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# **Greco-Roman Lessons for Public Debt Management and Debt Market Development**

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# Abstract

Italy and Greece initiated efforts to improve public debt management and develop their domestic debt markets respectively in the late 1970s and mid-1980s. At that time, both countries suffered from large and rapidly growing public debt, excessive reliance on short-term bills held by commercial banks, a strong preference of households to save in bank deposits, and a weak presence of institutional investors (pension funds, insurance companies, and mutual funds). Continuing large fiscal deficits, high levels of interest rates and inflation, and serious policy credibility problems impeded the use of long-term instruments.

Campanaro and Vittas provide a detailed analysis of the characteristics of the instruments that were used in these two countries, their pace of issuance and their impact on the composition of public debt. The authors note that the main Greco-Roman lesson for developing and transition countries concerns the transition from an excessive reliance on short-term Treasury bills, held by captive banks, to a liquid market with long-term instruments held, and actively traded, by long-term institutional investors. The transition required moving gradually to medium-term instruments, experimenting with innovation and targeting households and foreign investors, while taking steps to establish policy credibility by lowering fiscal deficits and inflation.

When reliance on captive sources of finance was substantially reduced and policy credibility was established, both countries focused on developing active money markets and liquid secondary markets with benchmark issues of fixed-rate long-term securities. They ultimately succeeded in developing active professional markets, using modern practices, targeting well-established European institutional investors, and integrating into the highly sophisticated euro markets. However, integration into the euro markets was the culmination of a prolonged effort of modernization and adaptation and was greatly facilitated by their strong political commitment to achieve economic convergence and join the euro zone.



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# I. Introduction and Main Findings

## 1.1 Introduction

For the past three years or so, the World Bank has undertaken a pilot program focusing on Public Debt Management and Debt Market Development in developing and transition countries. The program's objective is to assist a small number of low and middle income countries in modernizing their public debt management and developing their debt markets.

The pilot program has been created in response to the growing international consensus on the importance of efficient public debt management for stimulating the development of financial markets and lowering vulnerability to economic and financial shocks (World Bank and IMF 2001, OECD 2002). International guidelines have been issued, promoting sound practice on institutional, strategic, operational and regulatory aspects of public debt management and debt market development (IMF and World Bank 2003). The main elements of sound practice include formation of an integrated national debt office with clear responsibilities, transparency and accountability; adoption of sophisticated issuing strategies favoring emergence of liquid benchmarks, judicious use of competitive auctions and other issuing techniques, and promotion of stable redemption profiles with limited exposure to refinancing, interest rate and exchange rate risks; development of liquid money and secondary bond markets with efficient trading, clearing and settlement facilities as well as promotion of a diversified investor base; and creation of a robust regulatory and supervisory framework with effective enforcement powers.

There is wide acceptance that attainment of these objectives raises difficult sequencing issues and involves a long implementation period. For instance, developing liquid benchmark issues of fixed-rate long-term bonds may not be feasible until countries are able to overcome serious policy credibility problems. Transferring the risk of fixed-rate long-term securities to market participants may be counterproductive in countries where markets are illiquid, valuation is difficult, and risk management is inefficient. In fact, market instability arising from premature risk transfer may hinder the development of liquid and resilient markets. Promoting a strong presence of domestic institutional investors to create a diversified investor base, though highly desirable for many reasons, is a long-term undertaking.

In this context, the experience of Italy and Greece, two countries that have been able to transform their public debt markets, may have relevant lessons for developing and transition countries. Italy and Greece initiated efforts to improve public debt management and develop their domestic debt markets, respectively, in the late 1970s and mid-1980s. At that time, both countries suffered from large and rapidly growing public debt, excessive reliance on short-term bills held by captive commercial banks, a strong preference of households to save in bank deposits, and a weak presence of institutional investors (pension funds, insurance companies, and mutual funds). Continuing large fiscal deficits, high levels of interest rates and inflation, and serious policy credibility problems impeded the use of long-term instruments (Missale 1999).

Both Italy and Greece addressed the refinancing risk of their public debt and the need to diversify away from captive bank investors by first issuing variable-cost medium-term instruments, targeted at the household sector. To ensure the success of these initiatives, they offered large spreads over short-term rates to investors and paid high commissions to intermediaries as well as applying preferential tax treatment to government securities. They also took steps to lower their primary deficits, attain sustainable levels of public debt, and enhance the transparency of their debt operations.

When reliance on captive sources of finance was substantially reduced and policy credibility was established, they focused on developing liquid secondary markets with benchmark issues of fixed-rate long-term securities. Both countries ultimately succeeded in developing active professional markets, using modern practices, targeting well-established European institutional investors, and integrating into the highly sophisticated euro markets. However, integration into the euro markets was the culmination of a prolonged effort of modernization and adaptation.

The relevance of the Italian and Greek experience for transition and developing countries is limited by two important factors. First, Italy and Greece are examples of countries where public debt managers initially struggled to deal with spiraling demands on their borrowing ability. Their early experience illustrates the effective use of coping mechanisms rather than sound practice. Second, their ultimate success in adopting modern practices and developing active professional markets was greatly facilitated by their membership in the European Union and the strong political commitment to achieve economic convergence and join the euro zone.

The main Greco-Roman lesson concerns the transition from an excessive reliance on short-term Treasury bills, held by captive banks, to a liquid market with long-term instruments held, and actively traded, by long-term institutional investors. The transition required moving gradually to medium-term instruments and experimenting with innovation to attract nonbank investors. Since there were no local institutional investors, this implied targeting households and foreign investors, while taking steps to establish policy credibility by lowering fiscal deficits and inflation.

This paper provides a detailed analysis of the characteristics of the instruments that were used in these two countries, their pace of issuance, their impact on the changing mix of public debt in terms of investor base, maturity, and currency, and exposure to refinancing, interest rate and currency risk, and the total cost of issuing these instruments in terms of additional spread over treasury bills and higher administrative costs. The paper also addresses the related issue of the phasing out of the special programs and their substitution by a more market-based approach that relies on professional debt management, sophisticated issuing strategies, liquid markets and institutional investors.

The main objective of the paper is to document and evaluate the transition from total dependence on bank finance to a more diversified investor base and market finance. Although recent efforts to integrate with international markets and adopt best practices are covered, such as the upgrading of the capabilities of national debt offices, creation of liquid benchmark issues, appointment of primary dealers (including several nonresident international banks) and

automation of trading and settlement facilities, no attempt is made to evaluate the extent to which Italian and Greek practice complies with the public debt management guidelines.

Following this introduction, the remainder of the first chapter presents the main findings and policy lessons for developing countries. The other two chapters cover respectively the experience of Italy and Greece. In addition to short introductory and concluding sections, each chapter addresses three successive periods—the period of massive debt accumulation, the search for investor diversity and market finance, and the search for efficiency and international integration. The periods differ between the two countries reflecting differences in the timing of their problems and policy responses.

## 1.2 Main Findings

There are many similarities as well as differences in the experiences of Italy and Greece. The main similarities include the following:

- Both countries were more successful in managing the rise in public debt than in curbing it.<sup>1</sup> Italy experienced an increase of its general government debt from 67 percent of GDP in 1980 to 98 percent in 1990 and 124 percent in 1995. In Greece, general government debt rose from 38 percent of GDP in 1980 to 79 percent in 1990 and 110 percent in 1995.<sup>2</sup>
- Both countries implemented a “divorce” between the public treasury and the central bank, aiming to prevent the monetary financing of the public sector, as part of the obligations imposed by the Maastricht Treaty. In Italy a half-hearted attempt was effected as early as 1981 but it was fully formalized in 1993 when Bank of Italy advances to the Italian treasury were banned. A similar provision was also implemented in Greece in 1993.
- A third similarity was the success in placing a large proportion of debt with the household sector, thus avoiding excessive reliance on banks and monetization of the debt. This was facilitated by the large supply of household financial savings in both countries and by the limited availability of alternative investments, which was partly caused by the imposition of strict controls on holding foreign assets and partly by the absence of local institutional investors. Preferential tax treatment of investment income from government securities also played an important part.
- Another common feature was the use of variable-cost short-to-medium-term instruments. Some instruments were denominated in local currency and bore variable interest rates linked to short-term rates. Other instruments carried fixed nominal coupons but were indexed to the ECU and other foreign currencies.
- Both countries made little use of price-indexed instruments. Financial indexation was preferred because it enjoyed greater credibility than price indexation and because it implied a lower long-term cost. The lack of public trust in official price indices and the fear of official manipulation of the indexation mechanism also probably

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<sup>1</sup> The point was made by Conti and Hamaui (1994) for the case of Italy but it also applies to Greece.

<sup>2</sup> In the case of Greece, shortcomings in recording and reporting public debt data concealed a much higher level of public debt that may have been closer to 150 percent of GDP at its peak.

undermined demand for price-indexed securities. The authorities were as unwilling to accept the high real spreads that would have been required for the successful issuance of price-indexed securities, as they were of accepting the high nominal spreads that would have been necessary for issuing fixed-rate long-term instruments.

- The interest cost of public debt reached very high levels in both countries because of the large size of the debt and high interest rates. In Italy, the interest cost at its peak in 1993 exceeded 12 percent of GDP, while in Greece it reached 14 percent in 1994. In both countries, the interest cost has been reduced by more than half in recent years.

**Table 1.1: Financial and Institutional Innovation**

Italy		Greece	
1974	Growing reliance on Treasury bills (BOTs) of 3m, 6m and 12m.	1985	Opening of TBs of 3m, 6m and 12m to non-bank investors.
1977	Introduction of medium term certificates (CCTs) with variable rates linked to TBs.	1986	Offer of ECU-linked fixed-rate medium-term bonds.
1982	Offer of ECU-linked fixed-rate medium-term certificates (CTEs).	1987	Introduction of medium-term fixed-rate drachma bonds.
1983	Issue of inflation-linked certificates (CTRs) (one issue).	1992	Use of medium-term variable rate bonds linked to 12m TBs.
1987	Use of ECU-linked 12m TBs (BTEs).	1995	Systematic use of auction techniques.
1988	Use of medium-term certificates with put options (CTOs).	1995	Creation of new book-entry system.
1988	Adoption of new auction techniques.	1996	Use of 3-year fixed-rate bonds.
1988	Creation of MTS, screen-based OTC market.	1997	Launching of 5, 7 and 10-year fixed-rate bonds.
1988	Upgrading of the capabilities of the Directorate of Public Debt of the Italian Treasury.	1997	Use of inflation-linked bonds (4 small issues).
1991	Issue of fixed-rate 10-year bonds (BTPs).	1997	Introduction of system of primary dealers.
1992	Creation of Italian Futures Market.	1998	Issue of 2 and 15 year fixed-rate bonds.
1993	Issue of fixed-rate 30-year bonds (BTPs).	1998	Introduction of 2-year zero-coupon savings certificates.
1994	Adoption of system of primary dealers.	1998	Adoption of electronic trading.
1995	Issue of two-year zero-coupon certificates.	1999	Creation of Public Debt Management Agency.
1997	Adoption of new issuance calendar	1999	Expansion of system of primary dealers.
1998	Completion of dematerialization process	2000	Launching of 20-year fixed-rate bonds.
2000	First issuance of very short terms notes (2 months) BOT.	2003	Use of special savings certificates
2003	Issue of bonds linked to EU harmonized index of consumer prices.	2003	Issue of bonds linked to EU harmonized index of consumer prices.

- Over time and as the policy of economic convergence became more credible, both countries were able to develop active money markets with extensive use of repo facilities and to adopt modern techniques of primary issuance, focusing on developing liquid benchmark issues and establishing automated facilities for trading, clearing and settling transactions in government securities.
- Both countries benefited from the existence of liquid and efficient markets in other European countries, especially the presence of large pension funds and insurance companies. Institutional investors from other European countries became large

investors in Italian and Greek government securities and filled the gap created by the weak presence of local institutional investors.

- Both countries succeeded in improving their public finances, generating primary surpluses, lowering the interest cost of public debt and stabilizing its level. Prospects are now promising in both countries for a significant decline in the level of public debt.

There are also some important differences in the experience of the two countries:

- One difference concerns the timing of problems and policy responses. Italy experienced the deterioration of its public finances five to ten years ahead of Greece. Its response, in terms of new instruments and policies, also predated that of Greece by a similar length of time.
- Another difference concerns the past role of the household sector. In Italy, households invested directly in government securities, including fixed-rate instruments, even before the rise of public debt. In Greece, the household sector held very small direct investments in government securities before 1985.
- Italian households suffered heavy losses due to the high inflation of the 1970s and as a result Italy experienced a large shortening of the maturity of its debt in the 1970s as the authorities were forced to rely on short-term instruments. In Greece, the maturity of domestic debt was very short even before 1985.
- The first successful instrument in Italy was the variable-rate treasury credit certificate that was launched in 1977 and was linked to short-term rates. ECU-linked certificates were introduced in 1982. In Greece, the first successful instruments were launched in 1986 and were linked to the ECU. Fixed-rate medium-term bonds were launched in 1987 but met with very limited response. Variable-rate medium-term bonds were offered in 1992. Floating-rate and foreign-currency-indexed instruments were successful in both countries.
- In Italy, the household sector maintained a direct presence in the government securities market even after the advent of foreign institutional investors and the adoption of modern public debt management techniques. In contrast, the household sector appears to have withdrawn from participating directly in the Greek market after 1996 despite various attempts by the Greek authorities to sustain its presence.
- In Greece, the implementation of public debt management policies followed a monotonic approach. High spreads were offered on variable-rate medium-term bonds to entice households to invest in government securities. Also, the fixed rates offered on ECU-linked bonds were attractively set. When domestic interest rates started falling, Greece targeted the international market with fixed-rate long-term bonds that held the prospect of large capital gains for foreign investors.
- The Italian experience faced setbacks on two occasions. The fall of interest rates in the 1980s had not been accompanied by an aggressive stance to develop the long-term fixed-rate market. When pressures started to grow in 1987 for a rise in interest rates, the Italian authorities faced a serious policy dilemma: a rise in interest rates was advisable for monetary control purposes but it would cause a substantial increase in the interest cost of public debt. Similar dilemmas were faced after the currency crisis

- of 1992 and the large devaluation of the lira. However, after 1994, the Italian authorities were able to promote the use of fixed-rate long-term instruments.
- Greece established an independent national debt office in 1999. In contrast, in Italy the debt office continues to be a unit within the Treasury. However, this difference in institutional detail does not seem to have had any discernible effect on either policy or practice. The exact location of the debt office as an independent agency or as a department of ministry of finance or the central bank is less important than a clear allocation of responsibilities, effective coordination of the various parties involved, and a high level of transparency and accountability. In these respects, experiences in the two countries were very similar.

### **1.3 Policy Lessons for Developing Countries**

Like Italy and Greece in earlier periods, many developing countries start from situations of excessive reliance on short-term instruments and captive sources of finance, while the true cost of borrowing and exposure to refinancing risk are hidden. For such countries, which also often suffer from policy credibility problems, arising from high inflation and ineffective tax collection, implementing the full set of public debt management guidelines may prove particularly difficult. Issuing long-term fixed-rate securities or even securities indexed to local inflation may prove too costly, infeasible and even counterproductive. Important sequencing issues arise that are difficult to resolve and call for a gradual approach that takes full account of local conditions.

For such countries, the experience of Italy and Greece may have valuable lessons. It shows that countries may first address the refinancing risk by issuing variable-cost medium-term instruments, targeted at the household sector, while taking steps to lower their primary deficits, attain sustainable levels of public debt, and enhance the transparency of their debt operations. Offer of large spreads to retail investors and payment of high commissions to intermediaries may be necessary.

When reliance on captive sources of finance is substantially reduced and policy credibility is established, countries could focus on developing active money markets and then liquid secondary markets with benchmark issues of fixed-rate long-term securities. Measures to develop a diversified investor base are important, although the primary purpose for such initiatives would need to be the desire to create a more robust pension system or more efficient insurance and mutual fund industries rather than developing stable sources of financing public debt. Integrating with international markets by allowing foreign investors to invest in local debt instruments and domestic investors to invest in foreign markets may be a more promising avenue for stimulating the development of efficient and competitive financial markets.

Of course, complete replication of the Greco-Roman experience may not be feasible for countries that do not have a link to a larger economic area, like the European Union, and do not benefit from a strong political commitment to achieve convergence in economic performance to be able to join a more stable common currency area. Among transition and developing countries, those with aspirations to join the European Union could of course benefit more from the Italian and Greek experience.

The Greco-Roman experience is also relevant for developing countries with large household financial savings but weak institutional investor sectors. Several countries in Asia and MENA fit this characterization. In contrast, the experience of Italy and Greece seems less relevant for countries in Latin America and Africa where household financial savings are underdeveloped but institutional investors have a stronger presence. In these countries, issuing strategy and financial innovation would need to target institutional investors.

There are also countries where institutional investors have a strong presence but are dominated by public sector institutions, which are treated as captive investors for holding public debt. Relaxing the degree of captivity and encouraging plurality in asset management would be essential steps in making progress toward sound practice in such countries.

Finally, the use of mutual funds, especially money market and short-term bond funds, is an option that was not available in Italy and Greece when they started reforming their government debt markets but could today play an important part in most developing and transition countries. The experience of Spain (World Bank and IMF 2001:199-200) may be relevant in this respect.

In conclusion, while Greco-Roman experience is far from universally relevant, it may have useful lessons for many developing and transition countries that share several initial conditions with Italy and Greece. The most important lesson concerns the transition from an excessive reliance on short-term Treasury bills, held by captive banks, to a liquid market with long-term instruments held by long-term institutional investors. It highlights the need to move gradually to medium-term instruments, experiment with innovation and target available nonbank investors, while taking steps to establish policy credibility by lowering fiscal deficits and inflation, attaining sustainable levels of public debt, and enhancing the transparency of their debt operations.

# II. The Italian Experience

## 2.1 Introduction

The period of post-war reconstruction in Italy was followed by an economic boom in the 1960s. Although it suffered from a “stop and go” pattern, that was dictated by the external deficits and the limited availability of foreign exchange reserves, economic expansion was facilitated by strong international demand, increased level of investment (public and private), an abundant supply of labor, and increased productivity (Ministero del Tesoro, 1988:53). During this period, the level of public debt was relatively low. Domestic debt amounted to 31 percent of GDP in 1960 and remained at the same level in 1970 (Gerelli and Osculati 1985:13-4). Total debt, including foreign debt, rose from 40 percent of GDP in 1960 to 45 percent in 1970.

The 1960s were also characterized by extensive state ownership, not only in public utilities, banking and insurance, but also in heavy industry through IRI, the industrial holdings corporation. There were also restrictions on cross-border capital movements and direct controls on the operations of banks and other financial institutions. Yet, despite the large role of the state in economic activity, budget deficits were small. In fact, at the beginning of the 1960s, public finances were characterized by a primary surplus, although over the 1960s non-interest expenditures grew faster than revenues and resulted in a primary deficit.

## 2.2 The Period of Shortening Maturities with Debt Accumulation (1968-1976)

After the boom of the 1960s, the 1970s were characterized by a steep deterioration of public finances and strong inflationary pressures that were also linked to the large increase in oil prices brought about by the oil crisis of 1973. The differentials between Italian inflation rates and those in other advanced countries widened significantly. The ratio of public debt to GDP began to rise rapidly and reached 67 percent of GDP in 1975.

There were several reasons behind the rapid deterioration of public finances. One important change in the Italian landscape was the creation of local entities in 1972, which resulted in decentralizing government authority in a number of areas, such as health, housing, urban planning, education, and public works. The setting up of local governments should have been accompanied by a distribution of public expenditures between the two levels of government, but in practice, these became complementary. Weak controls were exercised on the growth of expenditures both at the central and local levels, while the taxes collected at the central level did not match the growing expenditures. In other European countries the increase in government expenditure that also took place at that time was matched by the imposition of higher taxes. This, however, did not occur in Italy ( Gaiotti and Rossi, 2003:8) where taxation occurred through higher inflation.

Additionally, the political system had become more active than in the past in the redistribution of income and wealth (the effectiveness of these efforts was weakened by

inflationary pressures). The political system favored the utilization of public resources in social security, disability pensions, financing the development of Southern Italy, and supporting inefficient firms (Fратиanni and Spinelli 1997, Putnam 1993).

At the same time, the Italian authorities were focused on lowering the political cost of large deficits and were reluctant to prevent their monetization. In the 1970s, the deficits were mostly financed through central bank advances. This resulted in a strong acceleration and instability of monetary aggregates that reinforced the prevailing inflationary pressures.

Italy suffered a balance-of-payments crisis in 1972 that intensified after the oil crisis. Although operating under a flexible exchange rate regime, the authorities used to intervene in the foreign exchange market to stabilize the commercial exchange rate, leaving the financial rate to fluctuate freely. In February 1973, however, the commercial rate was also allowed to float. Various controls on capital flows, bank credit ceilings, and bank portfolios were tightened in order to insulate the Italian economy.

A completely open economy could have caused a strong depreciation of the Italian lira and could have eventually resulted in an alignment of real interest rates to the level prevailing abroad. Under these conditions, arbitrage would have diverted domestic savings abroad. However, forced to invest in the domestic market, Italian investors shifted their preferences to short-term securities and bank deposits. The high inflationary pressures and concomitant rising nominal interest rates caused heavy losses to bond investors in the early to mid 1970s since the majority of the outstanding debt consisted of medium-term securities with fixed-interest rates.<sup>3</sup> The result was a steep monetization of the deficit<sup>4</sup> and a collapse in the average maturity of new debt. Graph 2.1 shows the collapse in the average residual maturity of public debt during the 1970s and 1980s.

Faced with a need to finance the continuing budget deficits and wishing to avoid an even steeper monetization of the growing public debt, the authorities decided in 1974 to finance a large part of the public debt with 3, 6 and 12-month Treasury bills (BOT) targeted at non-bank investors. This represented an attempt to have some influence on liquidity at a time when the market for longer term securities had collapsed. But it implied a more difficult and riskier debt management in the longer run<sup>5</sup> through increased exposure to interest rate and refinancing risks.

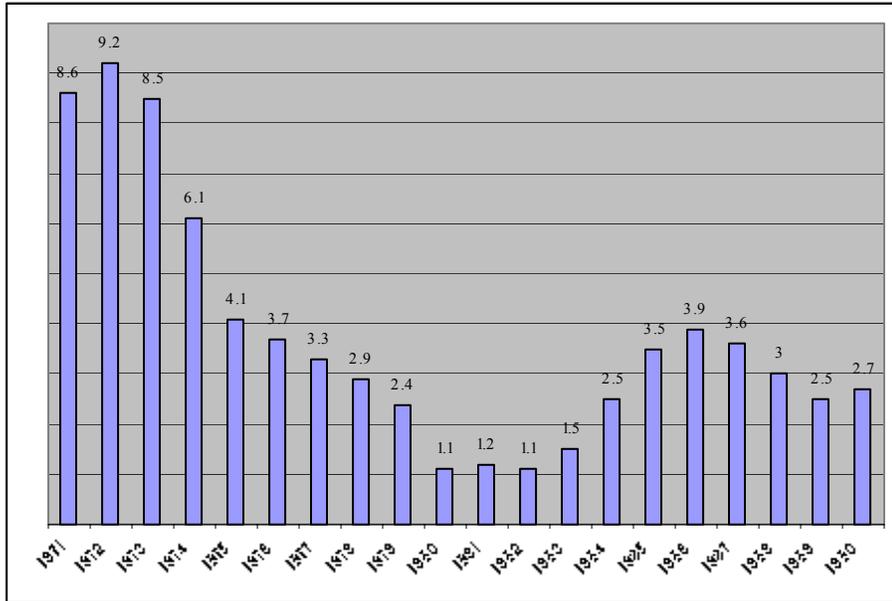
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<sup>3</sup> Pittaluga and Vaciano (1994) believe that the capital losses incurred by investors during this period are a partial explanation for the high level of real interest rates seen nowadays in Italy.

<sup>4</sup> In 1976 monetization reached a peak of 55% of the borrowing requirement. The debt to the Bank of Italy reached 43% of the total (Spaventa 1988).

<sup>5</sup> Spaventa (1988) attempts to analyze the costs of such a decision and argues whether other choices would have been wiser at the time.

**Graph 2.1: Average residual maturity of public debt (in years)**



Source: Salvemini (1992:78)

The sale of 12-month Treasury bills was effected by a uniform price auction since 1962, while 3 and 6-month bills were issued by public subscription. In 1975, a reform of the auction mechanism for Treasury bills allowed the Bank of Italy to participate on an equal footing with other market agents (banks and non-banks). The central bank was committed to act as a residual buyer for unsubscribed bills. A floor price was fixed by the Treasury for each auction.

Although the reform was an important first attempt to bring more participants to government securities auctions, its problems were embedded in both the floor price mechanism<sup>6</sup> and the residual role left to the Bank of Italy. This put an informal ceiling on the level of interest rates, weakening the central bank's discretion in monetary policy.<sup>7</sup> The floor price basically made monetization partially automatic - if the price set by the Treasury differed from the price determined by supply and demand, the Bank of Italy was obliged to choose between refusing to finance the government or monetizing the debt. The financing of the Treasury occurred through a special overdraft facility that was limited to 14 percent of the yearly budget.<sup>8</sup> Only if the government exceeded the ceiling, did the central bank have a choice to interrupt the financing.

The impact of the growing monetization of public debt is clearly reflected in the relative importance of different types of investors (Table 2.1). The share of the Bank of Italy rose from 12 percent of total debt in 1966 to 48 percent in 1975. Banking institutions were able to maintain a more or less constant share of a rapidly growing debt at around 35 percent, although this fell to 32 percent in 1975. In contrast, the "economy and foreign investors", which is defined as a

<sup>6</sup> The floor price for the 6 and 12-month Treasury bill auctions was abolished in 1989, while that for medium and long-term CCTs and BTPs was abolished in 1992.

<sup>7</sup> Important reforms were made in order to grant full independence to the Central Bank through various monetary control techniques, starting in the 1980s. (Santini 1997: 290-291).

<sup>8</sup> The interest rate applied to the overdraft facility was also very favorable, and fixed at 1%. This was a basic reason for the massive utilization of the facility by the Treasury (Scarpelli 2001).

residual category in official Bank of Italy statistics and mainly comprises holdings by Italian households, experienced a persistent decline, falling from 43 percent of total debt in 1966 to 15 percent in 1975. A slight recovery in the share of the household sector to 16 percent was observed in 1976 after the initial reforms of the debt markets. General government was relying on the banking system for 38 percent of its total debt in 1966, but ten years later it was dependent on it for almost 80 percent of the total.

**Table 2.1: Holders of Italian Public Debt Securities (1966-1975)**

<i> Holders</i>	<i> 1966</i>	<i> 1970</i>	<i> 1975</i>
Bank of Italy	12.3	32.9	48.3
Banks	35.8	32.1	31.7
Economy and foreign investors	42.6	29.4	15.3
Other financial institutions*	9.3	5.6	4.7
Total	100.0	100.0	100.0

\*Includes Mortgage Banks, Special Credit Institutes, Public Insurance Agency and Insurance Companies

Source: Bank of Italy

## **2.3 The Search for Investor Diversity and Market Finance (1977-1987)**

The necessity to shift the focus of the system from intermediaries (mainly banks) to markets and to enlarge and diversify the investor base characterizes the period between 1977 and 1987. The reforms followed different tracks: from an increase in transparency in public debt management to financial innovation and introduction of new types of securities to attract new investors, the refinement of issuing techniques, and the amelioration of the enabling environment.

### ***Increased Transparency***

Given the ties between the two institutions, and the serious consequences of denying funds to the Treasury, the Bank of Italy suffered income losses in 1981, having been obliged to sell bonds below their purchase price (Passacantando 1996:87-91). Furthermore, the overdraft facility acted as a portfolio constraint on the Bank of Italy's balance sheet, rising in the early 1980s from 24.5% to 45.8% of total assets. In an attempt to strengthen central bank independence in the conduct of monetary policy and reinforce transparency in public debt management, a "divorce" between the Treasury and the Bank of Italy was initiated in 1981.

The "divorce" resulted in the Bank of Italy ceasing to act as a residual buyer at Treasury bill auctions. The central bank gradually adopted a more independent attitude despite the growing funding needs of the Treasury. However, at the end of 1982, the Bank of Italy refused to finance the deficit, thus highlighting the fragility of the system. An extraordinary law, enacted by Parliament, required the extra funding from the central bank and put an end to this controversy. This incident underlined the importance of granting total independence to the central bank from the authorities responsible for public spending.

A number of other reforms took place between the end of the 1970s and the early 1980s. In 1979, securities repurchase agreements with banks (repos) were introduced as an instrument of liquidity management. In December 1982, the system of reserve requirements was changed.

The ratio was set at 22.5% of the increase in deposits (20% of the decrease); while the compulsory deposits with the Bank of Italy could not exceed 22.5% of total outstanding deposits. Remuneration differed by category of deposits, and banks' repos were also subject to additional requirements. In 1984, credit facilities were introduced for the main credit institutions active in the primary market for treasury bills.

### ***Financial Innovation***

The marketing of public securities to private households played an important role in the transition from a bank-oriented to a more market-based system. Historically, in common with most other European countries, the wealth of Italian households mainly consisted of real assets (houses, land, durables). However, a sharp change in the composition of household wealth occurred between the mid-1970s and mid-1980s. The relative value of houses suffered a large decline, while there was also a shift from broad money (currency in circulation plus bank and postal deposits) to government securities.

The latter trend was encouraged by the issuing strategy adopted by the authorities. Several new instruments, which were targeted at the household sector, were introduced between 1977 and 1988. At the same time, the interest rates offered on these securities were positive in real terms and exceeded bank deposit rates.

Initially, Treasury bills (Buoni Ordinari del Tesoro-BOT) of 3, 6 and 12-month terms were used to target households. These addressed the preference of households for short-term instruments with yields that reflected inflationary pressures. Over time, however, the authorities sought to extend the maturity of public debt by offering variable-cost medium-term Treasury credit certificates. These avoided the refinancing risk of short-term instruments, although they suffered from exposure to interest rate or foreign currency risk. Fixed-rate medium to long-term instruments were not used because of the apparent lack of policy credibility and the concomitant need for a high premium to cover the perception of high inflation risk.

The first such instruments, introduced in 1977, were Treasury Credit Certificates (Certificati di Credito del Tesoro-CCT). CCTs were by far the most heavily used instruments in the early 1980s. They were initially offered with a 2-year maturity and semi-annual coupons indexed to the average issue yield on 3, 6 and 12-month Treasury bills. In subsequent offerings, CCTs were issued with different maturities, both with annual and semiannual coupons, and both indexed to 6 and 12-month Treasury bills. The term of CCTs was gradually increased up to 10 years, while their spreads over their indexed base varied from 30 to 100 basis points. Financial indexation rather than price indexation was offered because of the lack of credibility of the inflation index and greater protection against fluctuations in real interest rates (Alesina et al 1989).

Financial innovation was taken a step further with the introduction of foreign-currency-indexed Treasury certificates (Certificati del Tesoro in Euroscudi-CTE) in 1982. CTEs were fixed-rate securities with 4 to 8 year terms with repayment linked to the value of the ecu (the basket of European currencies that predated the launching of the euro). 12-month foreign-currency-indexed Treasury bills were introduced in 1987 (Buoni del Tesoro in Euroscudi-BTE).

The distribution of these securities was organized both locally and internationally through a group of national and international banks. Settlement overseas in foreign currency was allowed. At a later stage, distribution was restricted to the national territory, but with the possibility of settlement in foreign currency. CTEs and BTEs were for the most part purchased by foreign investors interested in arbitrage opportunities. Their share was generally low, never exceeding 4 to 5 percent of total debt. Nevertheless, Italy was able to play a leading role in issuing ecu-denominated debt when financial integration in the European Community was at an early stage of development (Scarpelli 2001:35-6).

Several other innovations were also tried, although their impact was much smaller than that of CCTs. In 1983 an experimental issue of 10-year Real Treasury Certificates (Certificati del Tesoro Reali-CTR) was made. This experiment was not considered a success. A basic problem was the lack of credibility of the indexation mechanism, which also involved a time lag between the revaluation of the principal and coupon payments. Various announcements were made in subsequent years by the authorities to issue similar types of securities, but such offerings did not take place, due to the difficulty of determining an appropriate real interest rate (Scarpelli 1994).

Convertible CCTs were offered in 1986. They carried a variable coupon but conferred to their holders the option to convert to a fixed coupon at the end of their first year. The cost of this facility was a negative differential between the market rate at the time of issue and the variable coupon of the CCT before conversion. The option to convert was heavily exercised in early 1987, but not later in that year as interest rate levels became unfavorable to the conversion. Discount certificates (Certificati del Tesoro a Sconto-CTS) offered a variable rate equal to half the 12-month Treasury bill rate. CTSs were issued as “deep discount” securities and provided an interesting combination of fixed and variable returns. However, investors did not respond enthusiastically to this instrument, which was deemed too complex (Scarpelli 2001:40).

A more successful and lasting innovation were the Treasury Certificates with Options (Certificati del Tesoro con Opzione-CTO). These were fixed-rate securities, launched in 1988, with an 8-year maturity. Their novelty was that they offered investors the option to redeem their securities at par half way through their nominal term (effectively a European put option). Several issues of CTOs were made between 1988 and 1992, but their term was reduced to 6 years with a redemption option after 3 years. During the four years in which they were issued, they represented an important source of funding, covering about 17 percent of net new issues between 1989 and 1991. In 1991, they accounted for 5.6% of the total outstanding public debt. CTOs encouraged investors to extend their investment horizon and facilitated the shift to long-term fixed-rate bonds (Buoni del Tesoro Poliennali-BTP). However, the premium paid by investors for the embedded option of these securities was comparatively low and this was a significant factor in the authorities’ decision to terminate their use and replace them with BTPs.

Issuance of plain vanilla fixed-rate bonds was not completely abandoned during the period of high inflationary expectations and strong investor preference for variable-rate instruments, but their term was substantially reduced. 2-year BTPs were launched in 1982, followed by 3-year ones in 1985. In 1987, a simultaneous issue of 3, 4 and 5-year bonds was effected with their relative quantities determined by investor demand. Longer-term fixed-rate bonds were issued in the 1990s after the secondary market reforms of the late 1980s.

The share of BTPs fell to 7 percent of total marketable debt in 1985, although it recovered to 16 percent by 1990. At that time, BOTs accounted for 32 percent of marketable debt and the various types of Treasury certificates for a combined 49 percent.

**Table 2.2: Composition of Central Government Marketable Debt, 1980-90**

	1980	1985	1990
Treasury Bills	56.9	34.5	31.6
Treasury Bonds	13.3	7.2	15.6
CCTs	21.7	52.4	40.6
CTEs	0.0	1.7	3.8
CTOs	0.0	0.0	4.2
Other	8.1	4.2	4.2
Total	100.0	100.0	100.0

Source: Scarpelli 2001:30.

The above data relate to marketable central government debt. However, the government also had recourse to a substantial amount of non-marketable debt, through the issue of postal savings instruments and through direct loans from the banking system. The proportion of non-marketable debt declined over time (Table 2.3). There was also a small but growing accumulation of debt by other public entities, mostly local authorities. The total general government debt increased over the period from 67 percent of GDP in 1980 to 98 percent in 1990.

**Table 2.3: Composition of General Government Debt, 1980-90**

	1980	1985	1990
Marketable Central Government Debt	56.8	75.4	81.2
Non-Marketable Central Gvt Debt	34.1	20.8	16.9
Other General Government Debt	9.1	3.8	1.9
Total	100.0	100.0	100.0
Total in ITL trillion	228.2	667.9	1284.6
Total (% of GDP)	67.2	82.4	98.0

Source: Scarpelli 2001 and OECD

The introduction of new public debt instruments, especially variable cost certificates targeted at households, resulted in significant changes in the relative importance of different types of investors. Treasury bills changed over time from being an instrument of bank liquidity to an instrument of investing savings for Italian households.<sup>9</sup> The substitution of bank deposits with public debt securities in the financial portfolios of households took place almost entirely in the early 1980s. The share of households in Treasury bills rose from 24 percent in 1976 to 53 percent in 1981 and 76 percent in 1985. Their share in all marketable debt securities increased at the same time from 29 to 54 percent, while that of the banking system (including the central bank) fell from 69 to 35 percent (Table 2.4).

<sup>9</sup> Artoni (1983) pp. 67-71; Zautzik (1984).

**Table 2.4: Distribution of marketable debt by category of holders (1976-1990)**

	1976			1980			1985		
	Tbills	Bonds	Total	Tbills	Bonds	Total	Tbills	Bonds	Total
Banks	72.2	66.7	68.7	44.8	64.5	55.9	17.6	43.3	34.6
HHs	24.0	31.8	28.9	43.3	32.8	39.0	76.1	43.4	54.2
Others	4.0	1.5	2.4	11.9	3.7	5.1	6.2	13.3	11.2
Total	100	100	100	100	100	100	100	100	100

\*of which only 3% held by non residents; \*\* of which 1.4% held by non residents; \*\*\* of which 4% held by non residents. Source: Bank of Italy, Annual Reports.

The various instruments launched in the 1980s served the purpose of attracting households and diversifying the investor base. However, they created a high degree of fragmentation, partly because of the wide variation in the characteristics of different instruments and partly because of the tendency of improvisation and short-lived experimentation, reflecting a pragmatic trial and error process. Several instruments were issued for relatively short periods, mainly because of weak investor response.

**Table 2.5: Net Spread differentials**

Year	CCT average rate (a)	BTP average rate (b)	Differential (a-b)
1981	20.25	19.36	0.89
1982	20.78	20.21	0.57
1983	19.82	18.30	1.52
1984	16.98	15.60	1.38
1985	14.68	13.71	0.97
1986	12.41	11.47	0.94
1987	10.66	10.58	0.08
1988	11.25	10.54	0.71
1989	12.71	11.61	1.10
1990	12.31	11.87	0.44
1991	11.78	11.37	0.41

Source: Bank of Italy, various Annual Reports.

The problems created by the fragmentation of marketable instruments were corrected in the 1990s when various measures were taken to promote the development of a liquid secondary market. However, the instruments used in the 1980s, and especially the variable-rate CCTs, faced severe difficulties in the late 1980s. In 1987, the market prices of CCTs suffered significant falls despite the fact that they carried variable coupons and were thus less exposed to the adverse impact of rising interest rates on the market price of debt instruments (see table 2.6 for spread differential between CCT and BTP).

Scarpelli (2001) suggested that some of the problems of CCTs were due to macro variables, including a “quantity effect” linked to the large volume of CCTs, a “maturity effect” emanating from the use of CCTs as the main instrument for lengthening the average life of debt<sup>10</sup>, and a “crisis effect” linked to the use of CCTs at a time of rising inflation and interest rates. Other authors suggested that some of the CCT problems originated in the approximate valuation system prevailing in the Italian capital markets, which did not differentiate sufficiently between variable and fixed-rate instruments (De Felice, Moriconi, Salvemini, 1992 and 1993).

<sup>10</sup> The average life of CCTs toward the end of the 1980s was around 6 years, while that of BTPs was around 2 years.

The perception that the authorities may have attempted to manipulate the indexing mechanism, by depressing the 12-month BOT rate and causing an inverse yield curve to emerge at a time of rising rates, may also have contributed to the crisis.

However, the CCT crisis highlighted the policy dilemma that would arise with excessive reliance on variable rate instruments. A rise in the level of interest rates that could be dictated for monetary policy purposes would have an immediate adverse effect on the interest cost of public debt. Table 2.6 shows the evolution of the interest expense as percentage of GDP, for the past three decades. The ratio of interest expense to GDP doubles in the decade between the mid 1970s and 1980s, and the increase continues until reaching its peak around 12% in 1993. Thereafter, the ratio sees a visible decrease and is nowadays around 5% of GDP.

**Table 2.6: Interest Cost (% of GDP)**

1970	1.8	1987	8.0
1971	2.1	1988	8.2
1972	2.4	1989	9.0
1973	2.5	1990	9.7
1974	2.8	1991	10.1
1975	3.7	1992	11.4
1976	4.2	1993	12.0
1977	4.5	1994	10.9
1978	5.1	1995	11.0
1979	5.3	1996	10.4
1980	5.3	1997	9.0
1981	6.2	1998	7.4
1982	7.2	1999	6.8
1983	7.6	2000	6.5
1984	8.2	2001	6.5
1985	8.2	2002	5.8
1986	8.6	2003	5.3

Source: Bank of Italy, Italian Treasury, IFS, Salvemini (1992:27), own elaboration.

### ***Distribution Mechanisms, Tax Incentives and Market Structure***

After the first wave of reforms in 1975, further innovations were introduced in subsequent years. In October 1981, mid-month auctions of Treasury bills were initiated in order to limit the volumes of securities placed, and ease their absorption by the market. In 1984, the “BOT belt” was introduced. This involved a voluntary group of intermediaries that ensured the subscription of a considerable volume of the securities offered during an auction. In exchange, the subscribers received temporary financing from the central bank as a way of anticipating and concentrating demand for funds around the auction dates. This also assisted the central bank in slowly withdrawing from government financing.

For most of this period, the authorities used a combination of issuing techniques. 3- and 6-month BOTs were issued with multiple-price competitive auctions subject to a published minimum issue price, while 12-month BOTs were issued through uniform-price auctions and also subject to a minimum issue price. CCTs and BTPs were offered through public subscription and CTEs through bank syndication and underwriting, usually with predetermined quantities and

prices. The investing public could participate in new issues through the regional branches of the central bank and the branches and offices of commercial banks and securities firms that participated in the auctions, public subscriptions and syndications.

Over time there was a gradual shift away from public subscription and toward uniform-price auctions. However, as in the case of financial instruments, there was extensive palindromic experimentation of issuing techniques. Modern issuing techniques were more firmly adopted in the 1990s. Commercial banks were offered generous commissions to encourage them to sell government securities to the public. For instance, CCTs and BTPs, that were issued for terms of 5 and 7 years respectively in the late 1980s, earned commission rates that ranged between 1 and 1.25 percent.

Fiscal incentives were also used to enhance the relative attractiveness of government securities to savers. Between the mid-1970s and mid-1980s, interest income and capital gains on government securities were exempt from income tax, while interest in bank deposits was subject to withholding tax at an increasing rate. Withholding tax at 12.5 percent on all income from government securities was imposed on corporate investors in 1984 and on individual investors in 1986, although the rate was reduced by half during its first year of application to households. This had an adverse impact on investor demand, not only because the net yield of government securities was reduced, but also because it compounded the fragmentation of the market, adding differences in tax treatment to the differences in spreads, coupon payments, payment periodicity and indexation parameters that characterized the market for government securities. It also gave rise to considerable arbitrage activity as banks sold to households exempt securities or securities subject to the reduced withholding tax rate, while substituting them in their portfolios with fully taxable securities so they could benefit from tax credits. Eventually net returns were aligned in the secondary market since the vast majority of securities were held by households (Scarpelli 2001:41-42).

While trading activity in the secondary market remained limited, there were two significant developments during this period. First, repurchase agreements and foreign exchange swaps with commercial banks were increasingly used by the central bank to influence the overnight rate on the inter-bank market, while commercial banks used repo facilities to offer customized liquidity services to their customers. Second, mutual funds emerged as important institutional investors, collecting savings from the public and investing in different types of government securities. In fact, pressure from redemptions of mutual fund shares by investors lay behind the fall in market prices of variable-rate CCTs in 1987.

## **2.4 The Search for Efficiency and International Integration (1988-2000)**

During the 1990s further innovations and reforms were carried out, with the purpose of reinforcing the sustainability of public finances and lowering the cost of financing the debt. Some of the innovations were a continuation of previously initiated processes, such as the institutional clarification of the roles of the Bank of Italy and the Treasury. Others were linked to technological changes or regulatory measures that favored trading activity and transparency. An important role was also played by the preparation to comply with the Maastricht Treaty criteria,

which would allow Italy to be admitted in the first round of countries entering the euro zone. The firm commitment to achieve economic convergence with the rest of the European Union and join the euro zone played an important part in guiding policy and strengthening its credibility.

### *Institutional Changes*

Law 483/93 (November 26) finalized the “divorce” between the Bank of Italy and the Treasury by suppressing the latter’s overdraft facility and replacing it with a payment account with the Bank of Italy. In November 1994 the outstanding credit on the overdraft facility of the Treasury with the Bank of Italy was converted into bonds with an average maturity of 30 years. The interest rate remained unchanged at 1%. Also in 1994 a new reform of the reserve requirement set the marginal reserve ratio at 15%. All categories of banks were subjected to the new regime. The Governor of the Bank of Italy was empowered to stipulate the level of reserve requirements, within the limits set by law.

The Directorate of Public Debt at the Treasury (Direzione del Debito Pubblico-DDP), which is responsible for the issuance and management of domestic debt securities, enhanced the transparency and predictability of its operations by publishing its strategic guidelines, annual auction calendar, quarterly issuing program, offering announcements for treasury bills and bonds, results of auctions, and a plethora of statistics and other data on the structure and composition of public debt. The DDP expanded its staff and system capabilities to meet the challenge of containing the interest rate and refinancing risks while seeking to minimize the cost of public debt.

### *Market Infrastructure*

The development of an efficient and liquid secondary market was a very important step in facilitating the regular placement of large amounts of debt. MTS, a centralized screen-based automated system, was created in 1988. This was a wholesale quote-driven dealer market with automated screen based trading and computerized electronic communication links with market participants and the clearing and settlement system of the central bank. This wholesale market complemented the retail trading of government securities through the stock exchanges. Retail trading was automated in 1994 through the creation of MOT, a unified electronic trading facility for all Italian stock exchanges.

Participation in the MTS was limited to the central bank, banks (including foreign banks operating abroad), stock brokers, insurance companies, investment funds, Italian and European securities firms, all with net capital of at least 10 billion lire.<sup>11</sup> However, a system of primary dealers was also established in 1988. Eligibility to the status of primary dealer was open to securities firms and banks (including foreign banks with a branch established in Italy). The minimum capital requirement was set at 50 billion lire and selling contracts in the previous year of at least 10 trillion lire in government bonds.

The obligations of primary dealers related to secondary market making, in particular their minimum requirements consisted of: (i) yearly trading volumes on MTS of at least 1% of each

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<sup>11</sup> For more details see Dattels (1995)

category of security; (ii) two-way market quotation of a minimum of 10 issues for a minimum size of 5 billion lire; and (iii) updating of screen quotations within five minutes of a trade. Privileges offered to primary dealers included access to a special repo and reverse repo facility for up to a limit of 100 and 50 billion lire respectively, for a period of up to seven days, on a “carry-neutral” basis (repo rate set at the 2 week inter-bank rate), and exclusive role as “market makers” on the first tier of the MTS screen.

In addition, the 1994 reform of MTS introduced a new category of market specialists in addition to that of primary dealers. Market specialists were institutions holding the status of primary dealer, but with at least 75 billion lire in capital. They accepted increased obligations relative to other primary dealers in both primary auction underwriting and secondary market making. In particular, their primary market obligations included: (i) an average annual share of at least 3 percent across all security categories issued by auction, and (ii) 1 percent for each security category. The secondary market making obligations of specialists were: (i) commitment to trade a volume of 3 percent of total market turnover on MTS; (ii) 1 percent for each security category; and (iii) commitment to quote for size of 25 billion lire on benchmark stocks. The privileges of market specialists were similar to those of primary dealers, except that they were allowed to propose directly security transactions to the Bank of Italy and to participate in supplementary re-openings of Treasury bond auctions.

At the same time, important innovations were carried out in the clearing and settlement system. In April 1989, a new computer based gross settlement system on bank centralized accounts with the Bank of Italy was created (the so called BI-REL system), with real time debiting and crediting for large-value payments. A few months later, two new electronic sub-systems of the national clearing system for large value paperless transactions were launched: the so-called “SIPS”<sup>12</sup> for external lire, and the lira equivalent of foreign exchange transactions. Finally, an electronic memoranda for adjustments in bank’s liquidity position and transactions from the screen based market for inter-bank deposits was put in place. The dematerialization of securities effectively was completed with the measures associated with the introduction of the euro.

The secondary market for Italian government securities has grown to become one of the largest and most active in the euro zone. It is characterized by very large trading volumes and tight spreads. Monthly volume in the cash market averaged almost 180 billion euro in 2003, equivalent to 160 percent of GDP. Trading in the repo market was more than 5 times greater.

### *Issuing Strategy*

After the crisis of CCTs in the late 1980s, the authorities temporarily reverted to the practice of issuing large quantities of short term securities, causing a fall in average debt maturity. Issuance of long-term securities was resumed in the 1990s when inflationary pressures subsided and fiscal consolidation became effective. Fixed-rate 7-year BTPs were issued in 1990, followed by the use of 10-year fixed-rate bonds in 1991, which soon became the market benchmark.

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<sup>12</sup> SIPS stands for ‘Sistema Interbancario di Pagamenti tramite SA’, i.e. Interbank Automated Payment System.

Starting in March 1988, longer and medium term securities (3 and 5 year BTPs) were not sold at fixed prices, but instead at uniform price auctions, where all securities were awarded at the lowest bid accepted. CCTs were issued in tranches at regular intervals after 1990, with the aim of enhancing their liquidity. Finally, in 1992 the auction floor price was replaced by a stop-out mechanism that excluded outlier bids.

The development of the debt market suffered from a loss of confidence in 1992 that was linked to the currency crisis. The spread between 10-year BTPs and the equivalent German bonds reached 700 basis points at the end of 1992. The crisis was slowly overcome thanks to ongoing reforms of public finance and the spread was reduced to 250 in early 1994. The Treasury was able to issue 30-year fixed-rate BTPs for the first time in November 1993. The average life of marketable debt increased gradually from 2.5 years in 1990 to 6 years in 2003. The spread with German bonds fell further to 40 basis points by 1997 and to only 15 basis points in 2003.

The lengthening of the average life of debt favored the creation of derivatives markets in BTPs, initially through futures contracts on the Parisian and London markets, and later on the Italian futures and options markets (MiF and Mto).

The segmentation and fragmentation of government securities market created by the tax regime was improved in 1994 with the introduction of a procedure for accelerated reimbursement. This measure allowed for a rationalization of the market and a convergence of yields towards market levels. Further, in 1996, taxation at source was abolished for non-residents as well as for resident corporations.

A new instrument, CTZ (Certificati del Tesoro Zero Coupon), was launched in 1995. It was initially issued with a maturity of 2 years and was later on also issued with an 18-month term. CTZs are similar to BOTs but their maturity is longer than one year. CTZs were perceived to have two main advantages: a short cash flow benefit for the public budget because interest was not booked in the year of issue; and filling an important gap in the market determination of the yield curve. In 2003, a 20-year euro-denominated bond, linked to the harmonized index of consumer prices, was issued.

The timing and frequency of issuance were rationalized starting in 1997. The Treasury shifted from 20 auctions per month of 7-8 different types of security to a less crowded schedule: longer term securities were offered only once a month, while shorter-term securities were also re-opened once a month. This, together with the introduction of a clear calendar of issuance, with detailed data on volumes, enhanced the transparency of the issuing process and brought benefits to both the primary and secondary markets.

Issuing strategy emphasized the development of liquid benchmark issues and increase in the average life of debt. The techniques used included auctions and syndications as well as reopening of issues, buy-back programs and reverse auctions. The spreads that were offered to variable-rate medium-term certificates were substantially reduced from between 30 to 100 basis points in the 1980s to between 15 and 30 basis points in the 1990s. Commission rates paid to

banks were also cut substantially. On 7-year CCTs these were gradually but progressively curtailed from 1 to 1.25 percent in the 1980s to 0.30 percent in 2001 (Table 2.7).

**Table 2.7: Commissions on Government Securities**

	Until April 1991	April 1991 to December 1992	January 1993 to December 1994	From January 1994	From January 1997	From January 2001
BTP 3 y	--	0,50	0,50	0,35	0,25	0,20
BTP 5 y	1,00	0,75	0,75	0,60	0,40	0,30
BTP 10y	1,25	1,00	0,75	0,60	0,40	0,40
BTP 15 and 30y	--	--	0,75	0,60	0,40	0,40
CCT 7y	1,25/1,00	1,00	0,75	0,60	0,40	0,30
CTE	1,00	0,75/0,50	0,50	0,35	0,25	--
CTZ	--	--	--	0,25	0,15	0,20

Source: Banks of Italy

The results of the new issuing strategy were a drastic change in the composition of debt by type of instrument. Fixed rate bonds rose from 16 percent of marketable debt in 1990 to 54 percent in 2000 (Table 2.8). Treasury bills accounted for only 9 percent, and various issues of Treasury certificates for 27 percent.

**Table 2.8: Composition of Central Government Marketable Debt, 1990-2000**

	1990	1995	2000
Treasury Bills (BOTs)	31.6	21.6	9.2
Treasury Bonds (BTPs)	15.6	33.6	53.5
CCTs	40.6	27.7	21.4
CTEs	3.8	2.6	0.1
CTOs	4.2	2.6	
CTZs		2.2	5.6
Other	4.2	9.7	10.2
Total	100.0	100.0	100.0

Source: Scarpelli 2001:30.

During this period, the level of non-marketable debt continued to decline, reaching 8 percent of total debt in 2000 (Table 2.9). Marketable debt represented 87 percent and debt issued by other public entities 5 percent.

**Table 2.9: Composition of General Government Debt, 1990-2000**

	1990	1995	2000
Marketable Central Government Debt	81.2	86.6	86.5
Non-Marketable Central Gvt Debt	16.9	7.6	8.2
Other General Government Debt	1.9	5.8	5.3
Total	100.0	100.0	100.0
Total in ITL trillion (* billion euro)	1284.6	2201.9	1285.1*
Total (% of GDP)	98.0	124.3	110.5

Source: Scarpelli 2001 and OECD

A clear shift also took place in the relative importance of different types of investors. The combined holdings of the Bank of Italy and banks declined from 27 percent of the total in 1992 to 21 percent in 2000 (Table 2.10). A much bigger fall was experienced by the share held by

households, which shrank from 60 to 25 percent of total marketable debt. The main increase was recorded by foreign investors, who raised their share from 6 to 41 percent, and investment funds.

**Table 2.10: Holders of Central Government Marketable Securities (1990-2000)**

Holders	1990	1994	2000
Bank of Italy	6.4%	11.7%	5.6%
Banks	15.6%	19.5%	15.1%
Households	67.2%	50.5%	24.9%
Non Residents	4.0%	9.9%	41.2%
Investment Funds	2.3%	3.2%	11.3%
Others	4.5%	5.1%	7.3%
Total	100.0%	100.0%	100.0%

Source: Bank of Italy, Annual Reports

Foreign investors were attracted to Italian securities by the prospects of large capital gains that were expected in fixed-rate long-term instruments at a time of accelerating convergence of Italian interest rates to Euro zone levels. The simplified tax regime for foreign investors and the development of liquid instruments and efficient trading and settlement infrastructure removed obstacles to their participation in Italian markets.

Investment (mutual) funds were launched in Italy at the end of 1984. Their assets grew rapidly in the 1990s, reaching 39 percent of GDP in 2000. Their average size is still quite large by international standards and public securities represent the most important component of mutual fund assets. Furthermore, the majority of mutual funds are specialized, or semi-specialized in bonds, and hence in public securities.

## 2.5 Conclusions

Italy is an interesting case of a country that moved successfully to a market-based mechanism of public debt management and funding, while at the same time fostering the development of debt markets. Faced with a very large and rapidly growing public debt that was mainly financed by the banking sector, the Italian authorities took several measures in the late 1970s and the 1980s to target debt instruments at the household sector. Several new instruments were issued as a result of extensive innovation and experimentation. Some of these proved short-lived, but others had a lasting impact on the composition of public debt.

However, even reliance on households and variable-cost instruments had its own limitations, causing a large exposure to interest rate and currency risks, while probably also involving a high cost in terms of spreads and commissions paid to intermediaries. The funding and servicing problems caused by two crises, one in 1987 when rising interest rates raised the interest cost of public debt and the other in 1992 when a currency crisis resulted in a large increase in spreads over international rates, induced the authorities to foster the development of liquid and efficient secondary markets and develop long-term fixed-rate instruments that had a greater appeal to international institutional investors and also lowered the interest and exchange rate risks of public debt.

The growing success of economic convergence policies facilitated access to the emerging euro financial markets. Public debt management was no longer constrained by the weakness of

local institutional investors. Compliance with the requirements of the Maastricht Treaty ensured the independence of the Bank of Italy and stimulated the upgrading of the role and capabilities of the Public Debt Directorate of the Italian Treasury. This was reflected in the adoption of more sophisticated issuing and funding strategies, use of modern techniques of primary issuance, promotion of liquid benchmark issues and lengthening of maturities. Coupled with better control of public spending and a gradual reduction in the debt burden, the success of this approach is epitomized by the growing share of long-term fixed-rate bonds, the strong presence of foreign institutional investors and the large reduction in interest rate spreads of Italian government bonds to as low as 15 basis points over the level of German bonds.

# III. The Greek Experience

## 3.1 Introduction

Prior to the most regrettable, misguided and regressive military dictatorship of 1967-74, the Greek economy had achieved a remarkable record of economic growth and development. Starting from a very low base as a result of the destruction and prolonged suffering of the second World War and the ensuing Civil War, Greece achieved the second highest rate of economic growth between 1953 and 1967 (second only to Japan) and one of the lowest rates of inflation among OECD countries.

This success was based on a pragmatic combination of economic policies. These favored openness to international trade and foreign direct investment, exemplified by the signing of an association agreement with the European Economic Community in 1961 and organized labor emigration to Germany and other high income countries. But they also imposed extensive dirigiste measures on domestic markets, underscored by the vast array of direct controls on the banking and financial system, including capital flows.

The basic objective of these policies was to favor the financing of productive investment in industry and tourism and promote activities that either earned or saved foreign exchange. Housing was then treated as an unproductive activity and its financing was subject to tight limits. Consumer credit was also discouraged, while household saving was promoted by active public campaigns, praising the virtues of thrift, and by tax policies that favored saving with banks. Strong emphasis was placed on maintaining low inflation (Zolotas 1965).

Despite extensive state ownership and control, especially in public utilities and banking (much less so in industry and commerce), public sector deficits were not very large and were easily financed by the banking sector, which was treated as a captive source for government financing. Occupational pension funds, which played a small part in the financial system, were forced to deposit all their financial assets with the Bank of Greece where they earned a paltry rate of interest. Financial markets were effectively non-existent.

The economic success of Greece during this period did not hide some growing problems emanating from the imposition of extensive controls. Economic distortions grew over time as controls became less effective. An influential study by the then economic adviser of the Bank of Greece highlighted the efficiency costs that resulted from the ineffectiveness of controls and the pervasive distortions and abuse of directed programs (Halikias 1976)<sup>13</sup>.

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<sup>13</sup> This study was largely completed in the early 1970s but was published in 1976, a couple of years after the collapse of the military government. It was translated into English in 1978 (Halikias 1978).

## 3.2 The Period of Massive and Captive Debt Accumulation (1970-85)

The period of rapid economic development with financial stability was followed by what can be described as a period of massive but captive debt accumulation. The collapse of the military government in 1974 left a legacy of financial instability, large public sector deficits and high inflation that persisted for almost a decade. These problems caused a postponement of policies of financial liberalization. The authorities were concerned that liberalization might lead to a substantial and perhaps unaffordable increase in the cost of public borrowing. In addition, there was also concern about the risk of financial instability. Despite the large public sector deficits of the 1970s, the level of public sector debt did not rise appreciably in relation to GDP, mainly because the rate of interest on the public debt was highly negative in real terms.

Following accession to the EEC in 1981, economic convergence to European standards became a major objective of policy. In a paradoxical way, one of the first indicators where convergence materialized was the level of government spending in relation to GDP. In the six years to 1985 general government outlays increased by as much as 17 percentage points of GNP, by far the steepest rise recorded in the OECD area at that time (OECD 1987:39). Whereas in 1979, the share of government expenditure to national income was one third below the level of OECD Europe, by 1985 it had increased to almost 49 percent and was close to that of OECD Europe.

The largest source of this rise came from increased spending on public sector wages and social pensions. The latter grew from 7.3 percent of GNP in 1979 to 13.3 percent in 1985 (OECD 1987:44). Low pensions were raised considerably, especially pensions to farmers, while coverage of pension rights was also extended to returning immigrants with no record of contributions to social security programs. Another source of increased government spending was support to loss-making public corporations. The combined deficit of these entities rose from 2 to 5.5 percent of GNP between 1979 and 1985. In addition, many private sector firms were unable to meet the competitive challenge of European firms that followed the dismantling of tariffs (Giannitsis 1993). Many of these firms were declared “problematic” and relied on financial support from state-controlled banks for their continuing survival.

The effect of these policies was a massive increase in the public sector borrowing requirement that reached 17.7 percent of GNP by 1985. The level of general government debt rose from 39 percent of GDP in 1980 to 73 percent in 1985.<sup>14</sup>

External debt grew from 16 percent of total debt in 1980 to 31 percent in 1985. Most of the external debt was of a long-term nature, mostly syndicated loans from international banks, with little exposure to interest rate and refinancing risk. However, being denominated in foreign currency, it was exposed to foreign currency risk and suffered from the periodic devaluations of

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<sup>14</sup> Data from the 1987 OECD survey show that on a net basis the general government debt rose from 27 percent of GNP in 1979 to 63 percent in 1985. Adding the debt of public corporations brought the total to 85 percent of GNP, which was one of the highest ratios in the OECD area. Particularly disquieting was the speed at which the total public debt had grown, having soared in relation to GNP by nearly 55 percentage points between 1979 and 1985.

the Greek drachma. In contrast, domestic debt was mostly short term. It was held by commercial banks and specialized credit institutions, which were required by special regulations to invest a large proportion of their available funds in treasury bills. Another substantial part of domestic debt was represented by advances from the Bank of Greece.

There were infrequent issues of development bonds and loan stock that were targeted at the non-bank sector but these accounted for a very small part of total debt. The last such issue had been effected in 1972. Only banks and specialized financial institutions were allowed to invest in treasury bills. As noted, pension funds were required to place their financial assets in special low-interest deposits with the Bank of Greece, while the general public was encouraged to save in bank deposits, including deposits with the postal savings bank. The vast increase in public debt was effectively financed by compulsory bank investments, advances from the central bank and foreign borrowing. The banking system, including the central bank, held 69 percent of general government debt in 1985, while 31 percent was external debt.

### **3.3 The Search for Investor Diversity (1986-95)**

Starting in mid-1985, the Greek authorities changed their policy approach and sought to expand the investor base. Relying on banks for financing the huge public debt, which was expected to continue to grow rapidly, was fraught with risks. Exposure to interest rate volatility was unduly high, while the debt was effectively monetized with adverse implications on the inflationary front.

In searching for investor diversity, the Greek authorities followed an approach that had many similarities to that adopted by Italy since the late 1970s.<sup>15</sup> Like Italy, Greece faced serious constraints caused by the absence of institutional investors<sup>16</sup> and the pronounced liquidity preference of the saving public. The latter was underscored by the accumulation of large deposits with commercial banks and such specialized credit institutions as the Postal Savings Bank, the Agricultural Bank and the National Mortgage Bank. In 1985, savings and time deposits amounted to GRD 3 trillion, equivalent to 65% of GDP. Including currency and demand deposits, the total liquid assets of the non-bank sector amounted to 85 percent of GDP.

One of the first measures was to make treasury bills available to non-bank private investors. Treasury bills were issued with maturities of 3, 6, and 12 months, with the longer maturities earning a higher rate<sup>17</sup>. The spreads were set by the authorities. The program initially met with limited public response, but it became more popular when spreads over bank deposit

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<sup>15</sup> This was no coincidence since Bank of Greece officials closely studied the Italian experience.

<sup>16</sup> Mutual funds were first created in the mid-1960s but their operations were still relatively underdeveloped in the mid-1980s. As discussed below, mutual funds experienced considerable growth in the 1990s. The insurance sector, in both life and non-life, is still little developed in Greece. Occupational pension funds, mostly industry rather than company based, had accumulated significant assets, although they were far from fully funded. However, apart from their investments in real estate, their financial assets were compulsorily deposited with the Bank of Greece.

<sup>17</sup> Spreads varied over time. Initially, they were set between 50 and 100 basis points. Later on they were widened to between 100 and 200 basis points, while on occasion they reached 300 basis points and even 500 basis points. However, in very recent years, an inverted yield curve emerged and spreads became negative.

rates widened and yields became substantially positive in real terms. The payment of commissions to banks also helped.

The first Greek government bond with a foreign currency clause, linking it to the Ecu (the basket of European currencies that was a predecessor of the euro), was issued in November 1986. This was the first Greek government bond issue since 1972. It had a maturity of 3 years and a coupon of 8 percent. It was indexed to the Ecu, but redemption was made in Greek drachma, exposing investors to a residual foreign exchange risk. After a slow start, that reflected lack of investor familiarity and a relatively low coupon, the program was later expanded to include issues with 1, 2 and 4 year maturities as well as indexation to the US dollar and German mark. The program met with greater success when its coupon was raised to between 10 and 12 percent and when settlement in foreign exchange was allowed for subscriptions that were effected by free foreign exchange. At their peak, foreign-currency-linked instruments represented 8 percent of total debt.

Drachma denominated fixed-rate bonds with maturities of 2 and 3 years were also issued between 1987 and 1990. Despite paying a relatively high coupon of between 20 and 22 percent, when inflation was below 16 percent and falling, these bonds did not meet with strong demand and the program was suspended in 1990.

In addition to treasury bills and foreign-currency-indexed bonds, retail investors were also offered bonds with floating rates. These were launched in 1992 with maturities of 2 years, later expanded to 5 and 7 years. They were issued at a spread over the 12-month T-bill rate that varied with maturity.

After some early difficulties, the new strategy was highly successful in aggregate. Sales to the non-bank public grew very fast from 3 percent of the total new borrowing requirement in 1986 to 43 percent in 1990. Over the five-year period, non-bank investors accounted for 27 percent of new debt, domestic banks contributed 51 percent and foreign investors provided 12 percent (Table 3.1).

**Table 3.1: Sources of Financing the Public Sector Borrowing Requirement, 1986-90**

	1986	1987	1988	1989	1990	1986-90
Bank of Greece	9.3	6.6	-1.4	10.0	15.0	8.8
Banks: Treasury Bills	28.8	36.1	47.3	42.2	16.1	32.7
Banks: Other Loans	30.7	28.3	19.4	15.8	13.7	19.3
Non-banks	2.7	20.1	31.2	18.9	43.1	26.8
Foreign Investors	28.4	8.9	3.5	13.1	12.1	12.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total in billion GRD	776.1	843.9	1201.0	1594.7	1957.4	6373.1
Total % of GDP	14.1	13.5	16.0	18.2	18.7	

Source: Bank of Greece, Annual Report for 1991:110

The policies that were initiated in 1985 were intensified between 1991 and 1995. During this five-year period, non-banks (which were mainly represented by retail investors) absorbed 67 percent of total new debt, while the share of commercial banks was only 17 percent and foreign

investors absorbed 18 percent (Table 3.2). New advances to the government by the Bank of Greece were banned in 1993 when existing balances were converted into a long-term loan.

**Table 3.2: Sources of Financing the Public Sector Borrowing Requirement, 1991-95**

	1991	1992	1993	1994	1995	1991-95
Bank of Greece	5.0	15.6	-0.8	0.6	-18.1	-1.2
Banks: Treasury Bills	1.7	-17.8	16.4	18.4	13.5	9.1
Banks: Other Loans	12.8	19.9	9.9	3.0	-0.9	7.7
Non-banks	68.0	71.2	42.8	66.2	86.4	66.5
Foreign Investors	12.5	11.2	31.8	11.8	19.2	18.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total in billion GRD	2015.9	1363.0	2408.1	2450.6	2417.7	10655.3
Total % of GDP	12.4	7.3	11.4	10.3	9.1	

Source: Bank of Greece, Annual Report for 1996:144

Several factors may account for the success of government policy. Of major importance was the effort to reduce the public sector borrowing requirement through a multitude of fiscal initiatives. This was effectively halved between 1989 and 1995 from 18 to 9 percent of GDP. Various other measures were taken that related to the yield offered on government securities and their competitiveness vis-à-vis bank deposits or to the easiness with which such securities could be bought and sold.

- Interest rates on government securities became highly positive in real terms. After a long period during which interest rates on treasury bills (and bank deposits) were highly negative (Table 3.3), they were raised to well above the rate of inflation. Interest rates remained highly positive for most of the period between 1985 and 2000. They experienced a significant decline only over the past few years as they converged to euro zone levels.
- The offered instruments addressed the preferences of retail investors for short terms and variable rates. The Greek saving public exhibited a reluctance to invest in fixed-rate medium or long-term bonds. This probably reflected their unhappy experience with government bonds in earlier periods when default and/or hyperinflation wiped out the value of their holdings. Among variable rate instruments, longer maturities earned large spreads over shorter ones to encourage investors to hold them. The spread between 12-month and 3-month Treasury bills exceeded 4 percentage points in the early 1990s, while 3- and 5-year floating rate bonds earned an additional 1 to 2 percentage points. In 1994, the real rate of return on medium-term floating rate bonds was close to 10 percent.
- Foreign-currency-indexed (FCI) instruments were offered at attractive fixed coupons but at a substantially lower rate of interest than the nominal rates on domestic currency instruments. The Greek drachma depreciated between 1986 and 1995 at an average annual rate of 9 percent. Thus, the cost of FCI bonds turned out to be close to that of domestic instruments. (The use of FCI bonds was terminated in 1994 when domestic rates were substantially lower.)

**Table 3.3: Average Interest Rates and Inflation, 1975-2003**

Year	3-month	6-month	12-month	Spread 12m-3m	Inflation Rate	12m Real Rate
1975	9.00	9.25	9.50	0.50	13.2	-3.23
1976	9.25	9.50	9.75	0.50	14.0	-3.69
1977	7.75	8.00	8.25	0.50	12.2	-3.56
1978	8.92	9.17	9.42	0.50	12.7	-2.93
1979	11.08	11.33	11.58	0.50	19.4	-6.51
1980	13.75	14.00	14.25	0.50	24.3	-8.10
1981	13.75	14.00	14.25	0.50	23.9	-7.80
1982	14.75	15.00	15.25	0.50	21.1	-4.79
1983	14.75	15.00	15.25	0.50	20.3	-4.19
1984	17.27	17.52	17.77	0.50	18.7	-0.76
1985	17.08	17.54	18.38	1.30	19.3	-0.76
1986	17.00	17.50	18.50	1.50	23.0	-3.64
1987	17.25	17.75	19.00	1.75	16.3	2.35
1988	16.25	17.13	19.21	2.96	13.7	4.85
1989	16.42	17.29	19.04	2.62	13.6	4.78
1990	18.50	20.17	23.00	4.50	20.5	2.07
1991	18.79	21.79	23.33	4.54	19.3	3.37
1992	17.69	20.15	21.71	4.02	15.9	5.04
1993	18.23	20.23	21.23	3.00	14.5	5.86
1994	17.57	18.17	19.21	1.64	10.9	7.52
1995	14.40	15.01	15.49	1.09	8.9	6.02
1996	11.92	12.13	12.80	0.88	8.2	4.25
1997	10.04	9.94	10.31	0.27	5.5	4.51
1998	12.03	11.87	11.51	-0.52	4.7	6.48
1999	--	--	8.85	--	2.7	6.01
2000	--	--	6.12	--	3.1	2.93
2001	--	--	4.08	--	3.4	0.66
2002	--	--	3.49	--	3.6	-0.10
2003	--	--	2.91	--	3.6	-0.68

Source: Bank of Greece

- The attractiveness of government securities was reinforced by their preferential tax treatment. While interest from bank deposits was subjected to tax at the rate of 15 percent in January 1991, interest income from government securities continued to be exempt from tax.
- Distribution of securities was effected through several channels. Investors could purchase and sell government securities directly at the Bank of Greece or through a large network of authorized agents that included all credit institutions, members of the Athens Stock Exchange, and the Deposits and Loans Fund.
- Authorized agents were offered attractive commissions for placing government paper. For treasury bills these included both a sale and renewal commission (since some

treasury bills that were issued in physical form could be renewed at maturity). A sale commission was also paid on government bonds (Table 3.4).

**Table 3.4: Commissions on Treasury Bills and Government Bonds**

Treasury Bills	Sale Commission	Renewal Commission
3 months	0.20%	0.35%
6 months	0.20%	0.35%
12 months	0.45%	0.40%
Government Bonds		
1 year	0.45%	
2 years	0.50%	
3 years	0.60%	
4 years	0.75%	
5 years	0.95%	
6 years	1.10%	

Source: Bank of Greece, Economic Bulletin, 7, 3/96:34

Any opposition from commercial banks to the use of their branch networks for selling competing products was mitigated by the expectation that a better developed government bond market would enable the authorities to resume the liberalization of banking policies and especially to reduce and eventually abolish the abnormally high compulsory treasury bill investment ratio. In fact, the commercial banks' compulsory investments in treasury bills were lowered from 40 to 10 percent of their drachma deposits in 1991 and were abolished in June 1993.

Commercial banks were given the option and chose to convert the greater part of their formerly compulsory treasury bill holdings into long term bonds that were earning higher yields and were freely marketable. Conversion bonds were introduced in 1990 but their use was intensified between 1991 and 1993. They were accompanied by the use of consolidation bonds to cover obligations arising from the non-servicing of government-guaranteed loans. The bulk of conversion and consolidation bonds was issued with a 7-year maturity and, in some cases, a 3-year grace period. They earned interest at a variable rate linked to the 12-month Treasury bill rate plus a spread that was set for each issue.

The level of central government debt increased further from 73 percent of GDP in 1985 to 119 percent in 1995 (Table 3.5). Non-marketable debt, which accounted for 61 percent of total debt in 1980, declined to 22 percent in 1995. The share of treasury bills initially rose from 39 percent in 1980 to 46 percent in 1990 but then fell to 26 percent of the total. The main increase took place in variable cost bonds, which include both variable-rate and foreign-currency-indexed bonds. They reached 47 percent of total debt in 1995. Foreign debt rose between 1980 and 1985 but then declined and accounted for one fifth of total debt. The total debt data for 1995 refer to central government debt, before deducting net holdings of government debt by other public

entities. The latter amounted to 7 percent of total debt or 8.8 percent of GDP. Thus, general government debt was equal to 110.2 percent of GDP in 1995.<sup>18</sup>

**Table 3.5: Composition of Government Debt, 1980-1995**

	1980	1985	1990	1995
Treasury Bills (% of Total)	39.1	33.2	46.8	26.3
Fixed-Rate Bonds (% of Total)	0.0	0.0	0.0	4.9
Variable Cost Bonds (% of Total)	0.0	0.0	18.4	47.2
Non Marketable Debt (% of Total)	60.9	66.8	34.8	21.5
Total	100.0	100.0	100.0	100.0
Domestic (% of Total)	83.9	69.4	59.7	79.4
Foreign (% of Total)	16.1	30.6	20.1	20.6
Total Central Government Debt in GRD billion	660	3381	10328	31982
Intergovernmental Debt in GDR billion				2379
Total General Government Debt in GRD billion	660	3381	10328	29603
Total Central Government Debt (% of GDP)	38.6	73.2	78.6	119.0
Total General Government Debt (% of GDP)	38.6	73.2	78.6	110.2
GDP in GRD billion	1711	4618	13143	26884

Source: Estimated on the basis of Bank of Greece, Ministry of Finance, IMF and OECD data.

Estimating the share of different types of investors is complicated by the absence of sectoral financial accounts. An approximate indication can be provided on the basis of the shares of different types of investors in the sources of financing the public sector borrowing requirement and published information on the holdings different types of banks and non-bank financial institutions.

As indicated above, non-bank investors accounted for 27 percent of the increase in public debt between 1986 and 1990. If earlier holdings are ignored, this would represent 17 percent of outstanding debt in 1990.<sup>19</sup> The presence of institutional investors was very weak in 1990. Mutual funds were just starting to emerge and insurance companies were little developed, while pension funds were required to place their financial assets in compulsory deposits with the central bank. Attributing the total of non-bank holdings to retail investors would involve a small amount of overestimation. Foreign investors accounted for 20 percent of total debt, with the remaining 63 percent accounted by the banking system, including the central bank, commercial banks and specialized credit institutions.

Applying the same approach to flows during the period 1991-95, the share of non-bank investors rose to 28 percent of total debt in 1995. Mutual funds started to register impressive

<sup>18</sup> However, the true level of public debt was probably understated by serious shortcomings in recording and reporting public debt data.

<sup>19</sup> This assumption is not unreasonable since holdings before 1986 were negligible. But it also implies that total holdings were not affected by valuation changes. Since the holdings of non-bank investors after 1986 were predominantly in short-term instruments with variable rates of interest, this would also seem reasonable. The only exception was represented by bonds issued with a foreign exchange clause. These were affected by valuation changes. However, the vast majority of these instruments had maturities of 3 years or less. Moreover, the total debt outstandings are reported at nominal prices and do not take into account valuation changes.

growth in the 1990s and their assets reached 9 percent of GDP by 1995. They invested heavily in government securities and accounted for almost 4 percent of government debt. Insurance companies probably held close to 1 percent of government debt, while pension funds, which had been allowed in the early 1990s to invest in government bonds through a special service of the central bank, probably held 3 percent of the total.<sup>20</sup> Thus, retail investors are estimated to account for 20 percent. The share of the banking system fell to 44 percent, while foreign investors accounted for 21 percent of the total (Table 3.6).

**Table 3.6: Holders of Government Debt, 1980-1995**

(percent of total)	1980	1985	1990	1995
Banking System	83.9	69.4	62.9	43.9
Mutual Funds	0.0	0.0	0.0	3.9
Insurance Companies	0.0	0.0	0.0	0.8
Pension Funds	0.0	0.0	0.0	3.1
Retail Investors	0.0	0.0	17.0	20.2
Foreign Investors	16.1	30.6	20.1	20.6
Other Government Entities				7.4
Total	100.0	100.0	100.0	100.0

Source: Estimated on the basis of Bank of Greece, Ministry of Finance, IMF and OECD data.

### **3.4 The Search for Efficiency and International Integration (1996-2000)**

The attractiveness of government securities to domestic non-bank investors peaked in 1996 when they accounted for 79 percent of new issues (Table 3.7). A drastic change occurred in 1997 that was intensified in the remaining years of the decade. Institutional investors from other European countries became attracted to the high yields offered by Greek government securities, an attraction that was reinforced by the prospect of large capital gains that were likely to ensue from falling interest rates linked to economic convergence and eventual entry of Greece into the euro zone. The strong political commitment to achieve economic convergence and join the euro zone strengthened the credibility of government policy and paved the way for the successful integration with the euro markets.

Between 1997 and 2000, foreign investors acquired debt securities that amounted to 120 percent of new borrowings, while domestic non-bank investors sold securities equal to 65 percent of the same total (Table 3.7). Most of the increase in the holdings of foreign investors concerned drachma-denominated securities that were issued in the domestic market. During this period foreign debt rose by less than one-fifth of the total increase in the holdings of foreign investors.

<sup>20</sup> This probably understates the total holdings of pension funds because it includes only those investments that are effected through the central bank and are reported in its annual report. It excludes any direct investments by pension funds that do not use the services of the central bank.

Another major change was the orientation of retail domestic investors toward the equity market that was experiencing an unprecedented boom at the time.<sup>21</sup> Retail investors withdrew from the government securities market when the spreads on floating rate bonds were substantially reduced and because of their continuing aversion to investing in fixed-rate long-term instruments. They preferred to place their financial savings in bank deposits and, to a lesser extent, mutual funds. Currency and bank deposits, including repos and bank bonds, which corresponded to 85 percent of GDP in 1985, and had fallen to 67 percent in 1995, rebounded and reached 97 percent in 2000. Floating rate bonds that carried spreads of 20, 40 and 80 basis points for bonds with 3, 5 and 7 year maturities were targeted at domestic institutional investors (Ministry of Finance 2000:29).

**Table 3.7: Sources of Financing the Public Sector Borrowing Requirement, 1996-2000**

(percent of total)	1996	1997	1998	1999	2000	1996-2000
Bank of Greece	-4.8	10.8	11.3	8.1	5.7	4.9
Banks: Treasury Bills	15.7	29.7	-28.8	35.2	106.7	28.1
Banks: Other Loans	1.3	-0.2	17.9	-9.0	0.4	2.5
Non-banks	78.5	5.7	3.2	-117.1	-182.0	-21.6
Foreign Investors	9.4	54.1	96.4	182.9	169.1	86.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total in billion GRD	3127.1	2106.5	1935.5	1494.2	1717.0	10380.3
Total % of GDP	10.4	6.4	5.4	3.9	4.2	

Source: Bank of Greece, Annual Report for 2001:185

As noted, a major factor explaining the attractiveness of Greek government securities for large international investors was the expectation of very high returns linked to the high nominal yields and the prospect of large capital gains emanating from economic convergence and eventual entry into the euro zone. The yield on 10-year government bonds fell from well over 8 percent in 1997 to 5 percent in 2002. But the many initiatives taken in modernizing the functioning of the government debt market also played a major part.

In the middle of 1995, Greece began to make systematic use of the auction technique for placing Greek government bonds on the primary market (Bank of Greece 1996:31-40). This replaced the older technique of public subscription and avoided the problem of under or over-subscription that could result from the administrative setting of interest rates. The technique of public subscription continued to be used for issues of treasury bills until October 1997, because these instruments were mainly bought by retail investors. After 1997, only savings certificates, targeted and exclusively issued to retail investors, were offered through public subscription.

Another significant innovation was the establishment in May 1995 of a new electronic system for registering and monitoring transactions in government debt securities. This allowed the dematerialization of securities, except those held by retail investors who preferred to hold on to their securities, eliminating the printing, transporting and safekeeping costs of securities issued in physical form, and facilitating the development of the secondary market. The new system was open to international clearing systems (such as Euroclear and Cedel) for their international

<sup>21</sup> The boom in stock market prices later turned into a bubble that burst in 2000 like those of most other countries.

customers and thus contributed to the international attraction of Greek government securities. The system permitted delivery versus payment, automatic lending and borrowing facility, and coupon stripping. Electronic trading was introduced in May 1998, while all auctions were conducted through the electronic system from the beginning of 1999.

A system of primary dealers was introduced in July 1997. This was expanded in 1999 and linked to the electronic trading system. International credit institutions that were not established in Greece were allowed to become primary dealers and join the electronic trading system via remote access. This resulted in an increase in the number of primary dealers from 10 to 15.

A public debt office was created in 1998 as a separate public entity under the supervision of the Ministry of Finance. The creation of this office was motivated by the desire to take advantage of the opportunities offered by the growing economic convergence with more advanced European countries. It started operating in 1999 and continued earlier efforts to extend the maturity of public debt and increase the share of fixed-rate instruments. The new office, staffed with skilled and experienced professionals, adopted an effective program of modernizing public debt management.

A major initiative, which could explain the strong interest of international investors, was the introduction of fixed-rate bonds in 1996. The first issue covered 3-year bonds and was effected in November 1996. This was followed by issues of 5- and 7-year bonds in March 1997 and 10-year bonds in June 1997. 2- and 15-year bonds were issued in February and May 1998, while 20-year bonds were introduced in January 2000 (Ministry of Finance 2000 and 2001).

The authorities also experimented with several other new instruments, but their use was rather limited and episodic:

- In 1997 two-year zero-coupon bonds targeted at retail investors were issued by public subscription. They were meant to replace maturing treasury bills and their last issue was effected in July of the same year.
- Also in 1997 index-linked bonds were issued for the first time. These involved annual price indexation of the principal and annual payment of interest at a real rate of 4 percent. Four relatively small issues were made in 1997, but their use was then discontinued.
- Another innovation was the launching of two-year savings certificates in 1998. These were issued with a small nominal value, their interest income was exempt from income tax if held to maturity, they could be liquidated at any time subject to a penalty in the form of foregone interest if redeemed within the first 60 days of issue, and they were subject to a low upper limit per individual investor. Their use was also stopped after 2000.
- Privatization certificates and revenue securitization were briefly used in the late 1990s. Their use was terminated in 2002 following the changes in Eurostat definitions that required their inclusion in the public debt totals.
- In March 2003 a 20-year euro-denominated bond, linked to the harmonized index of consumer prices, was issued and absorbed almost in its entirety by foreign investors (94 percent).

- Finally, in 2003 and early 2004, the authorities issued one-year fixed-rate special savings certificates as a means of developing retail demand for government securities but public response was limited and their use was also discontinued.

These modest attempts at cultivating strong demand from retail investors contrasted sharply with the determined approach of the early 1990s. To a large extent, they reflected the availability of strong wholesale demand from international investors, which probably resulted in issuing public debt at a lower total cost.

Issuing strategy emphasized the prolongation of the average maturity of public debt and the development of liquid benchmark issues. The latter increasingly focused on 5-, 10- and 20-year bonds, gradually replacing intermediate maturities. The frequency of auctions was substantially reduced with a corresponding increase in auction size, while the syndication method was used for new issues of 10- and 20-year bonds. Reopening of past issues to take advantage of favorable conditions in the secondary market was actively pursued. Reverse auctions for specific pre-announced older issues as well as buy-backs and exchanges of issues were organized at regular intervals. These operations aimed at refinancing debt with lower cost and reducing interest payments. Foreign currency and interest rate swaps were also utilized.

**Table 3.8: Allocation of New Issues by Country and Type of Investors**

(percent of total)	2003 5yrs 4/2008	2003 10 yrs 5/2013	2004 5yrs 3.5% 4/2009	2004 10yrs 5/2014
Greece	35.6	23.7	22.2	25.0
Other Europe	59.3	68.3	70.0	68.8
North America	3.2	3.1	2.0	1.0
Asia	2.0	3.1	5.3	5.1
Other	0.0	1.8	0.4	0.1
Total	100.0	100.0	100.0	100.0
Banks	20.3	16.3	38.7	34.0
Central Banks	4.5	2.4	14.4	33.3
Fund Managers	55.1	78.9*	25.9	4.1
Hedge Funds	0.0	2.3	7.5	8.2
Pension Funds	12.7	0.0	6.6	12.5
Insurance Companies	5.8	0.0	5.9	6.9
Other	1.6	0.1	0.9	1.0
Total	100.0	100.0	100.0	100.0

\* Includes pension funds and insurance companies.

Source: Public Debt Management Agency

The strong interest of foreign institutional investors is shown by data on the allocation of new issues. Despite the establishment of a central securities depository and automated trading system since 1995, available data do not allow a complete analysis of public debt holdings by type of investor. This is mainly because data are recorded in nominee accounts. Plans are under way to require banks to indicate the ultimate beneficiaries of nominee accounts, at least for statistical purposes. Data from the Public Debt Management Agency show that foreign institutional investors from other European countries play a major part in subscribing to new

issues, while local banks and local institutional investors also are active participants (Table 3.8). Investors from North America and Asia absorb a small part of total issues.

In addition to the new instruments that were launched by the authorities, several innovations were introduced by market participants. These included repos, synthetic currency swaps, and so-called Marathon bonds (drachma-denominated bonds issued by foreign entities.)

An active repo market emerged in the mid-1980s following the opening of treasury bills to non-bank investors. The growth of repos was stimulated by their freedom from reserve requirements and their flexibility in meeting customized needs. Reserve requirements were imposed on repos in 1992<sup>22</sup>, but their growth continued until income from repo transactions was subjected to tax in 1994. The repo market stagnated after that until they were again exempted from tax in 1998.<sup>23</sup> Mutual funds have been active participants in the repo market, but at some point in the late 1980s and early 1990s repos were also extensively utilized by retail investors seeking to earn a higher yield. The emergence of an active repo market contributed to a substantial deepening of the money market that had been created since the early 1980s but suffered from low activity and high volatility.

A second innovation was the introduction of synthetic currency swaps (Papaioannou and Gatzonas 1997). These exploited the high interest differential between local and foreign currency instruments and the differential tax treatment of investment proceeds from domestic and foreign instruments. They were short-term tax plays involving for the most part three-month placements. Mutual funds became active participants in this market but retail investors were also attracted, causing a disintermediation away from bank deposits and repos.

A third innovation was the issuance of Marathon bonds and notes by some multilateral institutions, such as the World Bank and the European Investment Bank. These provided a supply of fixed-rate drachma-denominated securities when the Greek authorities were still reluctant to make such issues.

An innovation that was supported by the authorities was the creation of an organized exchange for derivatives and the trading of a futures contract based on the 10-year government bonds that started to be issued in 1997. This contract attracted considerable interest in the middle of 2000, but demand for the contract evaporated after the entry of Greece into the euro zone. The contract was terminated in June 2001 (Ministry of Finance 2001:14).

The level of central government debt relative to GDP fell slightly between 1995 and 2001 from 119 to 117 percent of GDP. However, with substantially increased holdings of debt by other government entities, the level of general government debt experienced a larger fall from 110 to 105 percent of GDP.<sup>24</sup>

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<sup>22</sup> Following the harmonization of Bank of Greece reserve requirements with those imposed by the European Central Bank, repos are not subject to reserve requirements since July 2000. Short-term bank deposits are subject to a 2 percent reserve requirement.

<sup>23</sup> From the beginning of 2002 income from repos is again subject to a 7 percent withholding tax. This resulted in a considerable decline in outstanding repo balances.

<sup>24</sup> The exact level and form (instruments) of intergovernmental debt is currently under discussion between the Greek authorities and Eurostat (Eurostat 2004).

The strong emphasis of public debt management on improving the currency and interest composition of the outstanding debt resulted in major changes in the structure of public debt in the later 1990s (Table 3.9). Non-marketable debt declined to 15 percent in 2001, while the share of treasury bills became negligible. Variable cost bonds, comprising variable-rate, foreign-currency-indexed and inflation-indexed bonds, fell from 47 percent in 1995 to 29 percent of the total in 2001. Medium and long-term fixed-rate bonds emerged as major instruments and expanded from less than 2 percent in 1995 to reach 55 percent of the total in 2001. The average residual maturity of domestic tradable debt exceeded 5.6 years in June of 2001 and its duration and modified duration reached 4.0 and 3.8 years respectively (Ministry of Finance 2001:7-8). The volume of trading in Greek government securities also expanded rapidly. The monthly volume in the second half of 2003 amounted to 55 billion euro, corresponding to an annual volume of 440 percent of GDP.

Foreign debt experienced a substantial decline in 2001, falling to less than 6 percent of total debt, mainly because of the adoption of the euro and the reclassification as domestic of all existing foreign debt that was denominated in currencies of Euro zone countries. Cross currency swaps further reduced the exposure to foreign currency risk of debt that is denominated in other currencies.

**Table 3.9: Composition of General Government Debt, 1995-2001**

	1995	2000	2001
Treasury Bills (% of Total)	26.3	3.4	1.5
Short-Term Fixed-Rate Bonds (% of Total)	3.1	0.0	0.6
Medium-Term Fixed-Rate Bonds (% of Total)	1.8	17.3	17.6
Long-Term Fixed-Rate Bonds (% of Total)	0.0	24.7	36.2
Variable Cost Bonds (% of Total)	47.2	36.4	28.8
Non Marketable Debt (% of Total)	21.5	18.2	15.4
Total	100.0	100.0	100.0
Domestic (% of Total)	79.4	75.8	94.4
Foreign (% of Total)	20.6	24.2	5.6
Total Central Government Debt in GRD billion	31982	48337	52275
Intergovernmental Debt in GRD billion	2379	4916	5381
Total General Government Debt in GDR billion	29603	43421	46894
Total Central Government Debt (% of GDP)	119.0	116.7	117.1
Total General Government Debt (% of GDP)	110.2	104.8	105.0
GDP in GRD billion	26884	41407	44638

Source: Estimated on the basis of Bank of Greece, Ministry of Finance, IMF and OECD data.

Estimating the share of different types of investors in holding government debt in 2000 is even more difficult than for earlier periods (Table 3.10). This is both because of the absence of sectoral financial accounts and because of the use of nominee accounts in the central depository system. The holdings of banks, mutual funds, insurance companies and pension funds are estimated from published data on the assets of these institutions in the same fashion as for 1995. The estimate for retail investors is based on the value of outstanding saving bonds. The reported

holdings of other government entities are deducted and the remainder is attributed to holdings of euro-denominated bonds by foreign investors.

The rapid growth of mutual fund assets in the 1990s continued until 1999 when their assets reached 31 percent of GDP. At that time, while their holdings of government securities had fallen in both absolute and relative terms, their investments in equities had reached 40 percent of their total assets. At the end of 2000, mutual fund assets were equivalent to 25 percent of GDP, while their holdings of domestic bills and bonds, which included issues made by banks and public corporations, amounted to 24 percent of their assets. Mutual funds held less than 6 percent of total general government debt in 2000.

Insurance companies are still weakly developed in Greece. Their total assets correspond to 6 percent of GDP and they invest about 15 percent of their assets in government securities. Their holdings represent less than 1 percent of total government debt. Pension funds are better developed than insurance companies but their financial assets are not properly recorded. Government securities held by the central bank on behalf of several pension institutions (and other public entities) represented about 4 percent of total debt in 2000. Thus, domestic non-bank institutional investors probably held at the end of 2000 about 11 percent of total debt. The share of banks declined to 38 percent of total debt, retail investors accounted for 3 percent and other government agencies held 10 percent of central government debt. Thus, foreign investors had an estimated combined total of 38 percent in euro-denominated and foreign currency debt.

**Table 3.10: Holders of Government Debt, 1995-2000**

(percent of total)	1995	2000
Banking System	43.9	38.4
Mutual Funds	3.9	5.4
Insurance Companies	0.8	0.8
Pension Funds	3.1	4.1
Retail Investors	20.2	3.1
Foreign Investors in euro bonds	0.0	14.3
Foreign Investors in other debt	20.6	23.7
Other Government Entities	7.4	10.2
Total	100.0	100.0

Source: Estimated on the basis of Bank of Greece, Ministry of Finance, IMF and OECD data.

Before concluding this section, three other important aspects of public debt management should be briefly discussed. The first concerns the very high interest cost of a large public debt that has been issued at high interest rates. The interest cost was kept low during the era of financial repression when banks were forced to invest in treasury bills and interest rates were highly negative in real terms. But after 1985, interest rates that were highly positive in real terms were paid on government debt and this was reflected in a rising interest cost relative to GDP. The cost reached a peak in 1994 when it amounted to 14 percent of GDP, up from 4.8 percent in 1981. The interest cost declined significantly in the late 1990s but it still amounted to 8 percent of GDP in 2000 and 6 percent in 2003 (Table 3.11).

The second aspect concerns the failure of the debt ratio, i.e. government debt divided by annual GDP, to experience a significant decline despite the achievement of a primary surplus since 1994 and the fact that the rate of interest has been lower than the growth rate of GDP throughout the 1990s. Data compiled by the Bank of Greece show that the general government debt ratio fell from 110.3 to 104.9 percent of GDP between 1993 and 2002, a reduction of 5.2 percentage points (Table 3.12).<sup>25</sup> However, the cumulative primary surplus over this period amounted to 36 percent of GDP, while the net effect of income growth and interest cost contributed to a decline of the debt ratio by an additional 10 percentage points.

**Table 3.11: Interest Cost (% of GDP)**

1981	4.8	1993	13.1
1982	4.6	1994	14.0
1983	5.9	1995	12.7
1984	6.9	1996	11.8
1985	8.0	1997	9.8
1986	8.2	1998	9.1
1987	9.6	1999	8.7
1988	8.7	2000	8.0
1989	8.4	2001	7.4
1990	12.0	2002	6.5
1991	9.3	2003	6.1
1992	11.6		

Source: Bank of Greece and Ministry of Finance

The failure of the debt ratio to show a similar decline is explained by the so-called stock-flow adjustment, which relates to all expenditures and receipts or assumption of liabilities that do not affect the primary balance but cause an increase or decrease in the level of debt (Table 3.10). Over recent years, especially in the early 1990s and again in 2000 and 2001, the Greek authorities were forced to recognize liabilities that had previously gone unreported, to issue bonds in recognition of the non-servicing of government-guaranteed loans, and to record various other operations, such as issuing privatization certificates and using revenue securitization techniques (Bank of Greece 2003:233-236). To the extent that some of these liabilities existed but were not properly recorded and disclosed, they would imply that the level of public debt had been higher than reported. To the extent that they represented the realization of contingent liabilities, they would reflect the cost of undertaking such operations. Official projections suggest that the impact of stock-flow adjustment would be much smaller in the future and that the decline in the debt ratio would accelerate in view of the continuing primary surplus and the fall in the level of interest rates. The latest projections of the Ministry of Finance indicate a fall in the debt ratio to 90 percent by 2006 (Ministry of Finance 2003).

<sup>25</sup> Reports written in the late 1980s and early 1990s show a debt to GDP ratio that was already higher than 110 percent of GDP. However, this ratio was lowered with subsequent upward revisions of GDP. The Bank of Greece analysis discussed in the text refers to the same set of GDP estimates for the 1990s.

**Table 3.12: Analysis of Changes in the General Government Debt to GDP Ratio**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Debt Ratio	79.6	82.2	87.8	110.1	107.6	108.7	111.3	108.3	105.8	105.1	106.2	107.0	104.9
Change	9.7	2.6	5.6	22.3	-2.5	1.1	2.6	-3.0	-2.5	-0.7	1.1	0.8	-2.1
Primary Balance	6.5	3.0	2.1	2.2	-2.7	-1.0	-3.1	-4.2	-5.3	-5.4	-5.1	-4.9	-4.3
Net Interest-Growth Effect	-4.9	-7.8	-1.7	-0.4	-1.1	-1.2	0.1	-2.8	-1.2	0.4	-0.8	-1.5	-2.4
Stock-Flow Adjustment	8.1	7.4	5.2	20.5	1.3	3.3	5.6	3.9	4.1	4.3	7.0	7.2	4.6

Source: Bank of Greece, Annual Report for 2002:235.

The equation used in this analysis is:

$$\left[ \frac{D_t}{Y_t} - \frac{D_{t-1}}{Y_{t-1}} \right] = \frac{PB_t}{Y_t} + \left[ \frac{D_{t-1}}{Y_{t-1}} \cdot \frac{i_t - g_t}{1 + g_t} \right] + \frac{SF_t}{Y_t}$$

- where,  $D_t$  = general government debt  
 $PB_t$  = primary balance (deficit or surplus)  
 $Y_t$  = GDP at market prices  
 $g_t$  = nominal rate of change in GDP  
 $i_t$  = average nominal lending rate to the public sector  
 $SF_t$  = stock-flow adjustment

The third point concerns the support provided to Greece by the European Union. This support took two forms. First, Greece received regular transfers that supported its public finances and balance of payments. The level of annual transfers exceeded 4 percent of GDP in the early 1990s and averaged 3.7 percent of GDP, on an unweighted basis, over the period 1986-2000 (Spraos 2001:282). Clearly, without this support, the financial policies pursued by Greece would have been more difficult to sustain. Second, when economic convergence policies started to succeed, Greece had ready access to the well developed and highly liquid euro financial markets. Thus, once financial stability and policy credibility were restored, public debt management was not constrained by the absence of local institutional investors and the underdevelopment of local financial markets.<sup>26</sup>

### 3.5 Conclusions

Greece provides an interesting example of the problems that confront a country with a large public sector debt, excessive reliance on short-term bills held by captive commercial banks, strong preference of households to save in bank deposits, and weakness of institutional investors (pension funds, insurance companies, or mutual funds). The combination of large fiscal deficits, high levels of interest rates and inflation, and serious policy credibility problems impeded the use of long-term instruments and precluded the rapid development of an efficient primary market and an active and liquid secondary market.

The policies pursued by the Greek authorities are clearly divided in two periods. In the first period, between 1986 and 1995, the main focus was placed on a gradual but steady reduction of the fiscal deficit and an orientation toward the household sector as a source of potential non-captive investors in government securities. It has been a successful policy as demonstrated by two major developments: first, the reduction of the public sector borrowing requirement from 18 percent of GDP in 1989 to 9 percent in 1995, at a time when the interest cost of government debt rose from 8 percent of GDP in 1985 to 14 percent in 1994; and the large increase in holdings of government securities by non-bank investors. From negligible levels, their holdings reached 17 percent of total debt in 1990 and 28 percent in 1995.

The second period, starting in 1996, but accelerating in subsequent years, involved a major reorientation of public debt management toward issuing fixed-rate long-term instruments that were targeted at international institutional investors. This was helped by the increased policy credibility that resulted from the strong political commitment to achieve economic convergence with the European Union and join the euro zone. The second period saw the establishment of a highly professional public debt management agency, use of modern techniques of primary issuance, promotion of liquid benchmark issues, a significant lengthening of maturities, adoption of a system of national and international primary dealers, and development of automated trading, clearing and settlement services. While desirable, none of these looked feasible in the early 1990s.

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<sup>26</sup> It is fair to note that most developing countries around the world receive transfers from bilateral donors and multilateral agencies that are comparable to those enjoyed by Greece. On the other hand, participation in a strong common currency area with well developed financial markets is not available to most developing countries.

The policies pursued in the first period involved a high cost, in terms of large spreads for short-term instruments and large commissions paid to banks, but were probably unavoidable given the absence of domestic institutional investors and the lack of policy credibility that prevented the use of long-term fixed-rate instruments at reasonable cost. However, it is difficult to assess whether this policy was the most efficient in terms of long-term cost and efficiency. It is also difficult to assess whether the delay in creating a national debt office prevented an avoidance of these problems. It can be argued that establishment of a public debt management agency in the late 1980s or early 1990s would have been premature and could have resulted in similar outcomes given the organizational and market constraints facing Greece at the time. Moreover, many important measures were taken between 1995 and 1997, before the creation of the national debt office.

In the absence of large pension funds and life insurance companies, other countries have sought to develop mutual funds as domestic institutional investors that could mobilize funds from retail investors and support a more efficient government debt market<sup>27</sup>. However, mutual funds were not well established in Greece (and most other European countries) at that time. And thus targeting the household sector may have been the only feasible approach, even though it may have been costly and cumbersome.

For countries in the developing world that face similar problems to those that confronted Greece in the mid-1980s, developing mutual funds may be a more attractive option. On the other hand, the new possibilities offered by electronic delivery systems, such as those used by TreasuryDirect in the US, may also represent an attractive option and could be used in parallel with a policy that favors the development of mutual funds. However, two important conclusions that seem inescapable concern the need to contain public debt at an economically sustainable level and the benefits of developing a diverse investor base and avoiding total reliance on the banking system.

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<sup>27</sup> Spain and Portugal among European Union member countries appear to have followed this approach.

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