

MASTER FILES  
ROOM C-525

IMF WORKING PAPER

© 1992 International Monetary Fund

0440

This is a Working Paper and the author would welcome any comments on the present text. Citations should refer to a Working Paper of the International Monetary Fund, mentioning the author, and the date of issuance. The views expressed are those of the author and do not necessarily represent those of the Fund.

WP/92/27

INTERNATIONAL MONETARY FUND

European I Department

An Analysis of the Process of Capital Liberalization in Italy

Prepared by Leonardo Bartolini and Gordon M. Bodnar 1/

Authorized for Distribution by Erich Spitäller

April 1992

Abstract

Beginning in 1985 Italy embarked on a path of progressive removal of its system of controls on portfolio investment, a process formally completed with the abolition of all remaining restrictions in 1990. In this paper we review this policy of capital liberalization and integrate the analysis with an examination of the process of stabilization of the lira exchange rate in the 1980s. Various indicators of capital controls' effectiveness and target zone credibility are used to identify the temporal relations among capital liberalization, exchange rate stabilization and capital flows.

JEL Classification Numbers:

F31; F36

---

1/ Research Department, International Monetary Fund, and Simon School of Business, University of Rochester. This paper was begun when the first author was in the Southern European Division of the European Department. We thank Carlo Cottarelli, Jose De Gregorio, Giorgio Magnani, and Erich Spitäller for comments and suggestions. The second author acknowledges funding from the Olin Foundation.

<u>Table of Contents</u>	<u>Page</u>
Summary	iii
I. Introduction	1
II. Capital Controls in Italy Since 1972	2
III. Indicators of Capital Controls and EMS Credibility	3
1. Analytical issues	3
2. Cross-border arbitrage returns	6
3. Exchange rate stabilization	8
IV. Data and Analysis of Historical Series	9
V. Conclusion	15
Appendix. Main Measures of Foreign Exchange Control and Main EMS Dates since 1970	17
Table	
1. Summary Statistics on Financial Liberalization and Exchange Rate Stabilization	14
Figures	
1. Net Capital Inflows (quarterly)	10a
2. Net Capital Inflows (four quarters)	10a
3. Gross Non-bank Capital Flows (quarterly)	10a
4. Outward Arbitrage Returns	10b
5. Inward Arbitrage Returns	10b
6. Rate of Return Band (Jan.81-Dec.91)	12a
7. Expected Exchange Rate Band (Jan.81-Dec.91)	12a
8. Rate of Return Band (Jan.90-Dec.91)	12b
9. Expected Exchange Rate Band (Jan.90-Dec.91)	12b
10. Euro Interest Rate Bid-Ask Spread (12 month)	16a
11. Forward Exchange Rate Bid-Ask Spread (12 month)	16a
References	21

### Summary

During 1985-90, Italy progressively removed the system of capital controls that had been in place during the previous decade. At the same time, it strengthened its commitment to the Exchange Rate Mechanism of the European Monetary System (EMS) and registered a strong increase in gross capital flows, with a positive and increasing net inflow through mid-1991. This paper reviews the developments in exchange regulations in Italy during the 1980s. Using simple indicators of the effectiveness of capital controls and target zone credibility, it assesses the pace and sequencing of the policies of capital liberalization and exchange rate stabilization.

The paper concludes that Italy achieved virtual integration of its domestic capital market with the offshore market well before achieving credibility of the exchange rate commitment. Nevertheless, the process of capital liberalization developed within a relatively stable financial environment. Furthermore, after binding restrictions on capital outflows were eliminated, a large net capital inflow took place, a development that is difficult to interpret on the basis of standard models of portfolio choice. These events suggest that capital liberalization may have played an indirect role in the development of the Italian capital account in the second half of the 1980s: by raising the potential costs of exchange rate instability, the removal of capital controls increased the credibility of the commitment to the EMS and therefore contributed to calming devaluation expectations. This allowed the Italian system to borrow increasingly on the world market without paying the price in terms of higher interest rates. This interpretation is consistent with the reduction of net capital inflows observed since mid-1991, along with the slowdown of progress toward exchange rate stabilization.



## I. Introduction

Beginning in 1985, and as part of an EC-wide commitment to liberalization of capital markets, Italy embarked on a path of progressive removal of its system of controls on portfolio investment. As a result, by mid-1990 the country had reached a regime of virtually free capital mobility, a startling contrast with the situation prevailing until 1985. The apparent effects of this deregulation on capital flows have been remarkable: through the beginning of 1991 the country experienced a boom in both capital inflows and outflows, with the inbound flow increasingly dominant.

If the removal of capital controls signals the reduced likelihood that new restrictions may be put in place in the future, net capital inflows may rise in conditions of stable--or even declining--domestic interest rates. The pace and magnitude of the net inflow in the Italian case suggest, however, that additional factors have been at work. Among these may count the credibility effects associated with the strengthening commitment to maintain the lira within its assigned oscillation band, especially after the Basle-Nyborg Agreement of September 1987 and the transition to the narrow band in January 1990.

In this paper we examine evidence on the relative importance of different factors affecting capital flows in Italy since 1981, with a view to gauging the likelihood that net capital inflows will continue to sustain the external current account deficit over the medium term. Several questions are of interest in this respect: when did the Italian capital market start to behave in a manner consistent with the benchmark of perfect capital mobility? When did forward markets for lira-denominated securities begin to display a pattern consistent with the claim of credibility of the Exchange Rate Mechanism (ERM)? And finally, how did these two processes interact with the cycle of capital movements in the past few years?

As a first attempt to identify the temporal links between capital liberalization, exchange rate stabilization and developments of the Italian capital account, this paper considers several indicators of capital controls effectiveness and target zone credibility. The interpretation supported by our analysis is, in several respects, not new. Fears to the contrary notwithstanding, liberalization of capital movements has been carried out in Italy within a relatively stable financial environment, thanks to the stabilization of the exchange rate within the ERM. Indeed, by raising the potential cost of exchange rate instability, the increase in capital mobility has enhanced the credibility of the exchange rate commitment. This has shifted exchange rate expectations downward, thus providing the opportunity for Italy to borrow at relatively favorable terms on the world market. Yet, to the extent that capital inflows induced by financial liberalization also reflect the stock adjustments of international investors' portfolios, continuation of the present pattern of current account deficits and capital account surpluses can only be maintained through high and widening interest rate differentials. Since such a process

is unsustainable in the long run, correction of the current account imbalance will sooner or later become necessary.

Section II of this paper reviews the main steps towards liberalization of capital movements in Italy in light of developments at the European Community level. Section III briefly surveys the relevant literature and discusses the use and definition of various indicators of capital mobility and target zone credibility. Section IV analyzes data on rates of return and exchange rates as they relate to the observed patterns of capital flows in Italy during the 1980s and early 1990s. Section V concludes.

## II. Capital Controls in Italy Since 1972

Details on the main measures of foreign exchange control in Italy since 1972 are provided in the Appendix. Until that date, and following the reintroduction of general convertibility in 1958, Italy had moved steadily on a path of capital liberalization.

The year 1972 marked the beginning of a phase of increasing financial protectionism, with de facto suspension of external lira convertibility in June, and tightening exchange rate controls. In 1973, the Italian authorities imposed a zero-interest deposit requirement on 50 percent of residents' purchase of foreign securities. Loans to nonresidents were prohibited, external trade credits highly restricted, and foreign currency payment for exports, prepayment of imports, as well as access to forward cover, were all heavily constrained. From 1976, violations of foreign exchange regulations were considered crimes, subject to sanctions under the penal code. In a parallel development, and with the exclusion of temporary measures enacted in 1974-75 to prevent increase in domestic banks' indebtedness, residents' borrowing from abroad was strongly encouraged. Foreign borrowing, for instance, was excluded from the definition of total credit used by the Bank of Italy for its monetary targeting, while borrowing through Italian banks was excluded from the existing ceiling on bank loans. As a result of these developments, by the early 1980s a complex and relatively effective system of capital controls had been put in place. At the time, the philosophy prevailing within the European Community was supportive of such measures. Capital controls were regarded as a tool to assure the necessary degree of monetary autonomy and reduce the risk of speculative attacks against central banks' reserves, in face of diverging macroeconomic trends.

The presentation to the European Council of the White Paper on Completing the Internal Market, in June 1985, marked a drastic shift of attitude both at the national and Community levels. Free capital mobility was clearly identified as one of the objectives to be attained on the path towards economic and monetary integration. In the process, Italy made rapid strides towards liberalization of its capital market. Restrictions on capital inflows were removed by end-1985, and--in a series of successive

steps--the compulsory zero-interest deposit requirement on portfolio investment abroad was reduced to 15 percent by August 1986.

In February 1986, the Single European Act was adopted by the EC Council of Ministers, with the aim of internal market integration by 1992. A two-phase program for implementation of the financial liberalization objectives stated in the White Paper was presented by the European Commission the following May and subsequently approved by the Council (Directive 86/566). This program established March 1987 as the implementation date for "Phase One." Italy was now called upon to take further steps to liberalize capital flows, in accordance with EC-wide policies. Compliance was rapid; by May 1987, residents' ability to invest in foreign securities had been enhanced (though limited to purchases from foreign unit trusts operating in Italy) and the zero-interest deposit requirement eliminated.

The next major step in the process of capital liberalization at the Community level occurred with the adoption by the European Council of Directive 88/361, in June 1988, which set a comprehensive timetable for liberalization of all capital transactions among Community members. This included loan, deposit, and money market transactions not covered by previous directives. Once again, Italy moved swiftly: in October of the same year a new comprehensive exchange law was issued, under which all transactions could be carried out unless specifically prohibited. Specific restrictions remained in the form of a surrender requirement of foreign exchange receipts, the prohibition of residents opening up deposit accounts abroad, and a few other controls on short-term investment abroad. By May 1990, however, with the removal of all remaining restrictions, the country's entire system of capital controls was dismantled, ahead of the Community deadline set for July 1 of the same year.

### III. Indicators of Capital Controls and EMS Credibility

#### 1. Analytical issues

An extensive technical literature has examined the effects of various forms of capital controls on interest rate differentials and capital flows, but little guidance is offered for the analysis of the response of capital flows to a financial liberalization. Most research compares different stationary (or steady-state) equilibria, but leaves the analysis of the dynamic implications of a liberalization beyond its scope. In addition, many models make simplifying assumptions on the nature of capital controls that limit their usefulness for the analysis of actual systems. In the models of Obstfeld (1986), Giavazzi and Giovannini (1989) and Mendoza (1991), for instance, capital controls are regarded as an overall restriction on residents' ability to trade assets with the rest of the world. Under this assumption, the standard stock-equilibrium condition of models with perfect capital mobility, that forces equality of onshore and offshore interest rates at all times, is replaced by a domestic equilibrium condition which implies severance of domestic and offshore interest rates.

By imposing symmetric restrictions on inflows and outflows of capital, these models yield only weak predictions on the possible effects of a liberalization: a stock-adjustment of agents' portfolio will generally take place, after removal of binding constraints on capital flows. This may involve, however, either an increase or a decrease of foreign asset holdings, depending on the direction in which the no-asset-trading constraint is binding, given the model's parameters and the current state of the system. The adjustment, in any case, ought to be rather fast, for holding sub-optimal portfolios will leave unexploited profit opportunities when capital controls cease to be binding.

The implications of studies based on the assumption of differential tax treatment of capital inflows and outflows are similar to those of the models discussed above. Following the early approach of Argy and Porter (1972) and the later studies of Marion (1981) and Flood and Marion (1982), these models assume the existence of a system of dual exchange rates, i.e., of a commercial exchange rate for current account transactions and a financial exchange rate for capital account transactions. 1/ The popularity of this approach was enhanced by the study of Adams and Greenwood (1985) that pointed at the equivalence of systems based on dual exchange rates with systems based on quantitative restrictions to capital flows. 2/ As in the previous case, these models imply that following a liberalization, capital flows should respond (in a comparative static sense) in the direction in which the quantitative restriction (or the equivalent exchange rate) was binding. The same prediction would apply to the removal of taxes on capital flows or on interest earnings, or to the removal of low-interest deposit requirements, such as those enforced in Italy between 1973 and 1987.

The implications of the above mentioned models depend strongly on the assumption that only restrictions on capital flows distinguish the economic environment from the perfectly competitive, full-information benchmark. In these circumstances, and given standard assumptions of gross asset substitutability, the analysis yields predictions in the spirit of traditional models of portfolio choice with an added constraint to, say, capital outflows. Whenever the constraint is binding, the domestic interest rate remains below the offshore rate, so that an unanticipated liberalization

---

1/ Among models of this type, see Cumby (1984), Aizenman (1986), Greenwood and Kimbrough (1986), and Bhandari and Decaluwe (1987).

2/ The intuition behind this equivalence is the same holding for the well known equivalence between tariffs and quotas in foreign trade: a trade quota can be enforced by setting a tariff that induces agents to voluntarily consume the targeted amount of foreign goods (see Bhagwati (1965)). Adams and Greenwood (1985), in particular, show that the equivalence between dual exchange rates and capital flow targets holds in a deterministic, two-period model. The same result, however, is likely to extend to more general multi-period models with stationary uncertainty, while it need not hold in general non-stationary models, or if there is imperfect separation between the dual exchange markets (see Gros (1988)).



lets capital flow from the low-return to the high-return market, while the yields on the two markets equalize. Reality, however, is often characterized by the combination of capital controls with a system of pegged or regulated exchange rates, in face of limited resources to enforce the peg and with imperfect credibility of the exchange rate policy. Indeed, as the next section will discuss in detail, the stylized facts from Italy are difficult to reconcile with standard models of portfolio choice. <sup>1/</sup> Following the removal of restrictions to capital outflows, Italy recorded a sharp increase in net capital inflows, despite the relative decline of domestic yields, a pattern that continued unabated for about three to four years.

Two recent studies try to analyze the complex relationship that is likely to have developed between removal of capital controls, exchange rate developments, and the capital account cycle in Italy in the late 1980s. Giustiniani and Rossi (1990) assume that international investors require a country-specific premium to invest in the domestic economy, which is an increasing function of the tax imposed on residents' foreign interest earnings. This premium is intended to capture both the 'political' risk of imposition of further capital controls <sup>2/</sup> as well as investors' perception of unsound domestic financial policies, as signaled by the presence of the capital controls. For a choice of parameters that the authors argue to be plausible for Italy around mid-1988, the reduction of capital controls may have implied a substantial reduction of the country-specific premium. The increase of non-residents' holdings of domestic assets would have more than outweighed the increase of residents' holding of foreign assets.

The study of Giavazzi and Spaventa takes into more explicit account the change in credibility of the exchange rate policy at the end of the 1980s. In this model the degree of financial integration is measured by the proportion of domestic borrowing that can be accommodated on the off-shore market. The model assumes backward-looking wage and price setting and an exchange rate policy with limited credibility. Giavazzi and Spaventa discuss the dynamics of inflation and demand, and conclude that the combination of a progressive liberalization and of increased credibility of the exchange rate will raise domestic demand and generate a current account deficit that will be financed by a capital inflow.

The analysis of the last two models is based on several ad hoc assumptions that are made to introduce in the model various form of market rigidities. In addition, portfolio decisions are described in a very stylized fashion. The models, however, have the merit of highlighting the important fact that capital liberalization does not merely remove a constraint on investors' portfolio decisions, but also increases their trust in the future course of domestic policy. Further research is needed to

---

<sup>1/</sup> Giavazzi and Spaventa (1990) also discuss the experience of Spain and Denmark, that were in many respects similar to that of Italy.

<sup>2/</sup> See Dooley and Isard (1980, 1987).

incorporate this idea in a more rigorous model of portfolio decisions subject to investment constraints. It will be important, in particular, to model the credibility effects as arising not merely from observed past performance, but rather from investors' evaluation of the future costs and benefits that the authority derives from enforcing a given policy rule. To the extent that capital liberalization may increase the cost of exchange rate instability, the abolition of capital controls should support an equilibrium in which the credibility of the exchange rate policy is strengthened, no matter what the authority's past record indicates. While the development of such a model is beyond the scope of this paper, in the rest of this section we shall discuss some simple indicators that may be used to identify the stylized facts that ultimately determine the validity of one model or another.

## 2. Cross-border arbitrage returns

To assess the evolution of the process of financial liberalization in Italy, we follow previous research and consider some synthetic indicators of capital integration. <sup>1/</sup> We extend the analysis of previous studies to consider developments in the past three years in the Italian capital market and integrate it with an analysis of the developments in the exchange rate market. Thus, the completion of the process of capital liberalization and the capital account cycle of the last two years can be interpreted within a unified framework, together with the process of exchange rate stabilization and the shift of the lira to the narrow ERM band.

Under the assumption of perfect capital mobility and no transaction costs, the differential between the domestic and the offshore interest rates on assets denominated in domestic currency and of the same maturity, should equal zero at all times. Denote the domestic interest rate on deposits of a given maturity (e.g., three-month) by  $i_t$ , the offshore rate on lira-denominated deposits of the same maturity by  $i_t^E$ , and the difference between these rates by  $\kappa_t$ :

$$i_t^E = i_t + \kappa_t \quad (1)$$

Theoretically speaking, values of the differential  $\kappa_t$  different from zero indicate a violation of the benchmark of perfect capital mobility. Two adjustments have to be made, however, when considering actual behavior of the series  $\kappa_t$  defined in (1). First, the existence of transaction costs, asymmetric information between investors and dealers, etc., will generally imply a small difference between the bid and ask levels of the various foreign exchange and interest rate quotations. This means that one need consider two series for the interest rate differential (or "capital control premium")  $\kappa_t$ : one series is relevant for investment from the onshore to the offshore market, and the other series is relevant in the opposite direction. Second, one should consider that the Eurolira market was rather thin during

---

<sup>1/</sup> See Gros (1987), Giavazzi and Pagano (1988a), Giavazzi and Giovannini (1989), and Bodnar (1991).

the early part of the 1980s. Since this lack of liquidity may induce an abnormal variability of the bid and ask quotations, it is advisable to rely on the Covered Interest Parity (CIP) condition, and substitute for the actual Eurolira rate the equivalent rate computed by covering forward a Eurodollar position. <sup>1/</sup>

To construct the appropriate series of arbitrage returns, we use the following notation. Denote by  $i^{*B}_t$  and  $i^{*A}_t$  the annualized bid and ask values of the Eurodollar rate on deposit with maturity  $\tau$  (in years), by  $i^B_t$  and  $i^A_t$  the corresponding values of the domestic Italian rate, by  $S^B_t$  and  $F^B_t$  the bid values of the spot and forward exchange rates (measured as the cost in lire of one U.S. dollar) and by  $S^A_t$  and  $F^A_t$  the corresponding ask levels. The forward exchange rates are defined on the same  $\tau$ -year horizon as the rates of interest.

The first series of shadow arbitrage returns that we consider describe the theoretical return to borrowing on the onshore market and going long on the Eurodollar market, covering the position with a forward sale. Define

$$\kappa^0_t = - (1 + i^A_t)^\tau + (1 + i^{*B}_t)^\tau (F^B_t/S^A_t) \quad (2)$$

where  $\tau$  is the maturity of the contract, measured in years.

A positive value of  $\kappa^0_t$  indicates the theoretical possibility of an outward arbitrage opportunity, that is, a violation of the benchmark case of perfect capital mobility.

A similar series can be defined to assess the theoretical possibility of inward arbitrage opportunities:

$$\kappa^I_t = - (1 + i^B_t)^\tau + (1 + i^{*A}_t)^\tau (F^A_t/S^B_t) \quad (3)$$

In this case, a negative value of  $\kappa^I_t$  corresponds to a deviation from the condition of perfect capital mobility, since the opportunity offered by taking a covered short position on the offshore market and making an equivalent deposit in the domestic market could not arise if capital was free to move across the border.

Having thus defined the relevant series of arbitrage returns, in the analysis that follows we shall regard capital controls as binding while either positive realizations of  $\kappa^0_t$  or negative realizations of  $\kappa^I_t$  are observed.

---

<sup>1/</sup> It is a well established fact that CIP holds almost perfectly within the Euromarket, which is subject to no regulation and homogeneous risk associated with securities traded in the same location. Small deviations arise only as result of transaction costs, which are accounted for in Equations (2) and (3).

### 3. Exchange rate stabilization

To examine the development of the commitment to exchange rate stabilization, the familiar Covered Interest Parity (CIP) condition provides a natural reference point. This implies that the relationship between the Eurolira interest rate and the rate of return on any other Eurocurrency can be written as

$$i_t^E = i_t^* + \pi_t \quad (4)$$

where  $i_t^E$  and  $i_t^*$  are the domestic and "foreign" Eurorate of interest with maturity  $\tau$ , and  $\pi_t$  is the corresponding forward exchange rate premium. The forward premium depends, among other things, on current devaluation expectations and investors' attitudes towards risk. <sup>1/</sup> If the two currencies are linked by an arrangement that limits the degree of relative depreciation (such as the ERM), the forward premium  $\pi_t$  lies within a band whose amplitude reflects the degree of credibility of the exchange rate arrangement.

To examine the degree of credibility of the commitment of the lira to its ERM band we consider two simple tests. The first test is traditional. Let the current exchange rate be denoted by  $S_t$  (measured in units of domestic currency per unit of foreign currency). Let the three-month rate of return on Eurolira be denoted by  $i_t$ , and the three-month rate of return on Eurodeutsche mark by  $i_t^*$ , both measured at the midpoint of the bid-ask levels.

Consider the ex-post rate of return in lire accruing to an investor on the Eurodeutsche mark market. This is given by

$$R_t = (1+i_t^*)(S_{t+\tau}/S_t)^{1/\tau} - 1 \quad (5)$$

where  $\tau$  is the term of the contract, measured in years.

Now, if the exchange rate is credibly restricted to a fluctuation band  $\bar{S} \leq S_t \leq \underline{S}$ , then investors know that their ex-post returns will also be restricted to a band, with upper and lower limits given by

$$\bar{R} = (1+i_t^*)(\bar{S}/S_t)^{1/\tau} - 1 \quad (6)$$

$$\underline{R} = (1+i_t^*)(\underline{S}/S_t)^{1/\tau} - 1 \quad (7)$$

The rate-of-return band thus defines a range within which the actual rate of return on three-month contracts must lie at each time if the band is

---

<sup>1/</sup> Equation (4) holds exactly when the maturity of the deposit is instantaneous. It holds almost exactly for finite maturities if the interest rate is not too large.

credible, otherwise agents would have the opportunity to reap arbitrage profits. 1/

While the test just discussed is based on a minimal set of assumptions (namely, that competition eliminates all arbitrage opportunities), it provides little quantitative information on the lack of credibility of the exchange rate band. A second test, suggested in Svensson (1991), permits a simple--though crude--quantification of the deviation of agents expectations from the benchmark of target zone credibility. This test is based on the stronger assumption of Uncovered Interest Parity (UIP), which corresponds to assuming that agents are risk-neutral and form rational expectations about the future exchange rate. While this assumption does not always accurately describe rate of return behavior, the quantitative indications provided by this second test can be usefully integrated with the more robust test considered above.

Under the assumption of uncovered interest parity, the exchange rate is expected to adjust to equate the rate of return on investment denominated in domestic currency with the rate of return on investment denominated in foreign currency. When UIP holds, therefore, the expected future exchange rate can be computed from

$$E_t S_{t+\tau} = S_t [(1+i^E_t)/(1+i^*_t)]^\tau \quad (8)$$

After computing the series of the expected exchange rates according to Equation (8), an alternative way of testing for target zone credibility is to check whether the term  $E_t S_{t+\tau}$  falls within the band  $[\bar{S}, \underline{S}]$ . As suggested by Svensson, the vertical difference between  $E_t S_{t+\tau}$  and the upper edge of the band indicates the extent to which market expectations contradict the claim to keeping the exchange rate within the band  $[\bar{S}, \underline{S}]$ . 2/

#### IV. Data and Analysis of Historical Series

In this section we consider the behavior of the arbitrage return series and credibility indices discussed in the previous section, and relate them to capital flows in Italy during the last decade.

---

1/ Subtracting  $i^*_t$  from the right hand-side of Equations (6) and (7) gives the range of  $\pi_t$  compatible with ERM credibility. Under the condition of CIP, an equivalent test would be whether the forward exchange rate falls within the ERM band. The test discussed above is of wider applicability, because it does not require the existence of a developed offshore forward market.

2/ Note that both tests discussed in this section are "weak", in the sense that they provide only necessary, yet not sufficient, conditions for target zone credibility. See Bartolini and Bodnar (1991) for a full-information technique to test for target zone credibility.

The period examined extends from January 1981 to December 1991. Data for spot and forward exchange rates and for the Euromarket and domestic deposit rates are from Data Resource Incorporated (DRI), FACS database. Observations are sampled daily at the London market closing time. Domestic interest rates are interbank repurchase agreement rates ("pronti contro termine"), sampled at the closing time of the Milano market. The repurchase agreement rates are subject to the same tax treatment as the Eurodeposit rates (i.e., they are taxed only as firms' income), and are therefore directly comparable to the Eurorates. Data on capital movements were provided by the Bank of Italy. 1/

We begin by considering Figures 1-3, which synthesize the trends of capital flows in Italy during the last decade.

Figures 1 and 2 report quarterly and yearly (with quarterly frequency) net capital flows, for both the bank and nonbank sectors. Both figures display a clear increase of the net inflow of capital since the end of 1987. The growth of the net inflow has been strong until the end of 1990, leveling off at that point, and displaying signs of weakness during most of 1991, with a sharp decline from the second quarter of this year.

Figure 3 separates the net inflow into its gross components, using quarterly data from the nonbank sector for which such breakdown is available. The evidence on the increase of both inflows and outflows of capital is dramatic. Beginning in 1988, the diagram hardly displays any obvious breakpoint in the trend, with growth of both flows continuing unabated through the entire sample.

The evidence from Figures 1-3 is that the removal of the controls on capital outflows has been accompanied by a strong increase of both gross inflows and gross outflows of capital, with the inbound flow increasingly outweighing the outflow, at least until mid-1991.

Figures 4 and 5 display the computed series of outward and inward arbitrage returns discussed in the previous section. Recall that a positive value in Figure 4 corresponds to a theoretical arbitrage opportunity for outward investment. This opportunity would have been exploited had the environment conformed to the theoretical benchmark of free capital mobility. Similarly, a negative value in Figure 5 indicates a violation of free capital mobility in favor of an inward movement. We take the occurrences of positive observations in Figure 4 and of negative observations in Figure 5 as evidence of the binding nature of capital controls.

The behavior of the series in Figures 4 and 5 indicates clearly that the degree of enforcement of capital controls was high in Italy through the

---

1/ Data are from "Bilancia Valutaria", which records flows on a cash basis. The reported flows are net of foreign direct investment (which are estimated for 1991).

FIGURE 1

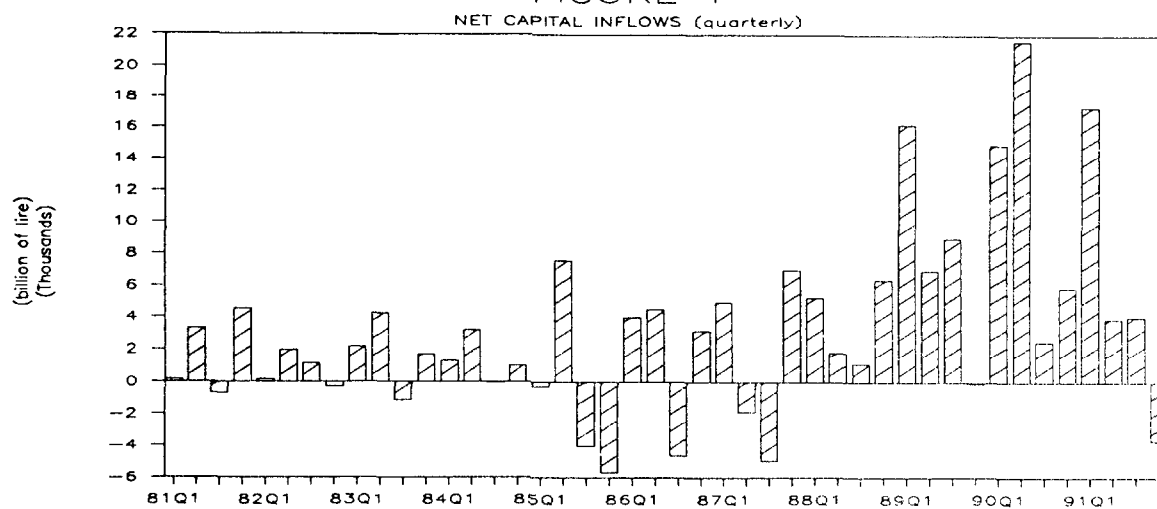


FIGURE 2

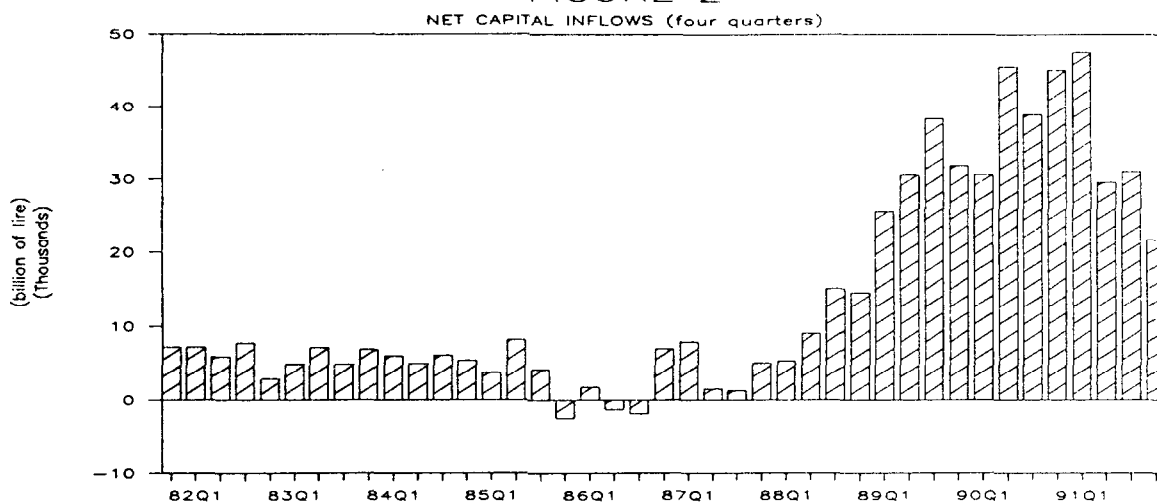


FIGURE 3

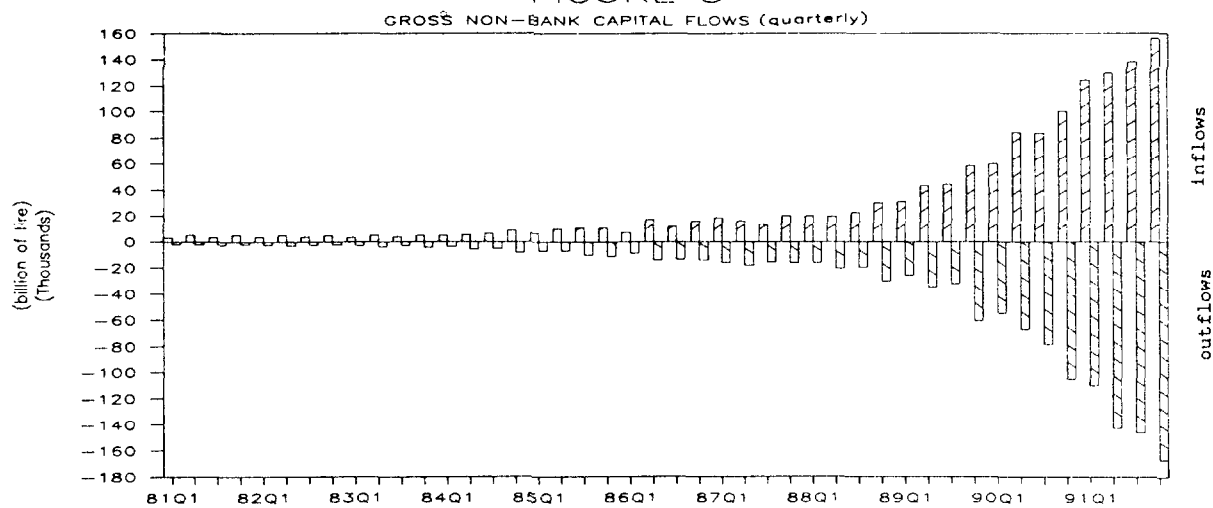






FIGURE 4

OUTWARD ARBITRAGE RETURNS

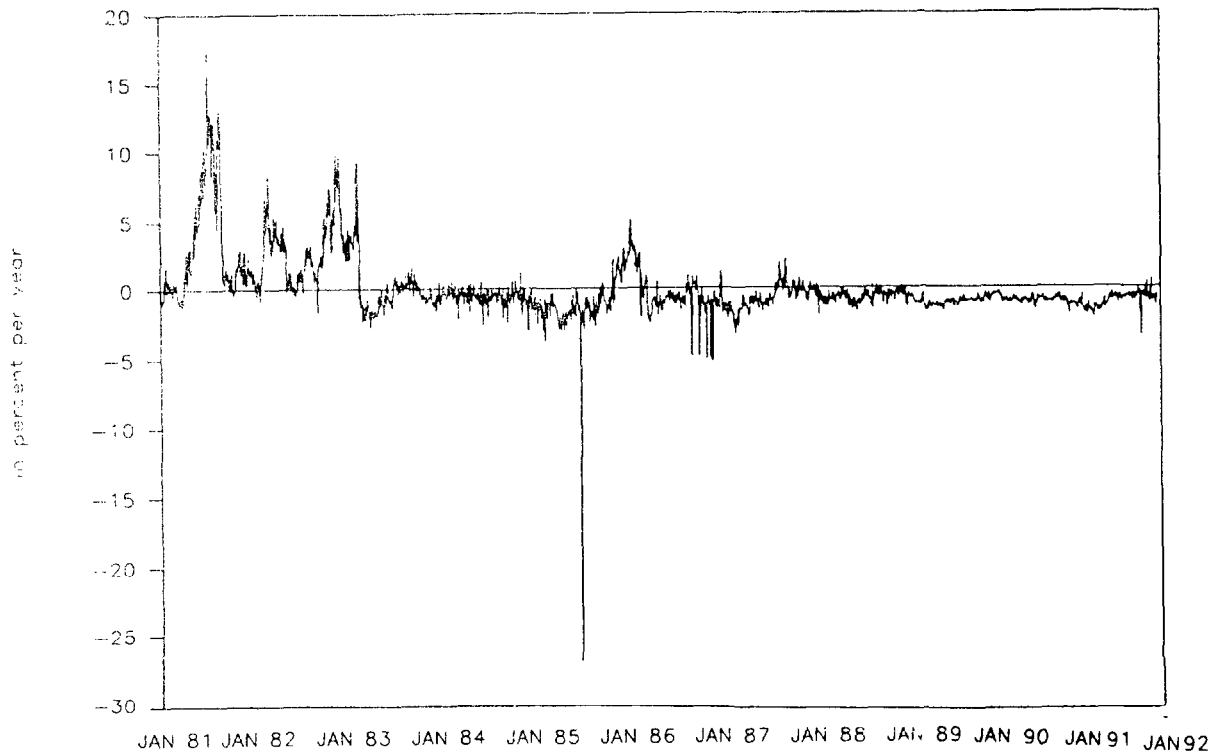
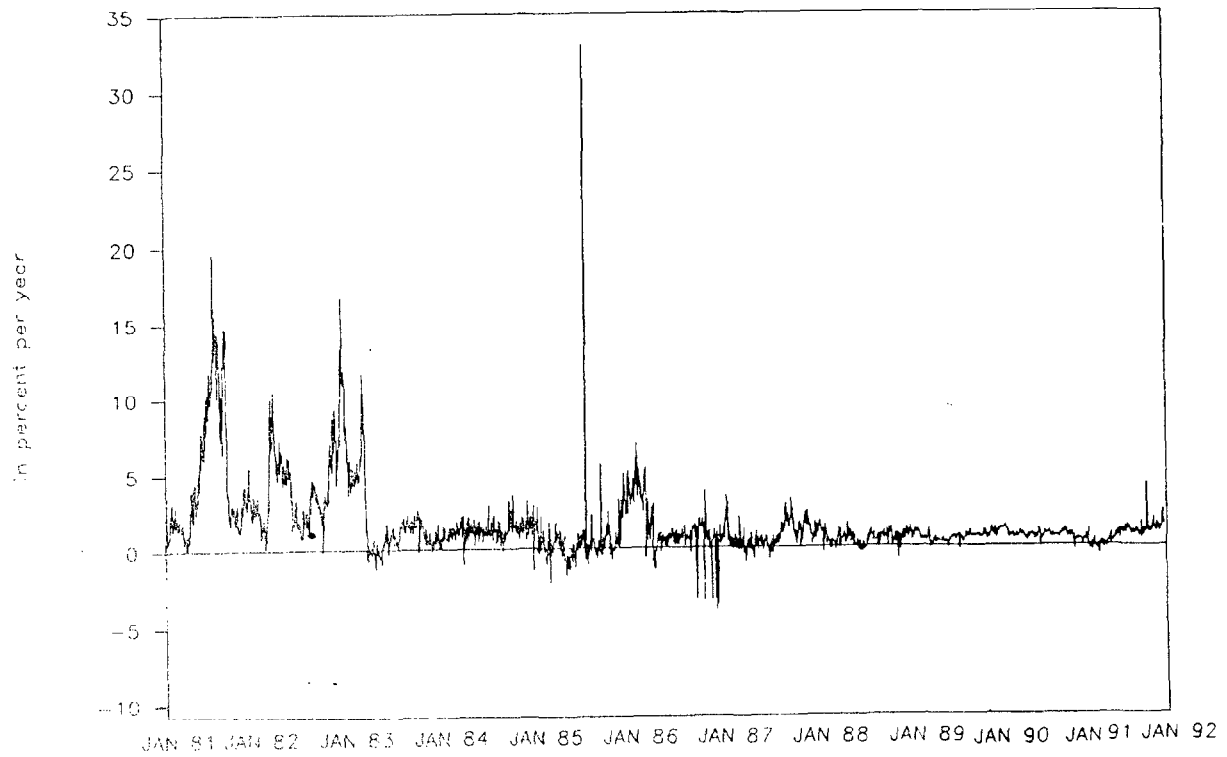


FIGURE 5

INWARD ARBITRAGE RETURNS





middle of the 1980s: shadow arbitrage opportunities were almost always present in either direction. Following the presentation of the White Paper on Completing the Internal Market in June 1985, however, there is strong evidence of increasing integration of the Italian money market with the international market. By the summer of 1988, with the EC-wide agreement on a comprehensive timetable for the removal of all restrictions to capital movements by June 1990, and with the subsequent approval by the Italian Parliament of a new and comprehensive exchange rate law in the following October, cross-border arbitrage opportunities were virtually eliminated. The remaining restrictions, which were removed by May 1990, appear to have been non-binding. Figures 4 and 5 suggest that the summer of 1988 can be taken as a symbolic date to represent effective completion of the process of integration of the onshore and offshore Italian capital markets.

Overall, the evidence provided by Figures 1-5 casts strong doubts on the hypothesis that the removal of restrictions to capital flows could be a direct cause for the observed strong growth of the flows after 1988. By the summer of 1988 binding restrictions to capital flows had been removed, and the constraints imposed by participation in the financial liberalization plan of the European Community were widely regarded as sufficient to prevent reversal of the liberalization process. Accordingly, it is reasonable to conjecture that the room to reduce the country-specific premium required by investors fearing the imposition of new controls was already negligible by end-1988. Despite the absence of important developments in the Italian capital market after mid-1988, the pattern of increasing flows continues well beyond that period, suggesting that other factors may have contributed to the process, after the removal of binding restrictions to capital flows. We therefore now consider evidence on the role played by the stabilization of exchange rate expectations.

Figures 6-9 illustrate the temporal behavior of the two indicators of the credibility of the lira/DM exchange rate band discussed in the previous section. Data are now from the one-year market, so that each observation incorporates expectations of exchange rate devaluation within a one-year horizon. Figures 6 and 7 present data for the entire 1989-91 sample period, while Figures 8 and 9 focus on the last three years. For ease of presentation, the Eurolira interest rate is normalized to zero in Figures 6 and 8, so that negative values of the upper boundary of the rate of return band indicate that investors anticipate a devaluation of the current parity with the DM over the next year.

The evidence summarized in Figures 6-9 suggests that stabilization of exchange rate expectations during the period 1981-91 has developed in three phases. During a first phase, lasting until March 1983, exchange rate expectations were extremely unstable, and the realignment risk implicit in forward market data was high. In Figure 6 the upper boundary of the rate of return band lies--virtually at all times--under the horizontal axis, indicating strong violation of the benchmark of credibility of the current ERM parity with the DM. During this period, the one-year-ahead expected exchange rate, displayed in Figure 7, exceeded the upper boundary of the ERM

band by 6.3 percent on average. This means that an average reduction of devaluation expectations of more than 6 percent per year would have been required for consistency with the ERM band.

The period following the major realignment of March 21, 1983, was more stable. The Eurolira interest rate tended to float within its required band from April 1986 to May 1987, before devaluation expectations became prevailing in the period May 1987-May 1988. During this second phase of the EMS, the one-year forward exchange rate exceeded its maximum limit by 1.7 percent on average, thus confirming the reduction of devaluation expectations during this period. Only around May 1989, did the series of the one-year Eurolira rate of return cross decidedly into the credibility band, thus indicating at least consistency of the behavior of forward markets with the claim to one-year stability of the exchange rate. It is worth noting that this event coincides with the presentation of the Delors report on monetary unification within the European Community. From May 1989 to December 1991, the lira was expected--on average--to remain within its band over a one-year horizon, as the series displayed in Figure 7 averaged about -0.3 percent.

While the period centered around the spring of 1989 appears to be an important benchmark in the shift of exchange rate expectations in Italy, it does not mark the end of the process of exchange rate stabilization. Indeed, even after the spring of 1989, the Eurolira interest rate displayed frequent violations of the rate of return band. Devaluation expectations were strong, for instance, before the shift to the narrow 2.5 percent ERM band of January 1990, indicating the anticipation of a realignment before the move to the narrow band. Even after the transition to the narrow band was completed, however, the lira Eurorate hovered at the top of the band, exceeding it for the entire October 1990-February 1991 period, as well as during the last month and a half of our sample. Thus, while the progress towards exchange rate stabilization with respect to the period preceding 1989 has been considerable, there is apparent room for further strengthening the credibility of the commitment to the ERM.

Overall, the evidence on the behavior of forward markets summarized in Figures 6-9 suggest that the policy of exchange rate stabilization may have picked up roughly when the process of liberalization appears to have completed the removal of binding restrictions to capital flows. Before we suggest an interpretation along these lines, however, we must consider the behavior of the level and variability of various rates of returns. While investors' decisions only depend on interest rate differentials, consideration of the actual levels of the series may help better assess the macro-economic trends underlying the time series.

The previous discussion has highlighted that the main implication of capital liberalization, namely that the differential between onshore and offshore rates should vanish, is well borne out by evidence from the Italian money market. The band of fluctuation of the interest differential (or "capital control premium")  $\kappa_t$  progressively narrows to zero. As is clear

FIGURE 6

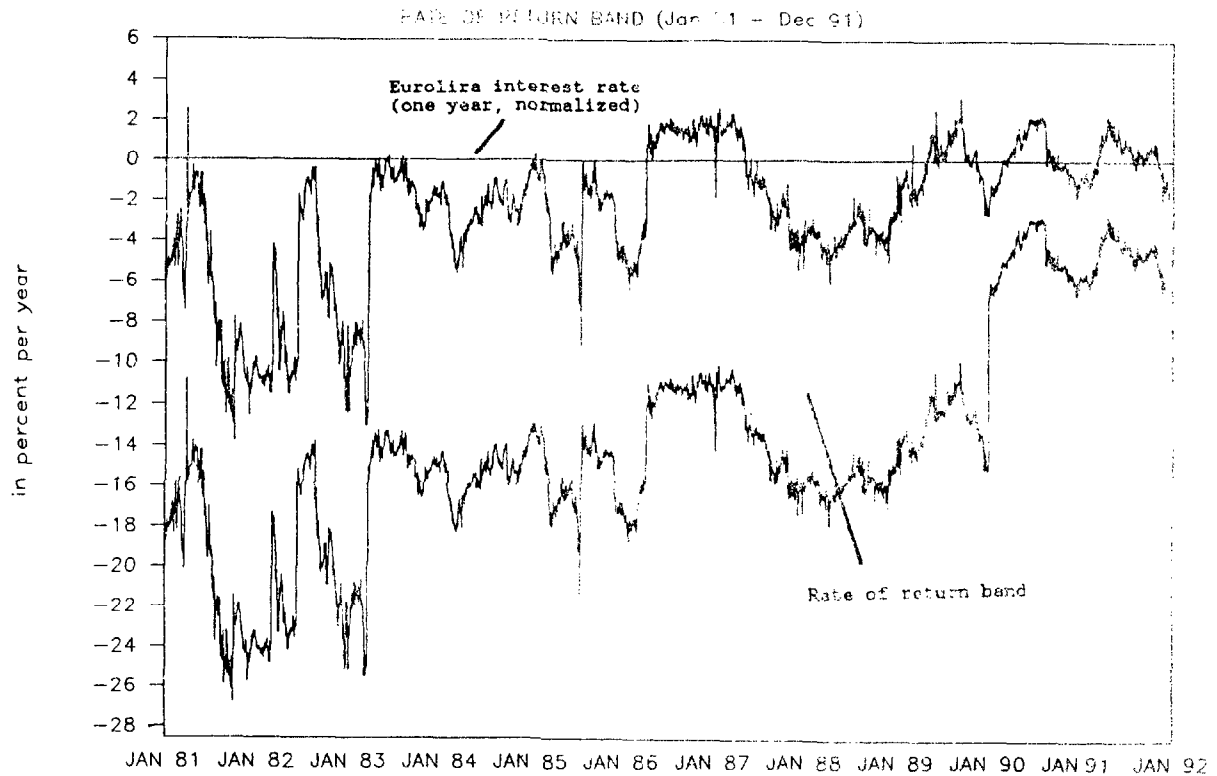


FIGURE 7

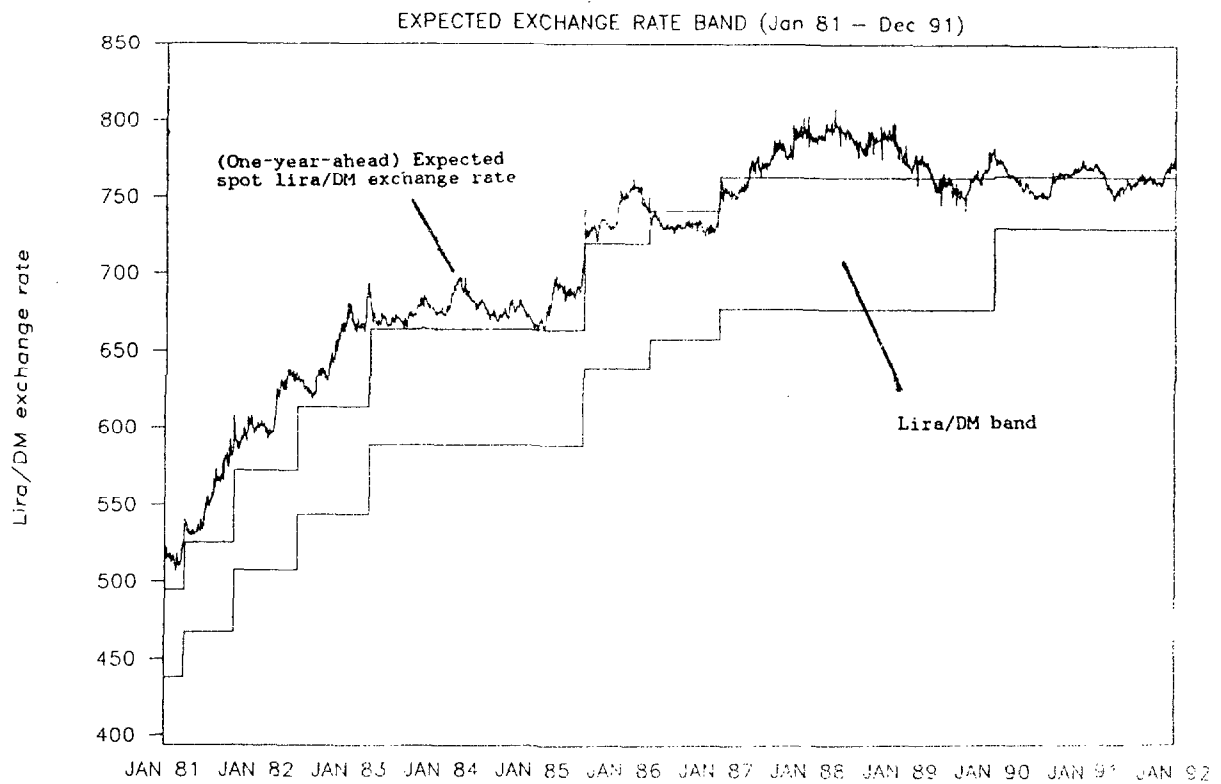




FIGURE 8

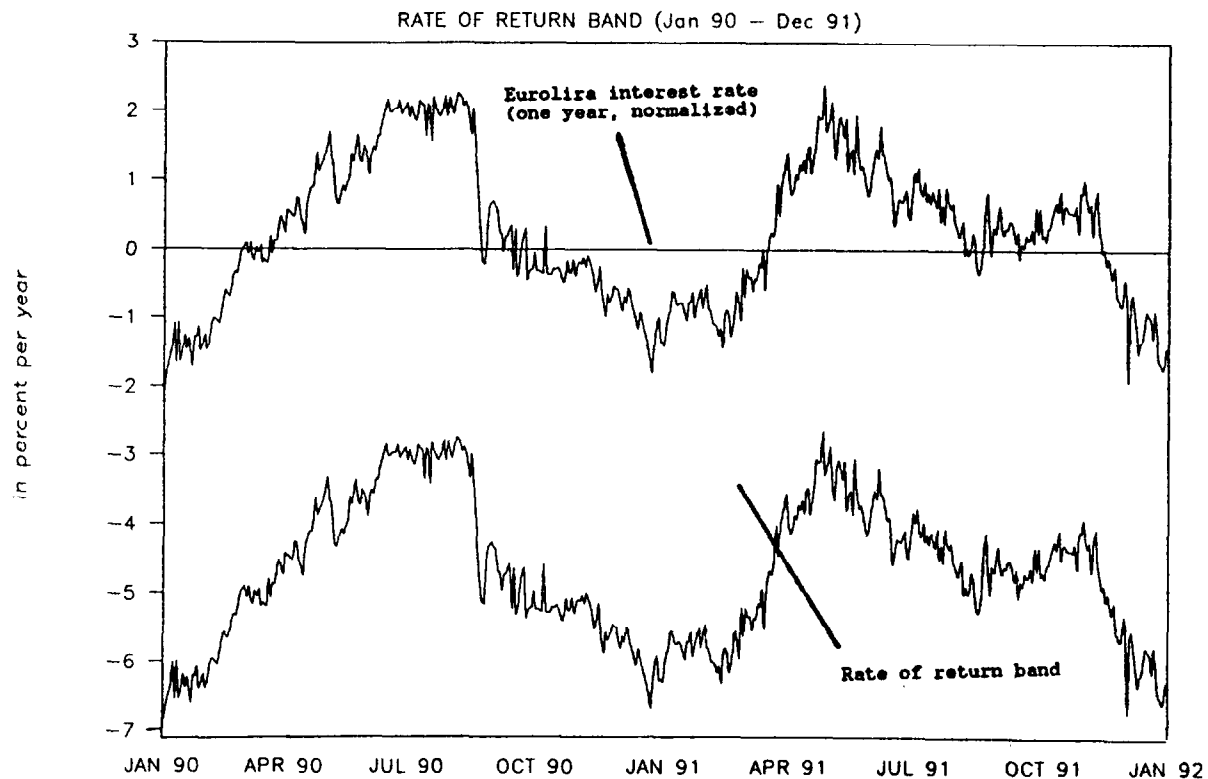
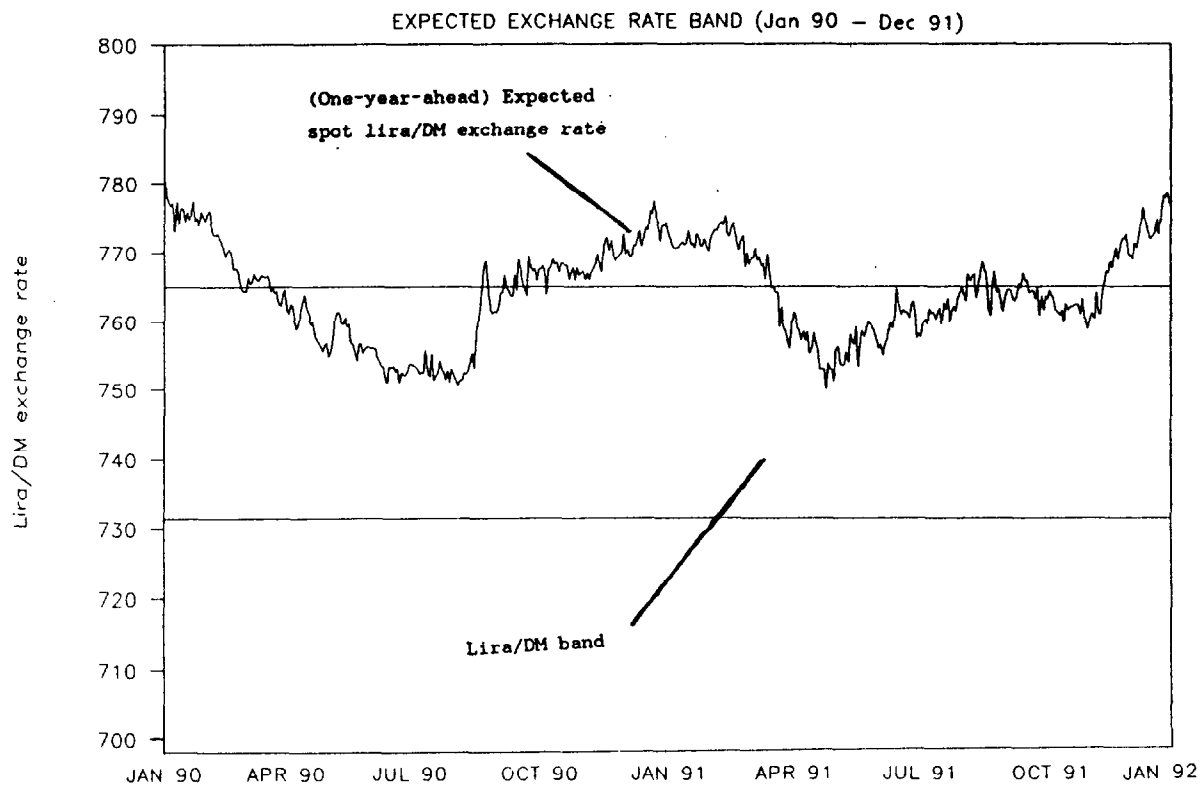


FIGURE 9







from equation (1), however, the gap  $\kappa_t$  may be closed through an adjustment of either the offshore rate to the domestic rate, or vice versa, or through a common convergence towards a different level. The latter will be the case if the Eurorate is forced to adjust by an exogenous movement of the foreign interest rate or by a shift in devaluation expectations. Indeed, it is this last possibility that is suggested by the behavior of the interest rate series.

Table 1 reports synthetic measures (yearly averages and standard deviations of daily changes) for the series appearing in Equations (1) and (4). The summary statistics are computed by using the midpoint between the bid and ask levels. With respect to the series  $i_t$ ,  $i_t^E$  and  $\kappa_t$ , the obvious evidence from Table 1 is that the process of capital liberalization has been accompanied by a dramatic decrease in the level of both the onshore and offshore rates, with maximum progress attained by 1988, and with the Eurorate carrying the major burden of the adjustment towards a smaller interest differential  $\kappa_t$ . The variability of the domestic interest series displays a wayward pattern, but the variabilities of the Eurorate and of the capital control premium  $\kappa_t$  show a clear decreasing trend. <sup>1/</sup> This pattern confirms the visual evidence from Figures 4 and 5 on the integration of the Italian capital market with the world market. It is also confirmation of the regime change that must have occurred in the exchange market to force downward adjustment of the lira Eurorate.

Table 1 also contains summary statistics on the behavior of the Eurolira and Eurodeutsche mark interest rates and of their differential (the exchange rate forward premium  $\pi_t$ ), this time from the one-year market. The table highlights the contribution to the reduction of the lira Eurorate by the down-shift of exchange rate expectations. After the strong improvement recorded during the 1981-85 period, progress is slower until 1988. After that date, devaluation expectations calm down considerably, and only the reduction of the forward premium prevents the lira Eurorate from following the sharp upward trend of the DM Eurorate.

The development of the measures of volatility of  $\pi_t$  and  $i_t^*$ , reported in Table 1, support the same interpretation. The volatility of the premium and of the lira Eurorate display a markedly decreasing pattern, while the volatility of the reference rate, the Eurodeutsche mark rate, is broadly constant. This suggests that the stabilization of the Eurolira interest rate  $i_t^E$  may be ascribed to the stabilization of devaluation expectations, as

---

<sup>1/</sup> The statistics reported in Table 1 are computed by excluding the observation for Friday, July 19, 1985, that single-handedly raises the variability of  $\kappa_t$  for the whole year from 0.46 to 0.59 percent, and that of the 3-month lira Eurorate from 0.45 to 0.59 percent (changes in the other entries are negligible). On that day, strong rumors of an ERM realignment disrupted the market causing--among other things--the bid-ask spread on the spot lira market to rise by a factor of forty. As a matter of fact, the parity of the lira in the ERM was realigned over that weekend.

Table 1. Summary Statistics on Financial Liberalization  
and Exchange Rate Stabilization 1/

Capital Control Liberalization			Exchange Rate Stabilization			
Lira 3m domestic rate	Lira 3m Euro- rate 2/	Capital control premium	DM 12m Euro- rate	Lira 12m Euro- rate 2/	Forward premium	
$i_t$	$i_t^E$	$\kappa_t$	$i_t^*$	$i_t^E$	$\pi_t$	
<u>Averages</u>						
1981	20.17	24.13	3.97	11.45	21.97	10.54
1982	20.12	23.41	3.29	8.58	21.60	12.99
1983	18.16	19.46	1.30	5.98	19.10	13.12
1984	16.03	16.38	0.35	6.28	16.25	9.97
1985	14.96	14.60	-0.37	5.55	14.15	8.60
1986	12.90	13.58	0.69	4.62	12.11	7.49
1987	11.41	11.43	0.03	4.27	11.23	6.96
1988	11.29	11.27	-0.02	4.57	11.17	6.60
1989	12.67	12.52	-0.16	7.21	12.08	4.87
1990	12.25	12.10	-0.16	8.95	12.07	3.11
1991	12.32	12.22	-0.10	9.34	11.68	2.34
<u>Standard deviations of daily changes</u>						
1981	.12	.90	.89	.23	.52	.48
1982	.08	.74	.74	.13	.39	.38
1983	.08	.59	.58	.07	.24	.23
1984	.18	.39	.41	.06	.21	.20
1985	.16	.45	.46	.07	.19	.18
1986	.17	.43	.43	.07	.22	.20
1987	.11	.37	.38	.08	.20	.19
1988	.18	.22	.27	.07	.15	.13
1989	.09	.13	.14	.09	.13	.11
1990	.17	.14	.17	.07	.10	.08
1991	.13	.18	.16	.05	.08	.06

Source: DRI - FACS database.

1/ All data are in percentage per year.

2/ Under the assumption of Covered Interest Parity,  $i_t^E$  is obtained as a covered yield, from the three-month Eurodollar market for the statistics on capital liberalization, and from the one-year deutsche mark market for the statistics on exchange rate stabilization.

summarized by the forward premium  $\pi_t$ , rather than to the stabilization of world interest rates, as summarized by  $i^*_t$ . Before we draw this conclusion, however, we must consider the possibility suggested by Giavazzi and Spaventa (1990) that the decline of the volatility of the forward premium may be due to the increased liquidity of the Eurolira forward market. This increased liquidity could have been the result of the natural development of the market from its infancy condition at the beginning of the 1980s, as well as the result of increased trading following the removal of capital controls. Following Giavazzi and Spaventa (1990), an assessment of the "thin-market" hypothesis can be made by considering the temporal behavior of the bid-ask spread on the Eurolira market, since one would expect the lack of market liquidity to be reflected in higher spreads. Figures 10 and 11 display the development of the Euromarket spreads on 12-month deposits and 12-month forward exchange contracts over the sample period. The figures show clearly that a downward sloping trend may be identified only until 1984 for the Eurodeposit market, and perhaps until 1985 for the forward lira market. Thus, the hypothesis that the increased size of the market may have reduced returns' volatility, thus contributing to the decline of risk premia, may be applicable only to the early part of the 1980s. In the later period, the reduction of perceived devaluation risk is a more convincing explanation of the decrease of the volatility of the forward premium.

#### V. Concluding Remarks

Fears to the contrary notwithstanding, Italy has successfully maintained a high degree of stability in its financial market from the moment the process of liberalization was undertaken in earnest. Rather than generating greater instability, the liberalization of capital movements has been accompanied by a progressive stabilization of exchange rate expectations. Furthermore, although the bulk of the restrictive measures abolished in the 1985-1990 period were aimed at controlling capital outflows, the liberalization actually resulted in a strong net inflow of capital, at least through the first half of 1991. The evidence provided by the rate of return tests that we have considered in Section IV also shows that although the liberalization was formally concluded in May 1990, the remaining constraints on capital movements were already non-binding from the summer of 1988, a fact formally sanctioned by the new exchange law of October 1988. We thus find evidence of a period of three to four years during which capital flows display a pattern which is difficult to reconcile with the predictions of standard models of portfolio choice. The pattern, however, is consistent with an interpretation of the liberalization as an indirect tool for promotion of economic convergence with Italy's EMS partners during the late part of the 1980s. By increasing the costs of anticipated realignments and--more generally--of exchange rate instability, the removal of capital controls signaled a stronger commitment to the stabilization of the exchange rate. By enhancing the credibility of the commitment to the EMS, both the level and variability of the lira forward premium were reduced. This, in turn, allowed the domestic system to increase its external borrowing during a period of expanding domestic demand

and current account deficit, without paying the price in terms of higher yields.

Our analysis of the behavior of the lira forward market supports this view. There is strong evidence of increased stability of the exchange rate commitment to the ERM following the removal of binding restrictions to capital flows. Our simple indicators of target zone credibility indicate that the credibility of the commitment to the ERM increased substantially around mid-1989, at the time of the presentation of the Delors report on EMU.

This interpretation is also confirmed by the events of the period following completion of the liberalization. The noticeable reduction of the inflow of capital, which can be observed beginning in the second quarter of 1991, is consistent with the observed slowdown in the process of increased credibility in the commitment to the ERM. The persistence of significant realignment risk, as displayed by Eurointerest rate data at the end of 1991, indicates the availability of additional room for increased credibility which has been left largely unexploited throughout the 1990-91 period. It can therefore be conjectured that the decline of the net inflow beginning in mid-1991 be the result of the winding-down of the credibility effects associated to the liberalization, which combine with the emerging long-run effects of the removal of the constraints on residents' portfolio decisions.

These considerations also bear implications for the medium-term developments in the Italian capital account. It is obvious that a continued capital inflow can be assured by paying increasingly high returns to foreign investors, thus inducing them to lend to an increasingly risky system. The relevant issue is whether further borrowing can take place without a rise in interest rate differentials. Given that the room for exploiting the short-term benefits from capital liberalization appears exhausted, the only viable strategy is to increase further the credibility of the commitment to the ERM, thus further shifting exchange rate expectations downward. Since this is a strategy that can be pursued only to a limited extent (until the commitment to EMU becomes completely credible), a rapid deterioration of the country's solvency can only be prevented by correction of the current account imbalance.

FIGURE 10

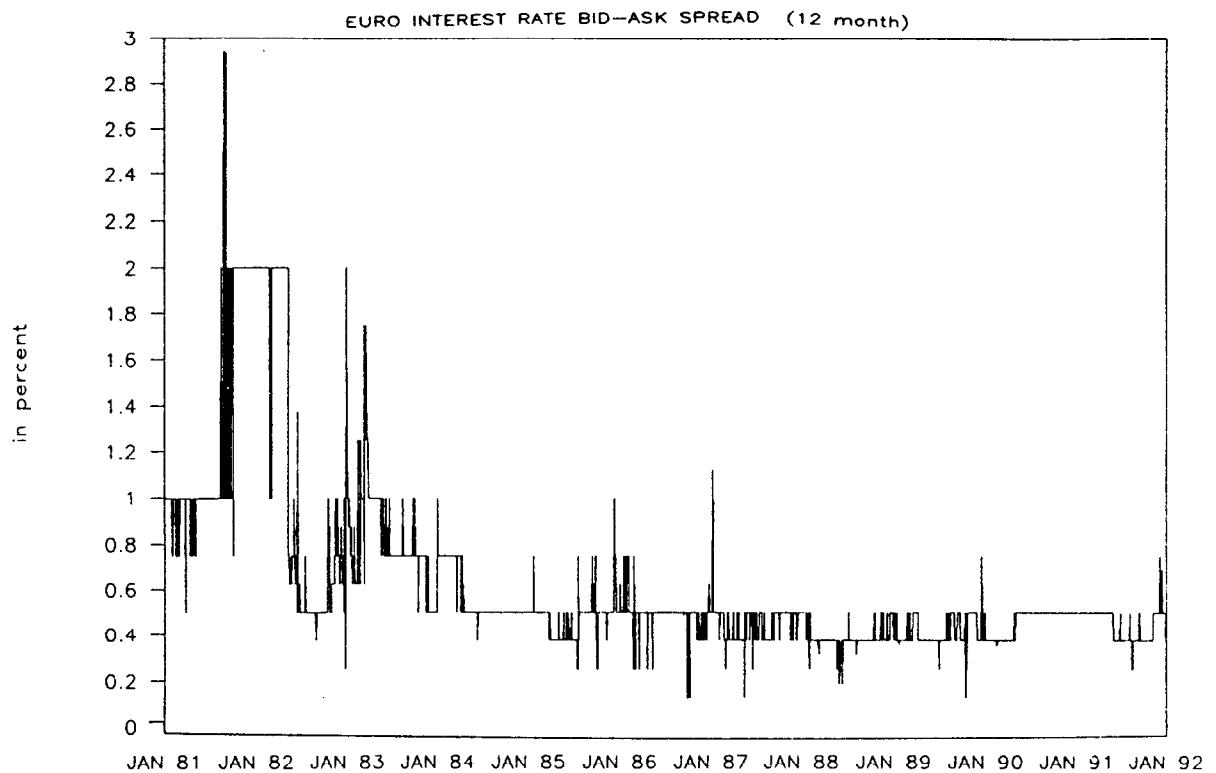
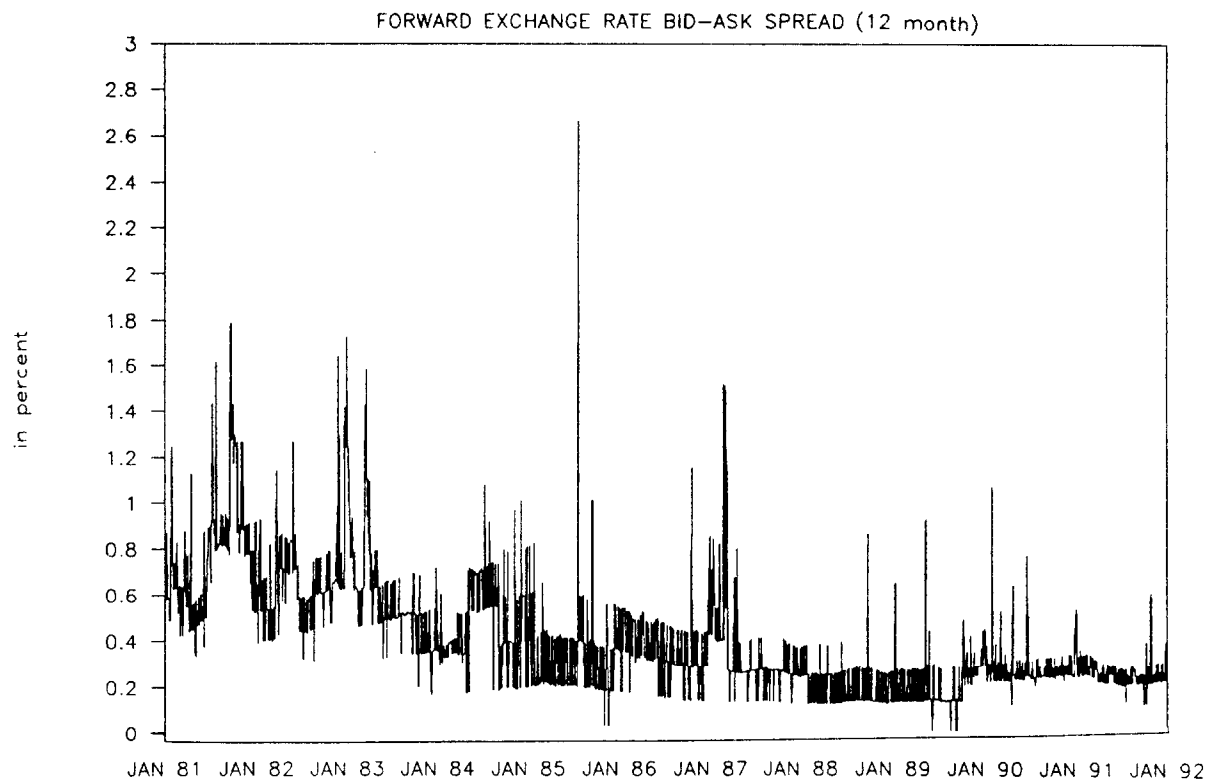


FIGURE 11





Main Measures of Foreign Exchange Control and Main EMS Dates since 1970

This appendix draws on Banca Commerciale Italiana (1988), on various issues of the volume on Exchange and Trade System, published by the IMF, and on Ungerer et al. (1990). The list includes the main measures designed to control capital flows and the external position of banks, which are regarded as the most effective and systematic in their operation. EC developments are italicized. The list of ERM realignments includes only those occurrences in which either the deutsche mark or the lira (or both) were involved.

- June 27, 1972. Prohibition of the crediting of banknotes to capital accounts, de facto representing suspension of external convertibility of the lira. Banks are authorized to assume a position of net external indebttness but are forbidden from assuming a creditor position.
- July 20, 1973. Banks' assets and liabilities in foreign currency must be balanced daily.
- July 27, 1973. Introduction of a 50 percent compulsory non-interest-bearing deposit at the Bank of Italy on property and portfolio investment abroad.
- July 19, 1974. Banks are forbidden from increasing their net external indebttness beyond the level attained on this date.
- June 17, 1975. The ceiling on banks' net external indebttness imposed on July 19, 1974 is lifted. The ban on net credit positions remains.
- March 13, 1979. Beginning of operation of the Exchange Rate Mechanism of the EMS.*
- September 24, 1979. ERM realignment (DM +2%, Dkr -2.9%).*
- March 23, 1981. ERM realignment (Lit -6.0%).*
- October 5, 1981. ERM realignment (DM +5.5%, Ff -3.0%, Lit -3.0, Nfl +5.5%).*
- June 14, 1982. ERM realignment (DM +4.25%, Ff -5.75%, Lit -2.75%, Nfl +4.25%).*
- March 21, 1983. Major realignment of the ERM, involving all major currencies (DM +5.5%, Ff -2.5%, Lit -2.5%, Nfl +3.5%, Blf +1.5%, Dkr +2.5%, Irl -3.5%), and widespread cross-currency speculation.*

July 20, 1984. Banks are still forbidden to assume an external credit position and must keep their net external indebtedness at the level reached by end-June 1984.

November 30, 1984. Reduction of compulsory zero-interest deposit on portfolio investment abroad: from 50 percent to 40 percent for securities issued in the OECD; to 30 percent for bonds issued in third countries by EC institutions and held by residents for at least a year. Abolition of zero-interest deposit on portfolio investment abroad by Italian mutual funds.

June 1985. *Presentation to the European Council of the White Paper on Completing the Internal Market. The paper identifies 279 decisions to be made for elimination of barriers to a common market.*

July 22, 1985. ERM realignment (DM +2.0%, Ff +2.0%, Lit -6.0%, Nfl +2.0%, Blf 2.0%, Dkr +2.0%, Irl +2.0%).

October 16, 1985. Reduction to 25 percent of compulsory zero-interest deposit on property and portfolio investment abroad.

December 4, 1985. The ceiling on banks' net external indebtedness imposed on July 20, 1984 is lifted.

February 1986. *The Single European Act sets December 31, 1992 as the target date for completion of internal market with free movement of goods, persons, services and capital. The Act will become effective in July 1987.*

April 7, 1986. ERM realignment (DM +3.0%, Ff -3.0%, Nfl +3.0%, Blf +1.0%, Dkr +1.0%).

June 1986. *Presentation of the first directive (#85/556) on capital liberalization, with March 1987 as date of implementation.*

August 8, 1986. Reduction to 15 percent of compulsory zero-interest deposit on property and portfolio investment abroad. External convertibility of Italian banknotes is reintroduced.

January 12, 1987. ERM realignment (DM +3.0%, Nfl +3.0%, Blf +2.0%, Dkr +2.0%)

February 25, 1987. Residents are allowed to buy through a domestic bank stock shares, bonds and shares of foreign unit trust (only those authorized to operate in Italy), even if unlisted but issued or payable by an EEC Country or guaranteed by an OECD official institution.



March 13, 1987. Introduction of a reserve requirement on banks' deposits in foreign currency: 25 percent of the monthly average increase and decrease in deposits, net of the proportion reinvested abroad or reallocated at other credit institutions, to be deposited in lire at the Bank of Italy and remunerated at the rate of 5.5 percent.

May 14, 1987. Abolition of the compulsory zero-interest deposit. Authorization still required for investment in non-EC countries.

*September 8-12, 1987. Basle-Nyborg Agreement among Central Banks' Governors to strengthen the ERM by wider use of fluctuation bands, by extension of the very-short-run financing facility and by more intense use of inframarginal intervention.*

September 13, 1987. The reserve requirement established on March 13, 1987, is set equal to zero.

*June 24, 1988. Adoption of Directive 88/361, including a comprehensive timetable for capital liberalization, to be completed by July 1990.*

October 1, 1988. A new exchange control law comes into force, under which all exchange transactions can be carried out unless specifically prohibited. In the event, all restrictions on commercial and financial transactions by residents with nonresidents were abolished with the following exceptions: 1) residents are not allowed to hold funds in bank accounts abroad, but currency can be held in accounts with domestic banks up to 120 days; 2) nonbank residents are not allowed to extend credit lines to nonresidents and to purchase money market instruments abroad with maturity of less than 180 days; 3) a ceiling limit for banks' ability to carry out forward operation against lire remains, but is increased by 50 percent.

February 17, 1989. The marginal reserve ratio on banks' net foreign currency deposit liabilities, set at zero on September 13, 1987, was raised to 25 percent.

*April 17, 1989. The Delors Report proposes a three-stage transition to EMU.*

October 23, 1989. The foreign exchange position of banks on a daily basis may not exceed 5 percent of the average of their spot foreign exchange assets at the end of the last three months.

*December 15, 1989. The Second Bank Directive is approved by the EC Council of Ministers.*

*January 8, 1990. ERM realignment. The Lira's central parity is devalued by 3.7 percent, while the band is narrowed to  $\pm 2.25\%$ .*

*January 19, 1990. Residents are allowed to purchase bonds and money market instruments issued or payable abroad even if they have a remaining term to maturity of less than 180 days. No conversion into lire is required at maturity.*

*May 2, 1990. All remaining restrictions on authorized banks' foreign exchange management are abolished.*

*May 14, 1990. Virtually all remaining foreign exchange restrictions are abolished.*

*July 1, 1990. Deadline for complete removal of capital controls, in accordance with Directive 88/361. Beginning of the first stage of the process leading to EMU.*

In addition to the measures listed above, frequent adjustments were made in the rules governing the terms and conditions of foreign trade financing, with the general aim of preventing speculative capital movements connected with foreign trade. Because of their temporary and unsystematic nature, and because their main effect was essentially indirect, these measures are regarded as having played a rather secondary role in the control of capital outflows in Italy during the last two decades. 1/ An additional group of measures were aimed at controlling residents' demand for foreign exchange by limiting the quantity available or controlling the cost of procurement. These included the regulation of foreign currency allowances for tourist purposes, the measures establishing a dual exchange rate market, and the establishment of taxes on foreign currency purchases and on import deposits. Partly because they were short-lived, partly because of their limited coverage basis, also the effect of these measures is regarded as having played a secondary role in the process of financial integration.

---

1/ The main effect was through operators' demand for foreign currency loans from banks. This effect would have been minimal had the external borrowing and lending ability of banks be unimpaired.

### References

- Adams, C., and J. Greenwood (1985), "Dual Exchange Rates and Capital Controls: An Investigation," Journal of International Economics 18, 43-63.
- Aizenman, J.A. (1986), "On the Complementarity of Commercial Policy, Capital Controls, and Inflation Tax," Canadian Journal of Economics 19, 114-133.
- Argy, V., and M.G. Porter (1972), "The Forward Exchange Market and the Effects of Domestic and External Disturbances Under Alternative Exchange Rate Systems, IMF Staff Papers 70, 502-528.
- Banca Commerciale Italiana, (1988), "Main Measures of Foreign Exchange Policy," Economic Research Department.
- Bartolini, L., and G. Bodnar, (1991), "Target Zones and Forward Rates in a Model with Repeated Realignments," IMF and University of Rochester, mimeo.
- Bentivogli, C., and M. Magnani, (1991), "I movimenti di capitale prima e dopo la liberalizzazione: alcune evidenze empiriche e un confronto internazionale," Banca d'Italia, mimeo.
- Bhagwati, J.N. (1965), "On the Equivalence of Tariffs and Quotas," in: R.E. Baldwin et al. eds. International Trade: Selected Readings, MIT Press, Cambridge, 171-189.
- Bhandari, J.S., and B. Decaluwe (1987), "A Stochastic Model of Incomplete Separation Between Commercial and Financial Exchange Markets," Journal of International Economics 22, 25-55.
- Bodnar, G., (1991), "Capital Control Liberalization and Financial Markets in the European Monetary System," Princeton University, Ph.D. Dissertation.
- Cumby, R.E. (1984) "Monetary Policy Under Dual Exchange Rates," Journal of International Money and Finance 3, 195-208.
- Dooley, M.P., and P. Isard, (1980), "Capital Controls, Political Risk, and Deviations from Interest-Rate Parity," Journal of Political Economy 88, 370-384.
- Dooley, M.P., and P. Isard, (1987), "Country Preferences, Currency Values and Policy Issues," Journal of Policy Modelling 1161-1176.
- Flood, R.P., and N.P. Marion (1982), "The Transmission of Disturbances Under Alternative Exchange-Rate Regimes with Optimal Indexing," Quarterly Journal of Economics 96, 41-66.
- Giavazzi, F., and M. Pagano, (1988a), "Capital Controls in the EMS," in Fair

- D. E., and C. deBoissieu, (eds.), International Monetary and Financial Integration --The European Dimension, Martinus Nijhoof Publ., Dordrecht.
- Giavazzi, F., and A. Giovannini, (1989), Limiting Exchange Rate Flexibility, MIT Press, Cambridge.
- Giavazzi, F., S. Micossi, and M. Miller, eds., (1988), The European Monetary System, Cambridge University Press.
- Giavazzi, F., and L. Spaventa, (1990), "The 'New' EMS," CEPR Discussion Paper No 369.
- Giovannini, A. (1988), "Capital Controls and Public finance: The Experience of Italy," in F. Giavazzi and L. Spaventa, eds., High Public debt: The Italian Experience, CEPR.
- Giustiniani, A., and S. Rossi (1990), "The Strength of the Italian Lira in 1988-89: A Case of "Overshooting"?", in International Capital Flows, Exchange Rate Determination and Persistent Current-Account Imbalances, Bank for International Settlements, Basle.
- Greenwood, J., and K.P. Kimbrough (1985), "Capital Controls and Fiscal Policy in the World Economy," Canadian Journal of Economics 18, 743-765.
- Gros, D. (1987), "The Effectiveness of Capital Controls," IMF Staff Papers 34, 621-642.
- Gros, D., (1988), "Dual Exchange Rates in the Presence of Incomplete Market Separation: Long-run Effectiveness and Policy Implications," IMF Staff Papers 35, 437-460.
- Ito, T., (1983), "Capital Controls and Covered Interest Parity," NBER, Working Paper No. 1187.
- Khan, M.S., and R. Zahler (1983), "The Macroeconomic Effects of Changes in Barriers to Trade and Capital Flows: A Simulation Analysis," IMF Staff Papers 30, 223-282.
- Marion, N.P. (1981), "Insulation Properties of a Two-Tier Exchange Market in a Portfolio Balance Model, Economica 48, 61-70.
- Mendoza, E.G. (1991), "Capital Controls and the Gains from Trade in a Business Cycle Model of a Small open Economy," IMF Staff Papers 38, 480-505.
- Obstfeld, M. (1986), "Capital controls, the Dual Exchange Rate, and Devaluation," Journal of International Economics 20, 1-20.
- Obstfeld, M. (1986), "Capital Flows, the Current Account, and the Real Exchange Rate: Consequences of Liberalization and Stabilization," in:

L. Ahamed and S. Edwards, eds., Economic Adjustment and Exchange Rates in Developing Countries, NBER, University of Chicago Press, Chicago.

Stockman, A., and H.D. Alejandro (1985), "Exchange Controls, Capital Controls, and International Financial Markets," NBER Working Paper No.1755.

Svensson, L.E.O., (1991), "The Simplest Test of Target Zone Credibility," IMF Staff Papers, September.

Ungerer, H., J.J. Hauvonen, A. Lopez Claros, and T. Mayer, (1990), "The European Monetary System: Developments and Perspectives," IMF, Washington.

