1975.
- The exchange-rate-based stabilization of February 1978-June 1982.
- The post-1984 adjustment period with a large real devaluation and moderately low inflation.

The last 15 years of Chile's economic history provide some important lessons on stabilization. Corbo and Solimano learned that:

- Eliminating the fiscal deficit is a necessary but not a sufficient condition for controlling inflation. In economies with a long history of inflation, credibility problems, and indexation schemes (de facto or de jure), inertia is likely to make inflation stabilization costly without income policies to solve the coordination problem implicit in guiding individual wage and price setters toward a low-inflation equilibrium.

- If the exchange rate is used as an anchor in a stabilization program, other nominal prices should be free or fixed with reference to the exchange rate. Otherwise, key relative prices such as the real exchange rate and the real interest rate could move into disequilibrium positions, making the macroeconomic situation unsustainable. The dynamics of disinflation matter a great deal in the design of the stabilization plan. The convergence toward a low-inflation equilibrium could be a slow process.

- The cost of stabilization is high, whether it is paid for up front (as it was in the 1975 program, when real wages, output, and employment were cut) or when it is delayed (as it was after Chile's boom in the crisis of 1982-83, when the current account deficit had to be corrected). Different programs (fiscal shock versus exchange-rate-based stabilization) distribute the costs of stabilization differently over time.

- The post-1984 experience illustrates that well functioning goods markets, a competitive real exchange rate, restoration of basic macroeconomic balance, and favorable terms of trade contributed significantly to restoring non-inflationary growth in Chile.

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Comments made by Bela Balassa, Sebastian Edwards, Leo Leiderman and Nissan Liviatan and participants in the conference on "Lessons of Economic Stabilization and Its Aftermath," held in Jerusalem, January 31-February 1, 1990 are acknowledged. We thank Larry Bouton and Fernando Quevedo for research assistance, Raquel Luz for word processing and Whitney Watriss for editorial help.

## I. Introduction.

This paper evaluates Chile's stabilization policies since the early 1970s. Four episodes are examined: (1) the high inflation at the beginning of the military regime when inflation was close to 1000 percent per year; (2) the orthodox stabilization program of 1975; (3) the exchange rate-based stabilization of February 1978-June 1982; and, (4) the post-1984 adjustment period with a large real devaluation and low inflation. Finally an overall evaluation of the post-1973 experience with stabilization is provided.

Chile has had a long history of inflation. In the 1960s, a period when government policy aimed to validate the inertia inflation that was resulting from the periodic wage and exchange rate increases (Cauas 1970), inflation reached an average of 21.1% per year. In the early 1970s, following the socialist-populist policies of the Allende government, in spite of widespread price controls inflation accelerated reaching 558% per year in August 1973, the month before the military coup that deposed Allende. The military government thus had to contend with an economy suffering from the worst inflation in Chile's history as well as from widespread distortions and major macroeconomic imbalances. With a public sector deficit close to 30% of GDP, financed mostly through the printing of money the real demand for money was shrinking and inflation accelerating despite extensive price controls.

In its initial years the military government attacked the inflation by controlling the growth of the money supply through a drastic reduction in the public sector deficit. In spite of that reduction, however, inflation continued at the three-digit level well into early 1977. A key question is why inflation took so long to drop below the three-digit level, given the very significant reduction in the public sector deficit. In February 1978, the governments responded to the situation by introducing a preannounced devaluation schedule

(tablita), with the devaluations to proceed at decreasing rates much below the difference between domestic and foreign inflation. By June 1979, it fixed the exchange rate.

Three basic objectives underlay this new policy. First, in a small country such as Chile, which by then had lowered its trade tariffs substantially, a slowdown in the rate of devaluation was supposed to reduce the expected rate of inflation. Second, the new system was expected to put downward pressure on the rate of increase in the price of tradeable goods. Third, it was to lead to a further integration of the domestic and international capital markets and reduce domestic interest rates by lowering the expected rate of devaluation.

The authorities thought that the new policy was fully credible, given that the fiscal deficit had been transformed into a surplus. Contrary to expectations, however, Chile's inflation remained higher than international inflation for over two years, and the resultant substantial real appreciation of the peso reached close to 30% by the end of 1981. The question then became why it took so long for domestic inflation to converge with international inflation. Furthermore, in spite of financial liberalization and the opening of the capital account, real interest rates averaged around 50 % per year in the period 1976-78 (see table 1). A key question here is why real interest rates were so high during this period?

On June 14, 1982, with Chile in the middle of a major crisis resulting from a large accumulated decline in competitiveness, large losses in its terms of trade, and significant increases in international and domestic interest rates, the government abandoned the fixed exchange rate policy. There ensued a couple of years of disorganized macroeconomic management, after which, in 1984, Chile achieved substantial real devaluation and started a sustained recovery at the

time when a "solution" to a financial crisis was resulting in a large increase in central bank liabilities. A key question is how it achieved that real devaluation without an increase in inflation.

The rest of the paper is organized as follows. Section II presents an overview of Chile's macroeconomic policies, particularly in the 1970s and 1980s.

The next section analyzes the policies introduced at the beginning of the military government to deal with the money over-hang and accelerating inflation of September 1973. Section IV examines the shock treatment of 1975. Section V looks at the exchange rate-based stabilization of 1978-82 -- and at their impact on inflation. Section VI examines the behavior of interest rates and Section VII the post-1984 adjustment. Finally Section VIII concludes with an overall evaluation of the post 1973 period drawing the corresponding lessons from that stabilization experience.

## II. CHILE'S ECONOMIC POLICIES: AN OVERVIEW<sup>1</sup>

Beginning in the 1930s and up to 1974, Chile pursued the classic strategy of promoting industrialization through import substitution. The primary emphasis was on trade and exchange rate policies -- quotas, tariffs, multiple exchange rates and on average, an overvalued currency -- all of which discriminated against mining and agriculture and against exports (Behrman, 1976; Corbo and Meller, 1981). A further problem was that the structure of the effective rates of protection under the different trade regimes varied

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Much has been written on the Chilean economic experience. See in particular Corbo (1985a), Edwards and Edwards (1987), French-Davis (1982), Foxley (1981), Harberger (1982), Zahler (1983), Fontaine (1989) and Solimano (1990).

considerably across industries.<sup>2</sup> There were no major restrictions on capital inflows during this period, although outflows were quite controlled. By the end of the 1960s, GDP growth had slowed to only 2.1 percent per year, while inflation was running around 30% and unemployment around 6%. Chile's performance compared unfavorably with that of other upper middle-income developing countries (World Bank, 1983).

In 1970, the Allende government came to power. During its three years of rule, from November 1970 to September 1973, it tried to implement a radical transformation towards a socialist economy. The macroeconomic policy entailed large increases in expenditures that were not matched by increases in government revenues, a large public sector deficit emerged and as there was not a market for government debt, monetary expansion and a balance-of-payments crisis followed.

To suppress the growing inflation and address the severe balance-of-payments crisis, the government intensified the price controls and trade restrictions across the economy. Control of foreign trade and credit, along with commodity rationing, became important parts of the macroeconomic policy. The government also nationalized the major copper mines (that were owned by foreign companies), the domestic banking sector, accelerated the land reform process initiated at the Frei administration, a radicalization that at the end disrupted agriculture, and

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<sup>2</sup> The composition of imports during the 1960s showed the effect of this system of protection: only 15 percent of imports were consumer goods, about 30 percent were investment goods, and 55 percent were intermediate products. As the structure of imports moved away from consumption goods toward raw materials, parts and equipment essential to the industrial sector, and without close domestic substitutes, the Chilean economy became more vulnerable to fluctuations in the world economy. Furthermore, the import-substituting strategy, by protecting capital-intensive activities, gave rise to only a low level of labor absorption (see Corbo and Meller 1981).

either took over or allowed workers to take over the most important firms in manufacturing.

By the end of 1973 the Chilean economy was showing substantial macroeconomic imbalances. The public sector deficit which increased from 6.7 percent of GDP in 1970 to 30.5 percent of GDP in 1973, caused internal and external imbalances (Table 1). The internal imbalance led to accelerating inflation even with the widespread price controls and rationing. The external disequilibrium was temporarily contained by widespread restrictions on foreign trade -- differentiated tariffs, multiple exchange rates, and extensive quantitative restrictions on imports and exports.<sup>3</sup> With controlled interest rates that were highly negative in real terms, organized capital markets were almost nonexistent. When the price controls were lifted in late 1973, the rate of inflation was roughly 1,000 percent a year.

The Allende regime also changed exchange rate policies drastically, shifting ultimately to multiple rates for commodity trade. Initially, it abandoned the successful crawling peg policy of the second half of the 1960s in favor of a fixed nominal exchange rate. Given the state of the economy, this policy could only be sustained first through an increasingly restrictive trade regime and with multiple exchange rate regime, and then through a series of major devaluations. Toward the end of Allende's administration, the ratio between the highest and lowest official exchange rates was 52 to 1.

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<sup>3</sup> The restrictions on commodity trade were varied and considerable by the end of 1973 (Torres 1982). The Ad valorem tariff rates ranged from 0 percent to 750 percent, value of 105 percent, a mode of 90 percent and a median of 80 percent. Among 4,952 tariff positions, 187 contained import prohibitions. For 2,872 tariff positions, a 90-day non-interest-bearing deposit equal to 10,000 percent of the CIF value was required, and for 2,278 tariff positions previous approval had to be obtained before presenting an import request.



## Tabla 1

## ANNUAL MACROECONOMIC INDICATORS

Year	GDP				Unemployment		Current Acct.	Public	Public Capital	Total Gross	Terms of	Real Interest	Real
	GNP	Absorption <sup>1/</sup>	Deflator	CPI <sup>2/</sup>	Rate <sup>3/</sup>	Price of Copper	Deficit	Deficit <sup>4/</sup>	Formation <sup>5/</sup>	Investment <sup>6/</sup>	Trade <sup>7/</sup>	Rate <sup>8/</sup>	Wages
	(Percent changes)				(Percent)	(Cents Per Lb.)			(Percent of GDP)		(Index)	(percent)	1980=100
1980				11.6	7.4	30.8	-4.6			13.9	139.9		45.8
1981	4.8	8.1	6.5	7.7	8.7	28.7	-7.2			15.3	125.3		48.9
1982	4.7	2.6	13.4	13.9	6.3	29.3	-5.2			12.4	134.1		50.8
1983	6.3	5.8	43.6	44.3	5.1	29.3	-4.2			14.8	131.4		47.4
1984	2.2	2.9	47.3	46.0	5.3	44.1	-3.5			14.1	133.9		46.1
1985	0.8	0.4	39.3	28.8	5.4	58.7	-1.4			15.0	152.9		52.3
1986	11.2	18.5	28.5	22.9	5.4	69.5	-1.8			16.3	185.2		58.6
1987	3.2	0.6	25.8	18.1	8.1	51.1	-2.7			18.1	176.4		87.7
1988	3.8	4.8	33.9	26.6	8.1	56.1	-2			18.3	188.6		88.3
1989	3.7	5.8	39.9	30.7	8.2	66.6	-0.1			15.1	222.8		74.5
1970	2.1	1.8	40.5	32.5	7.1	64.2	-1.0	8.7	10.4	16.4	226.1		82.1
1971	9.0	9.7	18.4	22.1	5.5	49.3	-1.8	15.3	10.5	14.5	172.3		96.0
1972	-1.2	1.0	88.9	117.9	3.8	48.8	-3.1	24.5	9.8	12.2	168.2		86.3
1973	-5.8	-8.2	418.1	487.5	4.6	80.8	-2.8	30.5	8.4	7.9	187.2		58.8
1974	1.0	2.4	694.2	497.8	9.7	93.3	-1.9	5.4	12.5	21.2	197.8		55.5
1975	-12.9	-20.8	342.4	379.2	18.2	55.9	6.8	2.0	9.2	13.1	118.5	18.0	53.9
1976	3.5	0.2	250.7	234.5	18.8	63.6	1.5	3.9	6.1	12.8	127.8	64.3	59.8
1977	9.9	14.2	103.5	113.8	13.2	59.3	-4.1	-0.4	6.9	14.4	114.4	56.8	72.6
1978	8.2	9.7	56.6	49.8	14.0	61.9	-7.1	1.5	6.7	17.8	111.0	42.2	83.0
1979	8.3	10.5	46.3	36.6	13.6	89.8	5.7	-4.8	5.1	17.8	118.5	18.6 (22.9)	92.1
1980	7.8	9.3	29.2	35.1	11.8	99.2	7.1	-5.4	5.2	21.0	100.0	11.9 (215.3)	100.0
1981	5.5	11.6	12.2	19.7	11.1	78.9	-14.5	-0.3	5.1	22.7	84.3	38.7 (14.5)	104.0
1982	-14.1	-24.1	13.3	9.9	22.1	67.1	-9.5	34.0 (8.9)	4.7	11.3	80.4	35.1 (18.9)	109.3
1983	-0.7	-4.6	26.6	27.3	22.2	72.2	5.6	3.3 (7.2)	4.8	9.8	87.5	18.5 (10.0)	97.3
1984	6.3	8.5	14.3	19.9	19.2	62.4	-10.7	4.5 (9.0)	6.0	13.6	83.2	11.7 (9.0)	97.6
1985	2.4	-1.9	32.9	30.7	18.3	64.3	8.3	2.9 (9.8)	7.1	14.8	78.5	10.5 (9.4)	93.2
1986	5.7	5.4	19.2	19.5	13.5	62.3	6.9	1.6 (4.4)	7.6	14.7	82.0	7.7 (7.8)	94.9
1987	5.7	7.3	21.2	19.9	12.3	81.1	4.3	0.3 (0.9)	7.3	16.9	77.0	9.3 (7.3)	94.7
1988	7.4	8.9	21.2	14.7	11.2	117.9	0.7	3.6 (3.0)	6.2	17.0		7.5 (7.8)	102.8

1/ Includes private consumption, public consumption and total investment.

2/ From 1971 up to 1979, CPI correspondent to the one revised by Cortazar and Marshall (1980).

3/ Greater Santiago, Universidad de Chile.

4/ Considers general government and public enterprises; extracted from Larrain (1988) up to 1979 and thereafter from the Larrain and Marshall (1989). The figures in brackets include also an estimate of the quasi-fiscal subsidies channeled through the Central Bank.

5/ Extracted from Larrain (1988) up to 1985 and thereafter from Fontaine (1987).

6/ Constructed from fixed gross investment, change in stocks and GNP at current prices. Sources: Indicadores Económicos y Sociales '60-'85 and Larrain and Marshall (1989).

7/ Sources: Cuadernos Estadísticos de la Cepal, Indicadores Económicos y Sociales '60-'85 and Harandjarian (1988).

Sources: Indicadores económicos y sociales 1980-1985 and different issues: boletín mensual, Banco Central de Chile.

The domestic commodity markets were also highly regulated by the end of the Allende regime, with the government setting more than 3,000 prices through a regulatory body, the Dirección de Industria y Comercio (DIRINCO). The labor market in the organized sector was characterized by low mobility, the result of large severance payments. The government was, directly and indirectly, a major employer.

In September 1973 a military coup ousted Allende. The economic team of the new military government spent its first two years, 1974 and 1975, trying to stabilize the economy. In 1974 it introduced a major tax reform and in both 1974 and 1975 it lowered government expenditures significantly to reduce the major source of the public sector deficit. It also sold government assets. Good prices for copper in 1974 and a rollover of 30 percent of the outstanding debt service in 1973 and 1974, in addition to the above measures, eased the adjustment to the first oil shock.

As to trade policy, the government lowered the nominal tariffs to a maximum rate first set at 140 percent and then at 120 percent. By June 1975, it had lifted all the commodity price controls and removed the constraints on domestic interest rates by June 1975. Following a large devaluation in late 1973, the relative incentives for the production of exportable goods improved substantially, while those for home goods and highly protected import-competing goods fell.

By late 1974 and early 1975 the external environment was souring -- copper prices dropped, oil stayed high. Because of severely restricted access to external financing, the government had to implement one of the most severe adjustment programs in Chile's economic history. The macroeconomic adjustment program of 1975 was followed by a comprehensive set of policy reforms. On the

trade side all remaining quantitative restrictions on trade were lifted and tariffs were gradually reduced to a uniform 10 percent by July 1979. In 1976, when substantial real depreciation had been achieved, the multiple exchange rate system gave way to a unified exchange rate system and a crawling peg targeted to achieve a fairly stable real exchange rate (with, however, two revaluations of 10 percent, the first in early June 1976, the second in March 1977) was instituted.

Liberalization was much slower in two areas. One was labor policy though some qualifications are in order here. Suspension of collective bargaining and severe restrictions to labor unions activities until 1979<sup>4</sup>, and high unemployment in most of the period, weakened the bargaining power of labor, so in that sense it is hard to say this was a very "protected" market in Chile during the military regime. However, concerning wage policy a serious mistake from the viewpoint of consistency with the overall macroeconomic policy was done in mid-1979, at the time the Plan Laboral was launched, when compulsory 100 percent backward wage indexation (introduced in October 1974 for the public sector) was extended to those under collective bargaining in the private sector.<sup>5</sup> This undesirable reform resulted in an unsustainable appreciation of the real exchange rate and a macro crisis. The real exchange rate would have appreciated, albeit to a lesser extent, even without backward wage indexation because of the sluggish adjustment of the prices of nontraded goods.

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<sup>4</sup> The Plan Laboral of 1979 sanctioned in a new labor code the flexibilization of labor practices.

<sup>5</sup> For a review of the indexation, see A. Edwards (1985). For a review of wage and labor policies in the last 25 years in Chile see Solimano (1988).

Liberalization of capital inflows also proceeded slowly with important reforms introduced only in June 1979.<sup>6</sup>

With inflation continuing, in early 1977, a debate developed about the causes of inflation and the most appropriate way to deal with them. That debate led to two 10 percent revaluations, which were expected to lower inflation and sterilize part of the accumulation of reserves. Toward the end of 1977, the government targeted the rate of devaluation to exceed the rate of inflation to compensate the import-competing sector for the announced tariff reductions. In February 1978, it established an active crawling peg system with an explicit stabilization objective. For this purpose, the rate of crawl was established at well below the difference between domestic and foreign inflation.

Then, in June 1979, with the monthly rate of inflation about 2.5%, the government fixed the exchange rate at 39 pesos per dollar. Finally, in late 1979 it introduced a new labor code that re-established collective bargaining, albeit for just a fraction of the labor force, and mandated a formula for a wage floor that went well beyond the indexation instituted in late 1974.

The policy reforms from 1979 to 1982 emphasized improving the functioning of the domestic commodity markets and further deregulation of capital flows. However, pressure developed for compensatory duties to compensate the sectors suffering the most from the effects of the real appreciation that was developing. The government modified the tariff policy providing compensatory duties to countervail foreign dumping. By the end of 1986, however, only 16 products received compensatory duties.

Beginning in 1983, the government made several changes in the uniform tariff of 10% arguing that were needed for fiscal reasons. One was to raise the

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<sup>6</sup> See Corbo (1985a) Appendix.

level to 20% and then to 35%. However, as the anti-export bias of this policy was becoming clear, in February 1985 the new minister of finance reduced the level of the uniform tariff to 30% in March 1985, 20% in June [ ? ] and 15% in January 1988.

On the financial side, following the large devaluation of 1982 and sharp recession in that year (GDP dropped 14.1% in 1982), a substantial financial crisis developed. To avoid widespread bankruptcy by financial institutions and productive enterprises, the government established a comprehensive policy to rescue financially distressed institutions financed by a large expansion in the quasi-fiscal deficit of the Central Bank.<sup>7</sup> As a result, the overall public sector deficit (including an estimate of the quasi-fiscal subsidies of the Central Bank) increased from a surplus of 0.3% of GDP in 1981 to a deficit of 9.8% of GDP in 1985 (see Table 1). However by 1988 it had reduced to surplus of 3.0% of GDP. The government financed the public sector deficit with domestic borrowing and foreign borrowing by the Central Bank, thus avoiding -- in the short run -- monetization and inflation.

After 1984, the government designed a comprehensive adjustment aimed at restoring macro balances in a situation of restricted access to foreign borrowing. Key policies were a combination of an aggressive nominal devaluation and supportive fiscal and monetary policies to achieve a large real devaluation. Given the improved efficiency of the tradable sector, the real devaluation was designed to achieve a large expansion in import-competing and exportable activities, and in this way to start a sustained recovery. As mentioned before, a distinctive feature of the post-1984 adjustment process is that no major

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<sup>7</sup> On the innovative plan to deal with the financial crisis, see Larraín (1989).

acceleration in inflation took place in spite of both a major real depreciation of the exchange rate -- around 45 percent between 1984-89 -- and the solution of a severe domestic financial crises.

### III. October 1973 : "Corrective" Inflation and Money Overhang

This section examines the policies introduced in September/October 1973 to deal with the money overhang and inflation. In particular, we look at whether the increases in prices and the monetary expansion of late 1973 were consistent with the elimination of the money overhang.<sup>8</sup>

Some of the measures the new regime implemented in October 1973 with respect to the price, exchange rate and wage policies were (see Gotuzo, 1973):

- (i) liberalization of most controlled prices, maintaining temporary subsidies to basic foodstuff products.
- (ii) after a sharp devaluation, establishment of a dual exchange market with a single exchange rate for exports and imports and a much higher rate for tourism.
- (iii) granting of wage readjustments -- below inflation -- supplemented by bonuses and some modest increases in non-wage payments.

The government supplemented these measures with an initial attempt to improve the budgetary situation of the public sector through drastic increases

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<sup>8</sup> As noted, the macroeconomic situation in September of 1973, the month when the military coup occurred, was one of repressed inflation and generalized excess demand in different markets, as reflected in scarcities and queues. Widespread black markets for basic goods and foreign exchange were the result of the system of fixed prices set at artificially low levels at a time of increasingly expansionary policies.

in the prices of public enterprises to reduce their losses.<sup>9</sup> A more comprehensive fiscal reform was implemented in 1975.

Table 2 summarizes the behavior of prices, money, the exchange rate and wages following the price deregulation of October 1973. When prices were deregulated in October 1973, they jumped significantly -- 46% that month. In turn, the devaluation of the exchange rate for trade transactions was 229 percent (the devaluation for the exchange rate for tourism was around 1,000 percent).

It is important to look at the causes behind this large jump in the price level in order to learn more about how to deregulate prices after a period of control.<sup>10</sup>

Our basic contention is that the sudden jump in prices was closely linked to a money overhang that had been accumulating since 1971 as a consequence of the overly expansionary monetary policies in the context of controlled prices and a falling demand for money, the result of the acceleration in inflation since 1972. To assess the importance of the money overhang in Chile in that period, we estimate a semi-logarithmic demand for money equation with a partial adjustment mechanism for the period 1960:2 to 1970:4.<sup>11</sup> We then use that estimate to measure the excess supply in the money market -- the money overhang -- for the period 1970-73.

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<sup>9</sup> A measure in that direction was the establishment of a uniform wage and compensation system for the public sector (escala unica).

<sup>10</sup> Although the misalignments of relative prices associated with the system of controls in Chile in 1973 was quite extreme, its experience does prove useful lessons for countries using price controls as part of a disinflationary package. Chile apparently never considered the alternative of a monetary reform of the type pursued in Germany immediately after World War II, with a capital levy (or semi-confiscation) of the holding of money (Wallich 1955).

<sup>11</sup> On the specification and estimation of demand for money for Chile, see Corbo (1982) and Matte and Rojas (1988).

Table 2: PRICES, MONEY, THE EXCHANGE RATE AND WAGES IN CHILE.  
(rate of change, %) )

	<u>Inflation Rate (CPI)</u>	<u>Money Supply (M1)</u>	<u>Official Nominal Exchange rate</u>	<u>Average Nominal Wages</u>
<u>1973</u>				
August	17.05	10.0	13.8	
September	16.88	9.0	14.86	
October <u>a/</u>	46.20	8.0	229.0	22.2 <u>b/</u>
November	5.69	20.0	3.5	
December	4.74	30.0	18.2	
<u>1974</u>				
January	14.49	11.0	8.1	32.08 <u>c/</u>
February	22.87	14.0	12.1	

Source: Yañez (1979) for the estimate of inflation and Banco Central de Chile (1985) for the other series.

- a/ Month of price deregulation  
b/ Variation with respect to July.  
c/ Variation with respect to October.

The estimated money demand equation is (the t-statistics in parentheses):

$$\ln(M/P) = -1.732 - 0.0064 \pi^e + 0.382 \ln Y + 0.826 \ln(M/P)_{-1}$$

(-3.38)
(-3.41)
( 3.48)
(14.44)

$$R^2 = 0.978$$

$$D.W = 1.75$$

$$\log. \text{ likelihood} = 79.12$$

$$F\text{-stat} = 602.57$$

$$N = 43$$

where

$\ln(M/P)$  = natural log of real money balances, real M1.

$\pi^e$  = expected rate of inflation. It is taken as the rate of change in (this period) CPI. For the CPI we use an estimate prepared by Yañez (1979) which corrects for repressed inflation.

$\ln Y$  = natural log of GDP.



According to Table 3 and Figure 1, there was considerable excess supply in the money market between 1971 and 1973. Moreover, it grew considerably after the last quarter of 1972, reaching a quarterly average of 37.8% of the stock of real balances demanded in the economy between 1972:4 and 1973:3. It is also interesting to note that the excess supply of money did not disappear in the last quarter of 1973 in spite of the sharp price increase of October 1973.

In part the reason is that monetary policy in the last quarter of 1973 was quite accommodating as can be seen in Table 2. In fact, between November and December of that year M1 grew 50% while the cumulative price increase from October until December was 56%. Interestingly, the reduction in the excess supply of money in the last quarter of 1973 was around 6% (Table 3). It is clear that a large excess supply of money -- or money overhang -- remained to be eliminated even after the price adjustment of the last quarter of 1973.<sup>12</sup>

Table 3: MONEY OVERHANG IN CHILE 1971-73

(money supply minus money demand as share  
of money demand, percentages)

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1971.1	18.4
1971.2	19.4
1971.3	12.9
1971.4	12.6
1972.1	18.8
1972.2	13.8
1972.3	11.8
1972.4	31.3
1973.1	47.3
1973.2	30.6
1973.3	41.8
1973.4	36.1

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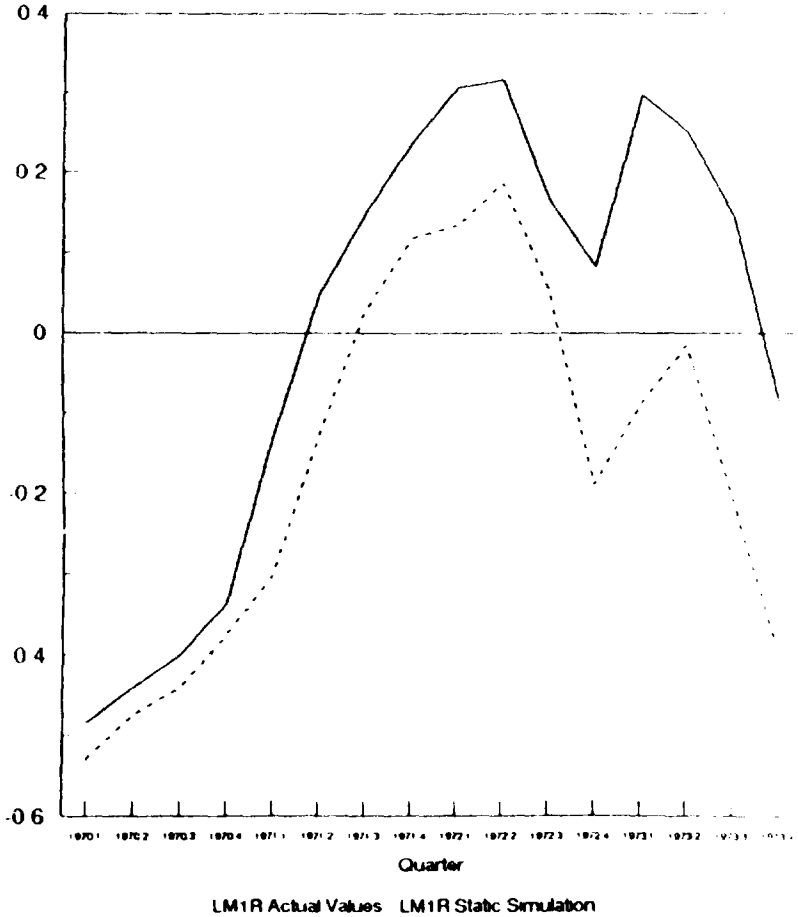
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<sup>12</sup> Ramos (1980) advances the hypothesis that the price level increase of October 1973 amounted to an overshooting of around 50 percent using the criteria of the official price level increase required to restore the level of real balances of 1970. In addition Ramos argues that the overshooting in the price level cut aggregate demand giving rise to a slump in economic activity on the demand side.

Figure 1  
**CHILE 1970 - 1973**

Actual value and static simulation  
 Based on quarterly data

Actual value and static simulation of LM1R

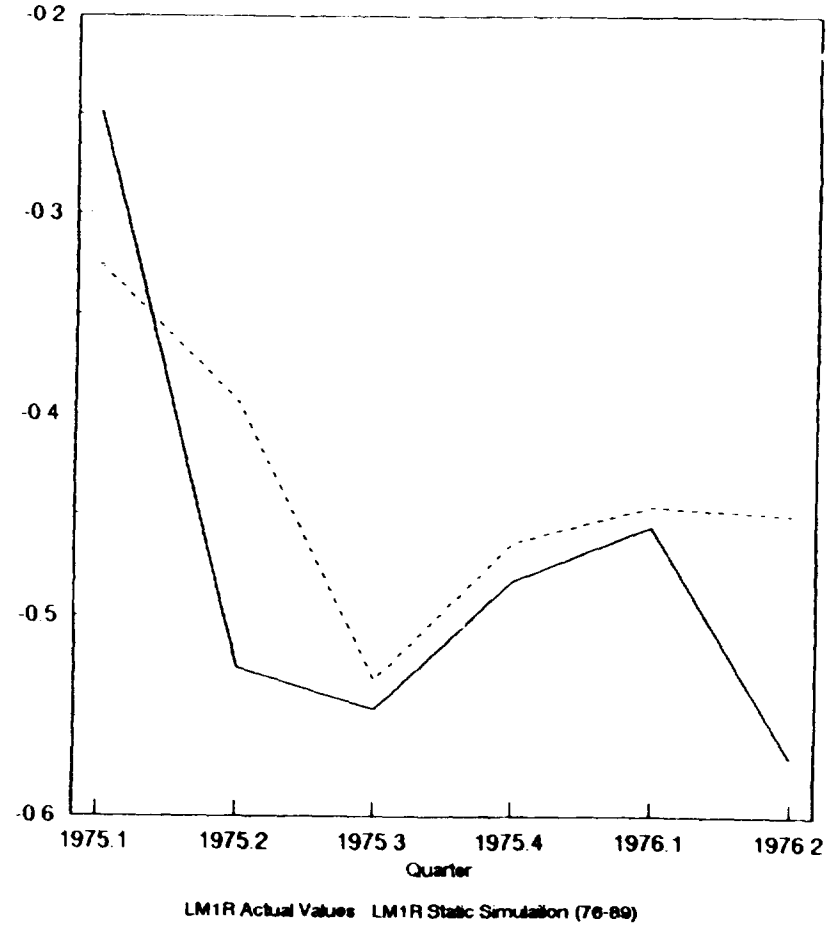


(Dinero w) FQ

Figure 2  
**CHILE 1975 - 1976**

Actual value and static simulation  
 Based on quarterly data

Actual value and static simulation of LM1R



LM1R Actual Values LM1R Static Simulation (76-89)

(Dinero w) FQ

This important finding may help explain why inflation did not recede after the burst of "corrective inflation" in the fourth quarter of 1973.

#### IV. The Monetary Shock of 1975 and the Dynamics of Disinflation

##### a. Monetary Policy Revisited

The actual stance of monetary policy in the "shock treatment" of 1975 which entailed a drastic drop in the rate of growth of money, has been the subject of controversy. The severe fiscal adjustment led to a further reduction of 3.4 percentage points of GDP in the consolidated non-financial public sector deficit in 1975, in spite of a drastic recession that year (GDP dropped 12.9%). However, it is not clear if monetary policy was indeed tight. Some have even argued that there was no monetary shock in Chile in 1975 (e.g., Harberger [1982] notes the high rates of money growth in that year).

Here we define the stance of monetary policy not just in terms of the supply side of the money market, but also by comparing the supply of money with the demand for money. As is well-known, it is expected that a stabilization plan will produce a fall in the velocity of money -- an increase in the demand for money -- if it is credible. To determine the degree of excess demand or supply in the money market, we estimate a demand for money equation using quarterly data for the period 1976:1 to 1989:1.<sup>13</sup>

Using a similar specification (and definition of variables) as before for the demand for money, (but note that as interest rates were deregulated after

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<sup>13</sup> In estimating the quantity of money demanded in 1975:1-1976:2 we control for the drop in GDP of 12.9% that year. We do so by using the level of GDP that would have been observed if the growth target of 6 percent set by economic policy for 1975 had been achieved (Caus 1975).

May 1975, the expected cost of holding money is represented by the nominal interest rate,  $i$ , paid on 30-89 day financial instruments), we get

$$\ln(M/P) = -1.45 - 0.005 i + 0.326 \ln Y + 0.645 \ln(M/P)_{-1}$$

(-1.92) (-1.85) (2.06) (7.69)

$$R^2 = 0.88$$

$$D.W. = 1.91$$

$$\text{Log likelihood} = 57.19.$$

$$F\text{-stat} = 121.68$$

$$N = 53$$

As Figure 2 and Table 4 show, there was an excess demand for money in the money market in 1975 and the first two quarters of 1976.<sup>14</sup> That is, monetary policy, as measured by the degree of excess demand in the money market, was particularly tight in the second quarter of 1975, coincident with the launching of the "Causas Plan" in April of that year.<sup>15</sup> It is also interesting to note that monetary policy was tightened in the second quarter of 1976 as the rate of inflation regained the pace of early 1976.

Having established that monetary policy was indeed tight under the orthodox stabilization plan of 1975 (fiscal policy was undoubtedly restrictive as well, since the fiscal deficit dropped from 10.5% of GDP in 1974 to 2.6% in

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<sup>14</sup> Sjaastad and Cortes (1978) and Lagos and Galetovic (1989) arrived at a similar conclusion for 1975.

<sup>15</sup> The decision to reduce inflation through tight fiscal policies seemed to have been very firm, as this quotation from Causas (1975, p. 155) indicates: "The budgets and programs in force for the purchase of goods and services in public institutions and state enterprises will be reduced between 15 and 25 percent. These reductions will be implemented at any cost, including the dismissal of any functionaries who are unable to understand that the reduction of inflation receives top priority in the economic policy... their particular interests as institution or individuals, although very respectable, are totally without importance in comparison with the principal preoccupation of all Chileans, namely inflation."

1975), it remains an open question why it took so long for the rate of inflation to fall at least below the three-digits level, a drop that only took place in 1977.

Table 4: EXCESS SUPPLY FOR MONEY IN 1975 AND EARLY 1976

(money supply minus money demand as  
a share of money demand, percentages)

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1975.1	7.9
1975.2	-12.3
1975.3	-1.5
1975.4	- 1.8
1976.1	-1.1
1976.2	-11.3

---

#### B. Why Inflation Took So Long To Come Down

To address that question we examine the role of two factors that may have contributed to the slowness of the deceleration of inflation:

- (i) the inflationary effect of the exchange rate policy (complemented with fiscal restraint), which was oriented to achieving a further real depreciation of the peso in 1975. That real depreciation was in turn a response to the large drop of 45% in the real price of copper between 1974 and 1975 and the planned reductions in tariffs. A real depreciation was accomplished by following a very aggressive policy of nominal devaluations.
- (ii) the persistency effect that resulted from the wage indexation rule for the public sector wages that geared them the previous periods rate of inflation.

We also will examine the speed of disinflation and the output cost of a counterfactual path for money growth during the stabilization shock of 1975.

A simple model of inflation determination, along the lines of Bruno and Fischer (1986) and Fischer (1988), is set up to deal empirically with the issue of velocity and the cost of the disinflation needed to explain the difficulty in lowering inflation in Chile after 1975.

This aggregative open economy model is comprised of aggregate demand, aggregate supply and wage equations. Aggregate demand in the goods market,  $Y^d$ , is made a function of the stock of real balances,  $M/P$ ; a vector of fiscal variables,  $Z$ , including real spending and taxes; and the real exchange rate,  $EP^*/P$ . A shift factor,  $q$ , is introduced to reflect demand shocks. The equation is

$$Y^d = f( M/P, Z, EP^*/P, q). \quad (1)$$

Aggregate supply,  $Y^s$ , is made an inverse function of: the real wage,  $W/P$ ; the real price of imported inputs, which is made equal to the real exchange rate for the sake of simplicity,  $EP^*/P$ ; and a factor,  $u$ , that reflects the effects of supply shocks:

$$Y^s = h( W/P, EP^*/P, u) \quad (2)$$

If we let the price level,  $P$ , equilibrate aggregate demand with aggregate supply, we get:

$$P = P( M, EP^*, W, Z, q, u) \quad (3)$$

Expressing equation (3) in terms of rates of change, where  $g_x$  is the rate of change in the variable  $x$ ,  $g_x = \delta x/x$ , and denoting the rate of inflation by  $\pi$ , we have:

$$\pi = \pi(g_m, g_w, g_d, \pi^e, \xi) \quad (4)$$

where  $g_m$  is the rate of growth of the money supply,  $g_w$  is the rate of growth of nominal wages,  $g_d$  is the rate of devaluation,  $\pi^e$  is the rate of foreign inflation, and  $\xi$  represents changes in aggregate supply and aggregate demand.

Solving for the rate of growth of demand, we have

$$g_Y = f(g_{M/P}, g_{e.e./p}, k) \quad (5)$$

where  $g_{M/P}$  is the rate of growth of real balances,  $g_{e.e./p}$  is the rate of change in the real exchange rate, and  $k$  is a vector representing changes in the fiscal parameters and terms of trade.

The rate of growth of nominal wages in the model,  $g_w$ , is made a function of the rate of expected inflation,  $\pi^e$ , the deviation of current output from potential output,  $Y/Y^p$ , and the rate of growth of labor productivity,  $g_y$ . Given that wages are indexed to past inflation, we use the last periods inflation in the wage equation. instead of expected inflation (although the degree of indexation has changed during the period).<sup>16</sup>

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<sup>16</sup> See Cortázar (1983), Corbo (1985b), and Solimano (1988) for an analysis of wage policy in Chile.

$$g_t = s(g_{t-1}, Y/Y^p, g_{y1}). \quad (6)$$

The econometric estimation of the inflation, GDP growth and Wage equations are carried out, equation by equation, by two stages least squares, 2SLS, in order get consistent estimates of the parameters. The equations are estimated using quarterly data for the period 1974:1 to 1989:1. The 2SLS estimate of the inflation equation yields (the t-statistics are in the parentheses):<sup>17</sup>

$$\begin{aligned} \pi = & - 0.0045 + 0.358 g_t + 0.197 (g_t + \pi^*) + 0.210 (g_{t(-1)} + \pi^*(-1)) \\ & (-0.62) \quad (3.68) \quad (2.19) \quad (6.96) \\ & + 0.155 g_{M1(-3)} + 0.029 \text{ DUMP} \\ & (3.95) \quad (1.19) \end{aligned}$$

$$\begin{aligned} R^2 &= 0.94 & \text{F-stat} &= 197.79 \\ \text{D.W} &= 2.11 & N &= 61 \\ \text{Log likelihood} &= 116.71 \end{aligned}$$

where  $\pi^*$  is measured as the implicit rate of foreign inflation in the imported component of the wholesale price index,  $g_{M1}$  is the rate of change in M1 and the variable DUMP is a dummy taking the average value of 1 in 1979:2, 1982:2-3 and 1984:3, at the time that discrete devaluations took place. An interesting result of the estimation is the time lag that takes the rate of money growth to affect the rate of inflation significantly is three quarters (the value of the coefficient is rather low). That result is evidence of a lack of sensitivity of inflation to decelerations in the rate of growth of nominal spending in the short

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<sup>17</sup> The instruments used in the estimation of the inflation equation are: the constant,  $g_{t(-1)}$ ,  $g_{t(-2)}$ ,  $\pi^*(-1)$ ,  $g_{t(-2)}$ ,  $\pi^*(-1)$ ,  $g_{M1(-3)}$ ,  $\pi^*(-1)$ , DUMP.



run, a well-recognized feature of inflationary processes with an inertial component.

The 2SLS estimation of the GDP equation in rate of growth form for the same sample period is<sup>18</sup>:

$$\begin{aligned}
 g_V = & 0.023 + 0.211 (g_{M1(-1)} - \pi(-1)) - 0.051 (g_{s(-2)} + \pi^*(-2) - \pi(-2)) \\
 & (4.28) \quad (4.85) \quad \quad \quad (-1.60) \\
 & - 0.517 g_{V(-1)} - 0.071 \text{ DUMMY} \\
 & (-4.36) \quad \quad (-5.06)
 \end{aligned}$$

$$R^2 = 0.49$$

$$\text{D.W.} = 2.57$$

$$\text{log likelihood} = 116.44$$

$$\text{F-stat} = 13.57$$

$$N = 60$$

Concerning this estimation, it appears that the rate of growth of real money is significant with a one period lag. A real depreciation affects the rate of change in GDP with two lags, as was expected (following the dynamics of the export response to changes in the real exchange rate). In turn, the sign of the coefficients suggests the possibility of a contractionary devaluation in the short run in Chile, a feature that confirms the finding of other empirical studies of devaluation for Chile and other developing countries.<sup>19</sup> Finally, the dummy variable, DUMMY, takes the value of 1 in 1975:1-4 and 1981:4 until 1983:1, corresponding to the two large recessions that took place during the sample period.

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<sup>18</sup> The instruments used in the estimation were: the constant term,  $g_{M1(-1)} - \pi(-1)$ ,  $g_{s(-3)} + \pi^*(-3) - \pi(-3)$ , DUMMY,  $g_{V(-1)}$ , and the rate of change of GDP in mining.

<sup>19</sup> See Solimano (1986 and 1989) for effect of a devaluation on output employment and the trade balance in the case of Chile and Edwards (1986) for a sample of developing countries.

Finally, the 2SLS estimation of the wage equation for the same sample period yields:<sup>20</sup>

$$g_t = 0.011 + 0.912 \pi(-1) + 0.636 (y(-1) - g_t(-1))$$

(1.044)    (14.76)                    (1.11)

$$R^2 = 0.86 \qquad \qquad \qquad F\text{-stat} = 184.59$$

$$D.W. = 2.22 \qquad \qquad \qquad N = 60$$

$$\log.\text{likelihood} = 85.97$$

The coefficients of the contemporaneous rate of inflation and the output gap in the current period were excluded from the regression because they were found to be statistically non-significant. As was expected, the rate of inflation in the last period turned out to be highly significant, with a value close to unity, a reflection of the lagged wage indexation followed in Chile during most of the sample period. Moreover, the coefficient for the rate of change in labor productivity with one period lag,  $g_{y(-1)} - g_{t(-1)}$ , is 0.636.

Figures 3, 4 and 5 show how the model tracks, done by comparing a (dynamic) base simulation using the observed values of the exogenous variables with the actual values of inflation, GDP growth and rate of change in nominal wages.

Using the estimates of the model reported above we perform some counterfactual simulations to shed light on the factors underlying the slow pace of disinflation observed after the orthodox shock treatment was implemented in Chile in 1975. The counterfactual simulations involve: (i) an exchange rate rule whereby PPP is maintained by devaluing the nominal exchange rate at a rate equal to the difference between domestic and foreign inflation in 1975 (As mentioned,

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<sup>20</sup> The instruments used in the estimation were the constant term,  $\pi(-1)$ ,  $g_{y(-2)} - g_{t(-2)}$ ,  $\pi^*(-1)$ .

the actual rule in that year was to devalue at a rate higher than the difference between the rates of domestic and foreign inflation); (ii) a change in the wage rule from lagged wage indexation to indexation based on contemporaneous inflation;<sup>21</sup> and (iii) a combination of (i) and (ii). For each simulation we examine the associated path of inflation, output and nominal wages, which we compare to the simulated values (see tables 5-8). We are not advocating that a PPP rule should have been followed for the exchange rate as the fundamentals also were changing during this period. Rather we use this alternative rule just for the purpose of designing a counterfactual.

The counterfactual simulations show that to some extent the exchange rate and the wage rules followed during the disinflation of 1975 tended to postpone the reduction of inflation in Chile. Table 5 shows that the size of the anti-inflationary gains from the slower pace of devaluation are greater in the short run, as column 1 indicates. However, the implicit acceleration in inflation associated with the exchange rate rule actually followed in 1975 tended to disappear towards 1977.

On the other hand, the alternative wage rule -- that geared to current rather than lagged wage indexation -- has a more lasting disinflationary effect over time, as column 2 shows. Furthermore, the counterfactual simulation combining both a change in the exchange rate and the wage rule (simulation 3) shows that the magnitude of the disinflation under those two counterfactual policy rules are non-negligible. Given perspective, the occurrence of adverse

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<sup>21</sup> Operationally this rule requires a wage increase based on an estimated inflation plus an adjustment at the end of the period to correct for the difference between estimated and actual inflation.

# CHILE

## INFLATION, GDP GROWTH AND WAGE GROWTH

(Actual and Base Simulated Values)

Figure 3

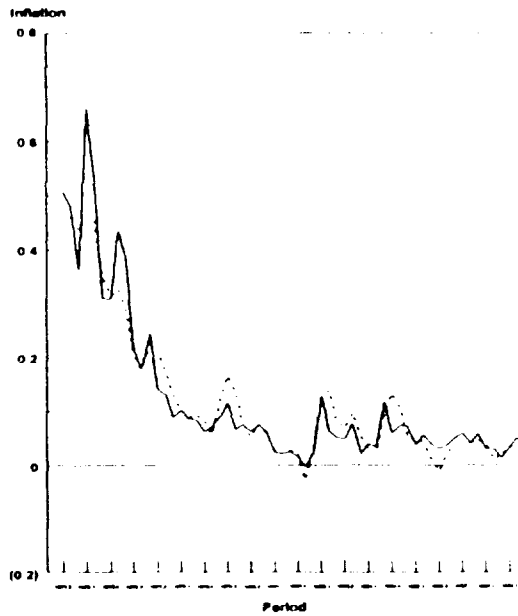


Figure 4

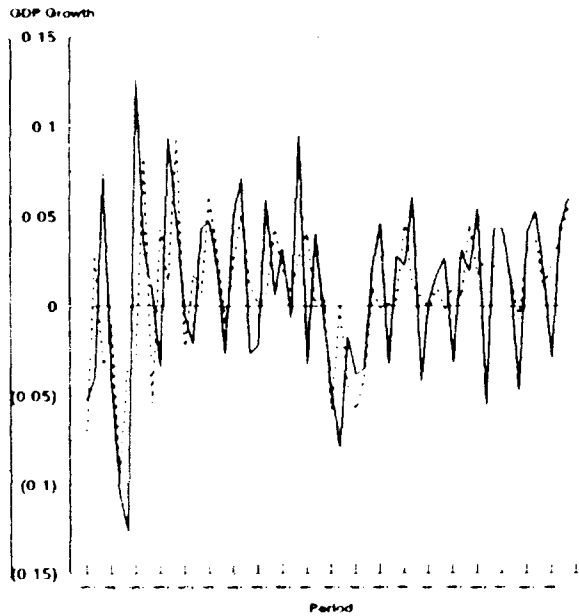
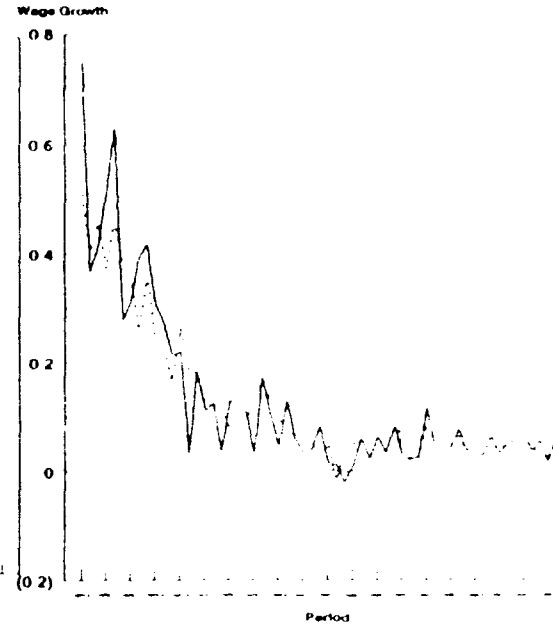


Figure 5



Actual Values Base Simulated Values

Table 5: RATE OF INFLATION -- COUNTERFACTUAL SIMULATIONS

(difference between the counterfactual simulations  
and the base simulation, percentages)

	(1) Exchange Rate Policy of Maintaining PPP in 1975 (simulation 1)	(2) Change in the Wage Rule to Contemporaneous Indexation (simulation 2)	(3) Simulation 3 (Sim.1&2)
1975:1	-5.52	2.78	- 5.96
1975:2	- 11.52	1.11	- 15.39
1975:3	- 5.30	- 4.38	- 8.85
1975:4	- 4.16	- 0.92	- 6.32
1976:1	- 8.76	1.84	- 11.69
1976:2	- 2.77	- 1.13	- 1.32
1976:3	4.93	- 4.05	6.13
1976:4	3.39	- 1.17	0.68
1977:1	- 4.80	3.01	- 9.12
1977:2	- 4.37	- 0.17	- 6.81
1977:3	2.69	- 2.19	4.37
1977:4	5.06	- 2.10	4.74

external shocks -- such as the drop in real copper prices -- is likely to have retarded disinflation in 1975. On the other hand, the practice of lagged wage indexation and aggressive devaluation also contributed to the inertia inflation, making the restrictive fiscal and monetary policies less effective in reducing inflation.

The Chilean experience of 1975 illustrates the trade-off, often present in the practice of stabilization, between more rapid disinflation and the need to adjust the real exchange rate (a move that often result in a temporal acceleration of inflation) to restore external balance in the wake of adverse external shocks.

The slow pace of disinflation in Chile in spite of the fiscal adjustment and the tight monetary policy put in place in 1975 suggests two different views

of the dynamics of disinflation and the appropriate policies for attacking it. One view would question to what degree it was efficient to rely just on tight money and fiscal policies to reduce inflation in 1975 in a country like Chile, with its history of four decades of inflation and given that the indexation mechanisms and record of failed stabilization would likely make people skeptical of the possibility of quick disinflationary results. In fact, recent experience with restrictive fiscal policy -- cum -- income policies in chronic inflation countries shows that the speed with which inflation is lowered and the output cost of disinflation can be reduced with respect to what is possible under a purely orthodox package (e.g., Israel and Mexico).<sup>22</sup>

The other view would argue that disinflation was slow because monetary policy was too accommodating, a situation that validated inflationary expectations in spite of the sharp fiscal adjustment.

The following counterfactual simulation examines the anti-inflationary gains and the cost of disinflation on output growth that might have resulted had a tighter monetary policy been followed. In this simulation, we cut in half the rate of growth of M1 of the previous years starting in 1975.<sup>23</sup>

The exercise shows (Table 6 and Figure 9) that a tighter monetary policy would have produced little extra anti-inflationary gain in the short run -- say, in the first year -- when compared to the actual monetary policy. Instead, the larger anti-inflationary gains would have resulted in the second and third years.

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<sup>22</sup> For reviews of different stabilization experiences, see Bruno et al. (1988), as well as Kiguel and Liviatan (1988) and Solimano (1989).

<sup>23</sup> The counterfactual quarterly rates of money growth under this tighter money alternative are: 20% per quarter for 1975, 10% per quarter for 1976 and 5% per quarter for 1977. The actual average quarterly rates of growth of M1 were 37.6% in 1975, 30.6% in 1976 and 20.3% in 1977. The average rate of growth of M1 in 1974 was 37.9%.

On the real side, the tighter monetary package carries with it an extra cost to the stabilization package, as it was accompanied by additional deceleration in the growth of GDP, mainly, but not only in the short run. That is, the cost of quicker disinflation is slower growth in the short run. This result is basically a consequence of: (i) the stickiness of inflation to decelerations in money growth (a goods market phenomenon); and (ii) the fact that lagged wage indexation de facto acts like a static expectations mechanism that slows the adjustment of wages and prices over time.

Table 6: COUNTERFACTUAL SIMULATION: TIGHTER MONETARY POLICY 1975-77  
(difference with control simulation, percentages)  
(simulation 4)

	<u>Rate of inflation</u>	<u>Rate of GDP growth</u>
1975:1	0.00	0.00
1975:2	0.00	- 1.97
1975:3	- 0.45	- 1.85
1975:4	- 0.57	- 2.82
1976:1	- 0.83	- 4.62
1976:2	- 1.33	- 0.18
1976:3	- 0.47	- 2.83
1976:4	- 0.80	- 1.50
1977:1	- 0.60	-7.65
1977:2	- 1.94	- 0.20
1977:3	- 0.62	- 1.68
1977:4	- 0.61	- 0.24

#### V. Exchange Rate Based Stabilization: 1978-82

An important shift in the approach to stabilization took place in 1978. Closed economy monetarism gave way to strong emphasis on using the exchange rate as the chief tool for disinflation. That change in approach was the result of the popularization in the southern cone countries, at that time of the monetary

approach to the balance of payments and also to the fact that as the trade liberalization initiated in 1974 was approaching a uniform, across-the-board tariff of 10% (except for small cars) in 1978, international prices in domestic currency started to play a major role in domestic price formation.<sup>24</sup> In that context, the nominal exchange rate was thought to be a key determinant of domestic inflation. Thus, in February 1978 the government instituted the system of preannounced rates of devaluation, culminating in a rate of 39 pesos per dollar, a level that was maintained until June 1982.

The result of the new stabilization plan was disinflation at a lower pace than expected and a lack of convergence between domestic and foreign inflation within a reasonable period. In turn, the effects of that situation were overvaluation of the currency, an unsustainable expansion in domestic expenditures, and of unsustainable high current account deficits -- close to 14% of GDP in 1981. In addition, unfavorable external conditions in 1982 (the drop in terms of trade and the increase in international interest rates) resulted in high real domestic interest rates and a cut in expenditures. With a fixed nominal exchange rate and inflexible prices for non-tradables, a major recession developed. In the context of a sharp increase in unemployment and the emerging recession in June 1982 the government abandoned the fixed exchange rate.

Then, just as Chile was initiating the adjustment, it was hit by another external shock -- the sharp reduction in capital inflows that followed the difficulties Mexico had in serving its debt. On top of the sharp recession, a financial crisis was emerging.

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<sup>24</sup> There is a vast literature on that period, e.g., Corbo (1985a and 1985b), Edwards and Edwards (1987), and Ffrench-Davis (1983). Corbo and McNelis (1989) used time-variant parameter estimation technique to detect structural changes in the rules of price formation in manufacturing during the period of trade liberalization in the seventies in Chile.



One popular explanation for the appreciation of the peso was that a system of full indexation of wages to the rate of increase in the CPI in the previous period -- the system instituted by law -- was, in the context of declining inflation, bound to result in substantial inertia inflation and appreciation. Furthermore, the large and unsustainable capital inflows of the late 1970s and early 1980s provided temporary support for the much appreciated real exchange rate and permitted an unsustainable level of domestic expenditures. At the same time, real wages rose at the rate of the reduction in inflation, with real wages in dollars rising even more because the fixed nominal exchange rate led to increasing overvaluation.<sup>25</sup>

To explore quantitatively the role of alternative wages rules in disinflation under an exchange rate-based stabilization effort such as the one tried in Chile between 1978 and mid-1982, we perform two counterfactual simulations: (i) a change in the wage indexation rule from full lagged indexation (the rule followed after June 1979) to full contemporaneous indexation; and (ii) the indexation of nominal wages to the exchange rate.

Table 7 and Figures 10, 11 and 12 show that the indexing of wages to the exchange rate produces larger and quicker disinflation. In turn, the rule of contemporaneous wage indexation tends to dominate the rule of lagged indexation in terms of disinflationary gains.

We now examine the associated path of GDP growth and the behavior of real wages and the real exchange rate under these two alternatives wage rules. As Table 8 reveals, replacing lagged for current inflation or the exchange rate

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<sup>25</sup> There was domestic deflation in Chile in February 1982. However, what was needed to correct the cumulative overvaluation and maintain the fixed nominal parity with the dollar was a protracted period of domestic deflation. Obviously, the real cost of such a path of deflation-induced real depreciation was enormous.

**Table 7: EFFECTS ON INFLATION OF ALTERNATIVE WAGE RULES  
IN 1978-82 -- COUNTERFACTUAL SIMULATIONS**  
(difference with base simulation, percentages)

	<u>Full Contemporaneous Wage Indexation (simulation 5)</u>	<u>Wage Indexation to the Exchange Rate (simulation 6)</u>
1978:1	- 4.28	- 6.18
1978:2	- 2.29	- 5.37
1978:3	0.17	- 6.52
1978:4	- 2.14	- 6.12
1979:1	- 4.81	- 4.38
1979:2	9.62	1.87
1979:3	6.58	-12.24
1979:4	- 5.41	-16.40
1980:1	- 9.13	-12.33
1980:2	- 3.86	- 7.49
1980:3	2.95	- 5.75
1980:4	- 3.85	- 8.17
1981:1	- 6.20	- 6.30
1981:2	- 1.62	- 3.48
1981:3	- 0.67	- 2.95
1981:4	- 2.72	- 3.82
1982:1	- 9.02	- 3.09
1982:2	7.86	21.68
1982:3	13.23	40.29

**Table 8: REAL WAGES AND THE REAL EXCHANGE RATE  
UNDER ALTERNATIVE NOMINAL WAGES RULES**  
(Differences in rates of growth with respect  
to the base simulation, percentages)

	<u>Real Wages</u>		<u>Real Exchange Rate</u>	
	<u>Contemporaneous Indexation Rule (Simulation 5)</u>	<u>Indexation to the Exchange Rate (Simulation 6)</u>	<u>Contemporaneous Indexation (Simulation 5)</u>	<u>Indexation to the Exchange Rate (Simulation 6)</u>
1978.1	- 2.74	- 3.97	1.53	2.22
1978.2	- 1.47	- 3.44	0.82	1.92
1978.3	0.11	- 4.18	- 0.06	2.34
1978.4	- 1.37	- 3.93	0.77	2.20
1979.1	- 3.09	- 2.81	1.73	1.57
1979.2	6.17	1.20	- 3.45	- 0.67
1979.3	4.22	- 7.85	- 2.36	4.39
1979.4	- 3.47	-10.52	1.94	5.88
1980.1	- 5.85	- 7.91	3.27	4.42
1980.2	- 2.47	- 4.80	1.38	2.69
1980.3	1.89	- 3.69	- 1.06	2.06
1980.4	- 2.47	- 5.24	1.38	2.93
1981.1	- 3.98	- 4.04	2.22	2.26
1981.2	- 1.04	- 2.23	0.58	1.25
1981.3	- 0.43	- 1.89	0.24	1.06
1981.4	- 1.74	- 2.45	0.97	1.37
1982.1	- 5.78	- 1.98	.23	1.11
1982.2	5.04	13.90	- .82	- 7.78
1982.3	8.49	25.84	- 4.74	-14.45

as the indexer of wages to speed up disinflation produces slower growth in real wages. In fact, the rate of growth of real wages under both the contemporaneous inflation indexation rule and the exchange rate-linked rule is lower than in the base simulation (where wage indexation rule adjusts nominal wages based in lagged inflation). Furthermore, indexation to the exchange rate reduces the rate of growth of real wages more than does indexation to contemporaneous inflation. The reason is the deceleration in the rate of devaluation after February 1978 (the rate was fixed in June 1979). This result would have been reversed had the exchange rate policy accelerated devaluation.

With respect to the real exchange rate, the counterfactual simulation indicates that it depreciates at a higher pace under the exchange rate-linked indexation rule for nominal wages than it does under the rule of indexation to current inflation. This result mirrors the slower pace of growth of real wages under this rule. Nominal wages grow less than do prices because the exchange rate is devalued at a lower rate in order to speed the reduction in inflation.

#### VI. Financial Openness and Interest Rates: Why Real Interest Rates Were So High?

In an economy where controls on the movement of private capital are not completely effective, the observed domestic interest rate ( $i$ ) can be expressed as a weighted average of the uncovered interest parity interest rate ( $i^*$ ) and the domestic interest rate that would be observed if the private capital account were completely closed ( $i'$ ). [ see Edwards and Khan (1985), and Haque and Montiel (1989)]. That is,

$$i = \psi i^* + (1-\psi)i'; \quad 0 \leq \psi \leq 1 \quad (7)$$

where  $\Psi$  measures the degree of capital mobility. If  $\Psi=1$ , capital mobility would be perfect and the observed domestic interest rate would be equal to the uncovered interest parity interest rate (the world interest rate plus the expected rate of depreciation). If, on the other hand,  $\Psi=0$ , the capital account would be closed and the observed domestic interest rate would be equal to hypothetical closed economy interest rate. As the capital account is liberalized,  $\Psi$  should increase.

Starting with the demand for money

$$\ln(M^D/P) = \alpha_0 + \alpha_1 i + \alpha_2 \ln(y) + \alpha_3 \ln(M/P)_{-1}; \quad \alpha_1 < 0; \alpha_2, \alpha_3 > 0, \quad (8)$$

where  $y$  is real output,  $P$  is the domestic price level and  $M^D$  is the demand for money. Assuming equilibrium in the money market  $\ln(M^D/P) = \ln(M^S/P) = \ln(M/P)$  an expression for the observed domestic interest rate can be derived:

$$i = -(\alpha_0/\alpha_1) - (\alpha_2/\alpha_1)\ln(y) - (\alpha_3/\alpha_1)\ln(M/P)_{-1} + (1/\alpha_1)\ln(M/P). \quad (9)$$

If the private capital account is closed, this expression can be used to derive the hypothetical closed economy interest rate

$$i' = -(\alpha_0/\alpha_1) - (\alpha_2/\alpha_1)\ln(y) - (\alpha_3/\alpha_1)\ln(M/P)_{-1} + (1/\alpha_1)\ln(M'/P) \quad (10)$$

where  $M'$  is the money supply given a closed private capital account ( $M' = M - \text{Private Capital Account}$ ).

Replacing this hypothetical closed economy interest rate in equation (7) we obtain

$$i - i' = \Psi(i'' - i'). \quad (11)$$

That is, the deviation of the observed interest rate from the hypothetical closed economy interest rate is proportional to the divergence of the uncovered interest parity interest rate from the closed economy interest rate.

Edwards and Khan use a similar equation to derive fixed estimates of the degree of capital mobility.<sup>26</sup> A major problem with the Edwards and Khan approach, however, is that  $\Psi$  is not constant for countries where the degree of capital mobility is changing through time. In this paper we recognize that  $\Psi$  is a variable coefficient with its value varying with the degree of openness in the capital account. A similar idea was used in Corbo and McNellis (1989) for the estimation of price equations in economies where the degree of openness of the trade account is changing during the period of estimation.

To obtain a measure of the effective degree of capital mobility for Chile, equation (11') is used to estimate  $\Psi$  with quarterly data from 1975 to 1983.

$$(i - i')_t = \Psi(i'' - i')_t + \xi_t. \quad (11')$$

Equation (11') is estimated with two different methods: time-varying and constant coefficient.

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<sup>26</sup> Haque and Montiel modify their specification in a way that permits them to apply it to countries where interest rates are controlled and thus there is no data on the domestic market clearing interest rate.

Under the time-varying coefficient method, the coefficient is assumed to follow the process

$$\Psi_t = A\Psi_{t-1} + \nu_t. \quad (12)$$

The constant coefficient method may be viewed as a special case of the time-varying method where  $A=1$  and  $\text{var}(\nu_t)=0$ . In this paper, the time-varying parameter estimation is done using the Kalman filter.<sup>27</sup>

The significance of the variability in capital mobility can be seen in figures 13 and 14 where the time-varying coefficient estimates, the OLS estimate, and upper and lower bounds for the OLS estimate (calculated at 90% confidence intervals, based on the estimated standard error and the critical t-statistic) are plotted. If the Kalman-Filter estimate falls outside the upper or lower bounds, then the variation is significantly different from the variation one may tolerate under the constant coefficient assumption. The pattern that  $\Psi$  follows is directly related to the relaxation of restrictions on capital inflows (Corbo 1985a). The large drop in the value of  $\Psi$  after the second quarter of 1982 coincides with a period in which capital inflows all but disappeared following the domestic crisis and the international debt crisis.

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<sup>27</sup> In order to proceed with time-varying estimation, the Kalman filter must be initialized. In the absence of a priori knowledge, OLS estimates of the  $\Psi$ ,  $\text{var}(\Psi)$  and  $\text{var}(\xi)$  are used as Initial estimates of  $\Psi_0$ ,  $\text{var}(\Psi_0)$  and  $\text{var}(\xi_0)$ . Lastly, some a priori assumption must be made about the initial variation of the innovation to the coefficients  $\text{var}(\nu_0)$ . The time-varying coefficients are very sensitive to the initial value of this innovation. By theory,  $\Psi$  is bounded by 1 and 0. The restrictions placed on these innovation should be such that this restriction is met. The initial values of the innovation to the coefficients is assumed to be some fraction of the innovation to the observation equation. For estimation purposes we have chosen two values for this fraction, 0.001 and 0.0001. Values larger than this result in estimates of  $\Psi$  that violate the above theoretical bounds.

The observed and estimated domestic interest rates obtained from the two methods are shown in figures 6 - 9. As can be seen, the time-varying model tracks the behavior of the observed domestic interest rate quite well during this period. In contrast, the OLS estimates over-predict interest rates for most of the period. As expected, the fit is much better using the black market exchange rate of devaluation. The large over-estimation that occurs after the first quarter of 1981 coincides with a period when the central bank began to suggest an interest rate to the financial system.

From these results, we conclude that up to early 1978 domestic interest rates were driven mostly by domestic monetary policy and only in the second half of 1978 did the uncovered interest parity interest rate become more important.

#### VII. The Post 1984 Adjustment: Real Devaluation Without Inflation Acceleration.<sup>28</sup>

For the period 1984-1988 Chile engineered a large real devaluation that reached close to 50 percent. During the same period the public sector deficit, including an estimate for the quasi-fiscal deficit of the Central Bank, was reduced from 9 percent of GDP in 1984 to a surplus of 3 percent of GDP in 1988 (see Marshall and Larrañaga, 1989). Following the large devaluation of 1984, inflation increased in 1985 reaching 30 percent per year but then came down again to a level close to 20 percent per year. GDP growth slowed down in 1985 but then it averaged 6.3 percent per year in the period 1986-88 and the growth rate for

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<sup>28</sup> On policies during this period, see Arellano (1988), Fontaine (1989) and Marshall and Larrañaga (1989).

Figure 6  
**OLS and Time-Varying  
 Capital Mobility Coefficient**  
 (Using Black Market Exchange Rate)

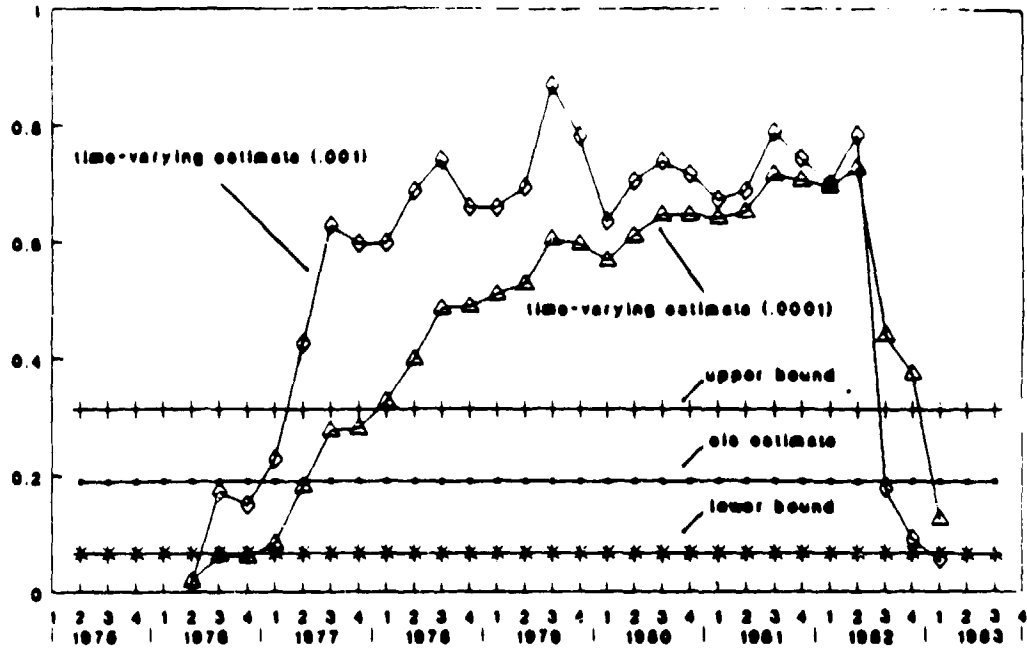


Figure 7  
**OLS and Time-Varying  
 Capital Mobility Coefficient**  
 (Using Official Exchange Rate)

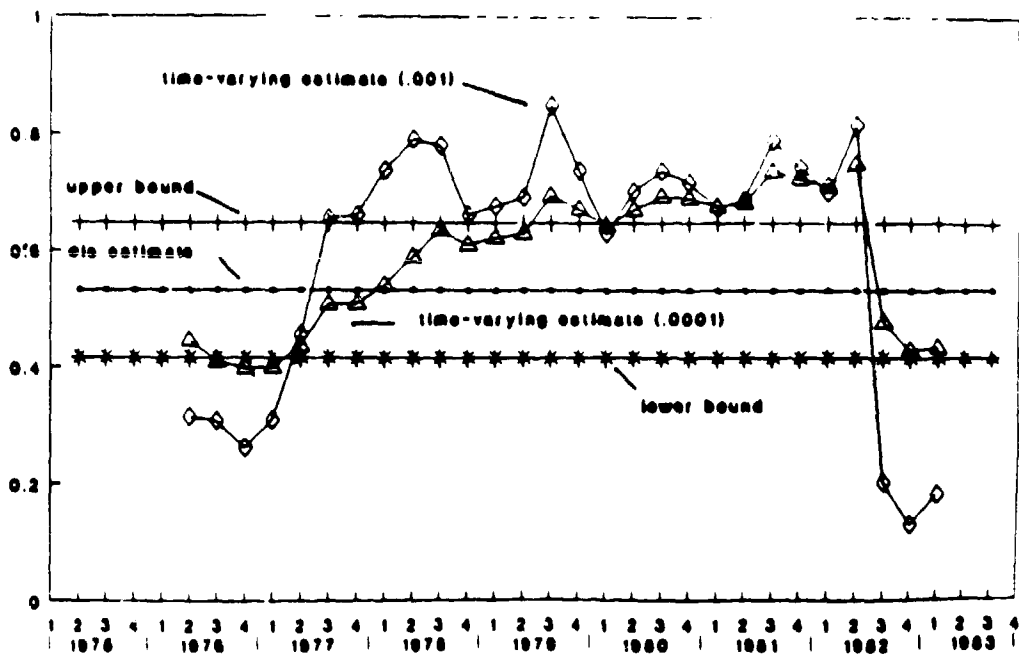




Figure 8  
**Observed and Estimated Domestic Interest Rate**  
 (Using Black Market Exchange Rate)

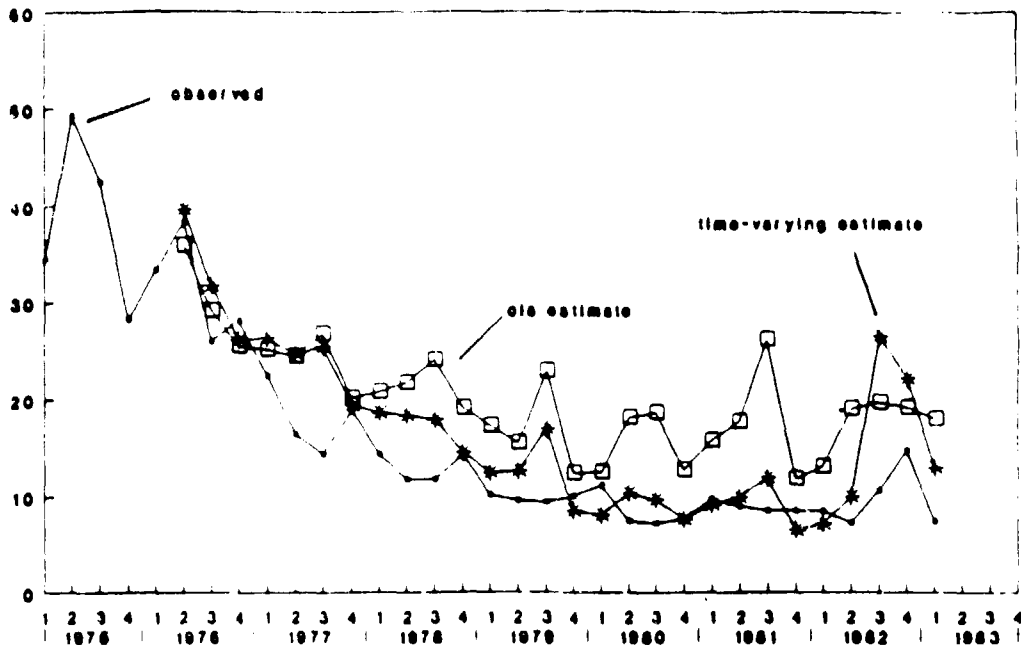
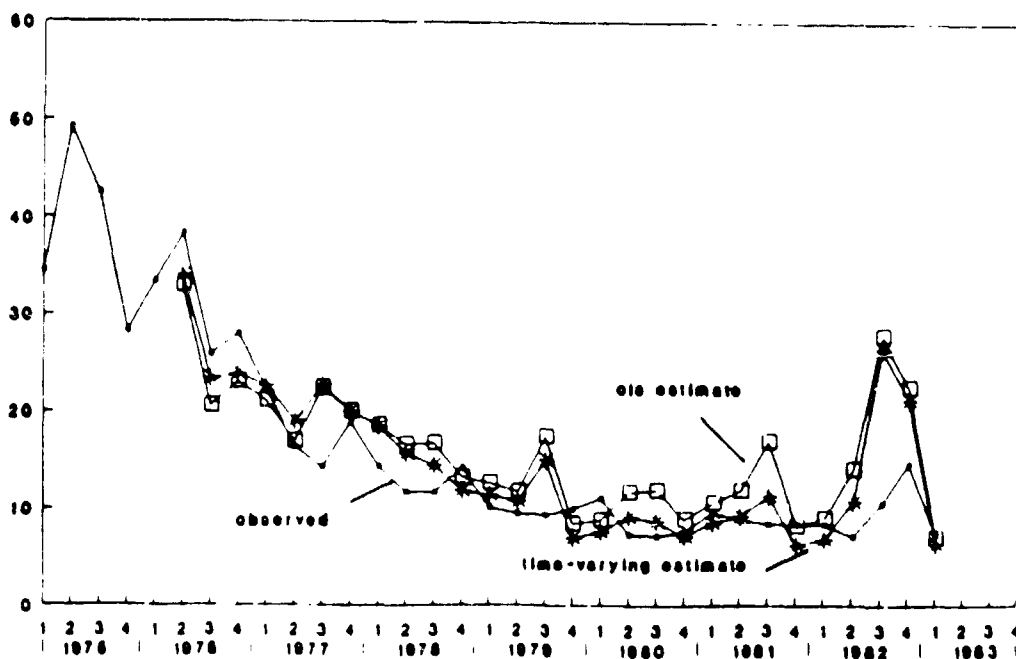


Figure 9

**Observed and Estimated Domestic Interest Rate**  
 (Using Official Exchange Rate)



1989 was around 10.0 percent (Table 1). This growth was pulled by non-copper exports that grew at an average rate of 13% per year in the period 1986-88.

#### Real Depreciation and Inflation

We are interested in analyzing how this real devaluation and turn around of the Chilean economy was achieved. Different factors are important here. First, Central Bank access to foreign markets as part of the renegotiations on the private sector debt. Therefore, the large deficits associated with the rescue operation of troubled financial institutions stemming from the financial crises of 1983 was not financed by printing money but by issuing foreign and domestic interest-bearing liabilities of the central bank. In fact, the public sector deficit (including the quasi-deficit of the Central Bank) was running close to 10 percent of GDP in 1985, non-monetary financing was obtained by the Treasury, tapering domestic and external financial markets. As the initial debt of the public sector was very small and monetary policy was quite activist, domestic real interest rate did not increase much. External financing was obtained from commercial banks as part of new money packages and from multilateral financial institutions. Further reduction in government expenditures and quasi-fiscal subsidies stemming from the programs of subsidies to debtors and preferential exchange rates by the Central Bank (ended by 1986) contributed to a drastic cut in the non-financial public sector deficit turning it to a surplus of around 3 percent in 1988. Therefore, the large fiscal adjustment made possible to obtain a significant real devaluation without a

permanent acceleration in inflation in spite of the burden imposed on the central bank by the solution of the financial crises of 1983 <sup>29</sup>.

A second factor that contributed to the non-inflationary adjustment in relative prices in Chile, in spite of a major real depreciation, was the combination of wage de-indexation engineered in 1982 and the persistence of considerable unemployment at least until 1987. In fact, unlike in some other Latin American countries, in Chile the authorities did not have to use inflationary acceleration to erode real wages in order to make them consistent with a higher real exchange rate.

A third element that contributed to avoid an inflationary spur from adjustment of the real exchange rate and the external accounts was the existence of relatively "low" inflationary expectations as the public internalized a rather tough fiscal stance by the authorities aimed to prevent a return to higher levels of inflation in spite of fiscal difficulties. In other words a reluctance to use the inflation tax (and the willingness and political ability to cut current public spending even in socially sensitive areas) was perceived by the public, giving rise to an anti-inflationary bias in the system.

The previous discussion on how the sharp real depreciation that took place in the Chilean economy after 1982 did not entail a sustained acceleration in inflation can be supported econometrically with a simple accelerationist specification of inflation run for both a pre-1982 and post-1982 sample using

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<sup>29</sup> It could be argued, however, that the large internal debt accumulated by the Central Bank in Chile constitute a "latent" inflationary pressure that can be triggered if other (than printing money) sources of revenues of the central bank, like the return from holdings of international reserves, transfers from the treasury or earnings from assets it acquired during the intervention of financial institutions in 1983 deteriorate (see Solimano, 1990).

quarterly data. The two stages least squares estimate for the sample 1976.1 to 1982.2 <sup>30</sup> yields the following result (t-statistics under parenthesis):

$$\pi = 0.007 + 0.805 (g_{t-1} + \pi_{t-1} - \pi_{t-2}) + 1.11 \pi_{t-1}$$

(0.47) (3.87) (9.89)

$R^2 = 0.79$

$D.W. = 1.58$

$\log.\text{likelihood} = 42.47$

$N = 26$

$F\text{-stat} = 45.27$

The two stages least squares estimates for the period 1982.3 to 1989.1 yields the following results:

$$\pi = 0.027 + 0.178 (g_t + \pi^* - \pi) + 0.368 \pi_{t-1}$$

(2.07) (0.99) (1.47)

$R^2 = 0.13$

$D.W. = 2.43$

$\log.\text{likelihood} = 62.69$

$N = 27$

$F\text{-stat} = 1.94$

It is apparent that a significant change in the structure of the inflation equation has taken place in the post 1982 period. On the one hand, the degree of persistence or inertia in the process of inflation is reduced significantly in the period post-1982 as compared to the pre-1982 period; in fact, the coefficient of  $\pi_{t-1}$  is reduced from (above) the unity in the period 1976.1 to 1982.2 to a coefficient 0.368 in the period 1982.1 to 1989.1. Undoubtedly the elimination of the clause of full lagged wage indexation since the third quarter of 1982 goes a long way explaining this reduction in price inertia for this period. Another major result, and very important for our

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<sup>30</sup> The instruments used in the estimation are : the constant term, the rate of nominal devaluation lagged one period, the rate of foreign inflation lagged one period, the rate of domestic inflation lagged two periods.

discussion, is the sharp reduction in the coefficient of the rate of depreciation of the real exchange rate in the inflation equation. In fact, the elasticity of the inflation rate with respect to the rate of depreciation of the real exchange rate falls from 0.80 in the period 1976.1 to 1982.2 to 0.17 in the period 1982.2 to 1989.1. Indeed the equation captures well the large reduction in the inflationary impact of real depreciation observed after mid-1982 in the Chilean economy.

#### Real Depreciation and Growth

The real depreciation has been one of the factors behind the recovery and growth record of the post-1984 period. In particular, we find that of non-copper exports and efficient import competing activities responded rapidly to the new higher real exchange rate and a modest increase in tariffs that took place after 1983.<sup>31</sup> Concerning the new configuration of relative prices, it is also worth mentioning that the policy of maintaining a real interest rate compatible with a reasonable rate of return for physical investment was another important element behind the recovery of private investment and the resumption of growth after 1984.<sup>32</sup>

Other factors behind the recovery cum growth process of the Chilean economy after 1984 were: (i) the large availability of labor and some unused capacity until 1987, (ii) the economy was with very few distortions (iii) very favorable copper prices in 1988-89, that provided a cushion on the external

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<sup>31</sup> On the response of exports to the real exchange rate see Caballero and Corbo (1989).

<sup>32</sup> The interest rate policy represents a departure with the extravagant levels of the real interest rates observed in the Chilean economy in the mid-and late seventies and the early eighties (particularly in 1981). For a further discussion of the sources of growth post 1984 in Chile see Solimano, 1990.

sector and improved public finances (iv) the support provided by an increase in the share of public investment in GDP after 1985 coupled by a recovery in private investment starting more forcefully since 1987 (see Solimano, 1989b).

As a final observation around the rather strong real performance of the Chilean economy after the crises of 1982-83 we find that the correction of major misalignment in key relative prices like the real exchange rate and the real interest rate, characteristic of the early 1980s, are conditions sine qua-non for more structural reforms like liberalization of the trade regimes, the reforms in industrial organization fostering factor mobility and domestic competition work their for a change in incentives being able to generate a rapid and strong supply responses. The Chilean experience shows again that restoring macroeconomic balances, the reduction of major distortions (and a bit of good luck in the external sector, say in copper prices) were fundamental conditions for restoring growth (see Corbo and de Melo, 1987).

#### Inflation and Real Wages

An important question in the adjustment process followed by the Chilean economy after 1984 is the impact of the real depreciation of the exchange rate on real wages. A trade-off between external competitiveness and standard of living is often present in the course of an adjustment process. To get a further insight between the relationship between real wages and the real exchange rate and other variables like labor productivity, terms of trade and spending we will set up a simple model following Collins and Park (1969) and Corbo (1985b) of determination of the real exchange rate.

The model is constituted by the following equations: First a definition of the real exchange rate,  $R$ , as the ratio between the domestic currency price of foreign goods,  $eP^*$ , and the price of domestic goods,  $P$ . Say,

$$(1) R = eP^*/P$$

The price of domestic goods will be a linear homogeneous function of the price of exportable goods,  $P_x$ , the price of importable goods,  $P_m$ , and the price of non-traded goods,  $P_n$ ,

$$(2) P = P(P_x, P_m, P_n)$$

In turn the price of exports goods will be assumed to be a function of the wage rate adjusted by labor productivity,  $w/a_x$ , and the price of imported intermediate goods in domestic currency,  $P_m$ .

$$(3) P_x = f(w/a_x, P_m)$$

The economy will be assumed to be a price taker for the goods it imports:

$$(4) P_m = eP_n^*$$

The price of home goods will be determined by wages adjusted by labor productivity in the home goods sector,  $w/a_n$ , the price of imported inputs in domestic currency,  $P_m$ , and a the ratio of expenditure over real output,  $E/y$ .

$$(5) P_n = h(w/a_n, P_m, E/y)$$

Replacing equations (3)-(5) in (2) and inserting in the definition of the real exchange rate (1), we get:

$$(6) R = eP^*/P( f(w/a_x, eP_n^*), eP_n^*, h(w/a_n, eP_n^*, E/y))$$

Rearranging terms, equation (6) can be written as

$$(7) R = R( e/w, P^*/P_n^*, a_x, a_n, E/y )$$

Equation (7) indicates that the real exchange rate depreciates ( $R$  rises) with a cut in real wages in dollars (an increase in  $e/w$ ), a deterioration in the

external terms of trade and an increase in labor productivity in export and home goods activities.<sup>33</sup> In turn the real exchange rate appreciates (R falls) when there is an increase in domestic spending relative to output.

The semi-reduced form solution of the model, equation (7), is estimated econometrically with quarterly data for the 1980s.<sup>34</sup> The results for the log-linear estimation with quarterly data for the period 1980.1 to 1989.1 yields:<sup>35</sup>

$$\begin{aligned} \ln(R) = & -1.153 + 0.237 \ln(e/w) + 0.129 \ln(a_e) + 0.449 \ln(a_h) + \\ & (-0.96) \quad (2.77) \quad (1.20) \quad (1.62) \\ & + 0.117 \ln(p'_{-1}/p'_{-2}) - 0.506 \ln(E_{-1}/y_{-1}) + 0.916 \ln(R_{-1}) \\ & (1.20) \quad (-1.50) \quad (4.96) \\ & - 0.337 \ln(R_{-2}) \\ & (-2.15) \\ \\ & R^2 = 0.93 \quad n = 37 \\ & D.W. = 1.95 \quad F\text{-stat} = 62.07 \\ & \log. \text{ likelihood} = 57.29 \end{aligned}$$

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<sup>33</sup> An increase in labor productivity in export and home goods activities (the import competing sector is price taker) reduces the price of domestic goods, so given  $ep'$ , a real depreciation takes place.

<sup>34</sup> The equation is estimated by OLS with the ratio absorption to output lagged one period to avoid a simultaneity problem with the contemporaneous real exchange rate.

<sup>35</sup> The variables were constructed as follows: the real exchange rate, R, is the ratio of the index of foreign goods in the wholesale price index multiplied by the nominal exchange rate and divided by the consumer price index. The ratio  $e/w$  was constructed dividing the nominal exchange rate by average nominal wages. The average productivity of labor in exportables,  $a_e$ , is the ratio between total output in mining, manufacturing and agriculture divided by total employment in the three sectors. The average labor productivity in the home goods sector,  $a_h$ , is the ratio of output in services and other non-traded activities to total employment in that sectors. The terms of trade index,  $p'/p'_e$ , is approximated by the ratio between the international price of copper divided by the price index of prices of the OECD countries. The ratio of absorption to GDP,  $E/y$ , was constructed as 1 minus the ratio of the trade surplus to GDP.



The estimate of the equation for the real exchange rate in Chile in the 1980s reveals some interesting results. First, the elasticity of the real exchange rate with respect to the real wage in dollars,  $w/e$ , is - 0.23 a rather low number. This finding is consistent with the fact that, in particular after 1984, the initial drop in real wages (even in dollar terms) associated with a large real depreciation was not too large -given the magnitude of the real depreciation, around 45 percent in 1984-89. Second, the ratio of absorption to output seems to have a considerable quantitative impact on the real exchange rate namely the elasticity is - 0.506. That, in turn, provides support to the casual observation that the implementation of expenditure changing fiscal and monetary policies to support the real depreciation of the peso after mid-1982 played an important role in achieving such a real depreciation in Chile in the post 1982 period. Third, the size and significance of the coefficient of the lagged real exchange rates in the equation supports the notion of a gradual approach of the real exchange rate to "equilibrium" or at least sustainable levels after changes in fundamentals take place.

#### VIII. Conclusions and Lessons from the Chilean Experience: an Overall Assessment

The last 15 years of Chile's economic history provides some important lessons on stabilization. First, after the outburst of "corrective inflation" of the last quarter of 1973 largely associated to the relaxation of price controls under conditions of a large money overhang, the experience of 1975-77 illustrates that the elimination of the fiscal deficit is a necessary but not a sufficient condition for the control of inflation. In economies with a long history of inflation, where credibility problems are at stake and indexation schemes -- introduced de-facto or de-jure -- are pervasive, a strong inertia is

likely to exist and that makes inflation stabilization very costly without some sort of income policies that solve the coordination problem implicit in guiding individual wage and price setters to reach a low-inflation equilibrium.

Second, if the exchange rate is used as an anchor in a stabilization program, then other nominal prices should be free or fixed with reference to the exchange rate, otherwise, key relative prices such as real exchange rate, the real wage rate and the real interest rate could move into unsustainable paths, making the macroeconomic situation unsustainable. In sum both the fiscal shock therapy of 1975-77 and the experiment with exchange rate-based stabilization of 1978-82 show that the convergence to a low inflation equilibrium may be a slow process. Ergo, the dynamics of disinflation matters a great deal in the design of a stabilization plan.

The two stabilization episodes just mentioned highlight neatly the potential trade-offs between meeting the inflation target and achieving a real exchange rate consistent with the fundamentals during the course of disinflation. In the period 1975-77 a real depreciation of the exchange rate was required to accommodate lower real copper prices and a reform of the trade regime. However, the exchange rate policy oriented to produce a real depreciation conspired against rapid disinflation, making the trade-off between achieving a real devaluation and attaining the inflationary target more evident. A similar problem arose during the exchange rate-based stabilization experiment of 1978-82 when the use of the exchange rate for stabilization purposes after February 1978, in the context of backward wage indexation and declining inflation led to an overvaluation of the real exchange rate, a large increase in expenditure and an unsustainable current account deficit. When lack of foreign financing forced a reduction in the current account deficit, expenditure reducing policies resulted

in a sharp increase in unemployment. Again the inflationary target had to be given-up (transitorily) and the exchange rate had to be devalued in 1982 in order to correct the unemployment that was generated from the expenditure reducing policies.

Another important issue is the cost of stabilization. The cost of stabilization in the program of 1975, in terms of cut in real wages and output and employment losses, were certainly high and the strategy was apparently to pay the costs upfront at the beginning of the program (a recently installed authoritarian regime provided some of the background for that). In the exchange rate-based stabilization program the costs of stabilization seemed not to exist at the beginning as a boom in economic activity developed. However the crisis of 1982-83 largely associated with the need to correct an unsustainable current account deficit that had resulted from the exchange rate policy followed in the preceding period of exchange rate based-stabilization showed that the costs of stabilization did not disappear but were just postponed toward the final phase of the exchange rate based stabilization plan. Moreover the size of the costs of stabilization (taking the form of a correction of a current account deficit) were indeed large. This different intertemporal distribution of the costs of stabilization across different programs (fiscal shock versus exchange rate based stabilization) is another important lesson of the Chilean experience.

Finally, the post 1984 experience illustrates the importance of well functioning goods markets, (though the existence of high unemployment, although being reduced at a relatively rapid pace, shown that adjustment in the labor market is often more cumbersome), a competitive real exchange rate, the restoring of the basic macroeconomic balances -all of this complemented with favorable terms of trade- were the basic conditions for restoring non-inflationary growth.

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