

INTERNATIONAL MONETARY FUND



# **Staff Country Reports**

## **Italy: Selected Issues**

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# INTERNATIONAL MONETARY FUND

## ITALY

### Selected Issues

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Approved by European Department

January 13, 2006

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## I. INTRODUCTION AND OVERVIEW

1. The factors accounting for Italy's poor growth performance over the last few years have been at the forefront of public policy debate in that country, and were also at the core of discussions during the 2005 Article IV consultation. The following chapters explore various aspects of this theme, with a view both to establishing the facts about the challenges confronting Italy and laying out aspects of the policy framework needed to meet them.

2. Italy's economic problems are clearly illustrated in its external sector performance, as explored in Chapter II. The external sector should be the primary channel for the elimination of cyclical divergences within a monetary union, as countries facing weaker domestic demand should enjoy a gain in external competitiveness through slower wage and price growth relative to partner countries. Despite weak domestic demand, however, Italy has continued to lose market share over the last several years, and far from promoting a recovery, the external sector has actually been a drag on growth. Various factors have been posited to explain Italy's poor external performance, including increasing competition from emerging market countries and, until recently, the strength of the euro. This chapter finds, however, that weak long-run productivity performance is the primary factor accounting for the loss of competitiveness suffered by Italian firms in recent years. Slow productivity growth, in turn, is likely to be rooted in country-specific factors, including the vulnerability of small, family-owned Italian firms and their product specialization. The persistence of these factors is itself a reflection of rigidities and inefficiencies in the Italian economy, many of which can be addressed through policy reform.

3. The link between policies and growth is explored further in Chapter III. Specifically, the chapter finds evidence that rigid product markets and a high tax burden on labor have been associated with slower growth in European regions. These findings are noteworthy, given Italy's high tax burden and the country's poor showing on indexes of product market regulation. Within Italy, the chapter finds some evidence that differences in rates of growth across the regions can be explained by their export specializations, but the effect is not significant. Overall, the results of the chapter are encouraging, as they suggest that the right mix of policies can have an important impact on growth performance, and within a surprisingly short period of time.

4. Chapter IV focuses on the role of fiscal policy and its implications for household consumption decisions. Specifically, it estimates fiscal multipliers for Italy based on an intertemporal model of nondurables consumption. In such a theoretical framework, the impact of shifts in fiscal policy on consumption depends on three characteristics: whether households anticipated the change; how long they expect the new policy to remain in effect; and the extent to which households are "short-sighted," discounting future income streams at a rate higher than the market rate of interest. The results suggest that Italian households are in fact relatively far-sighted, putting a high value on the future and offsetting most of the impact of temporary tax cuts with higher saving. An important implication of this finding is that for tax cuts to have a significant impact on demand they must be seen as sustainable over



the long term. This underscores the need for durable expenditure-based consolidation as a precursor to any reduction in tax rates to promote growth.

5. There is a broad consensus on the need to increase infrastructure investment to support growth in Italy. Given tight budget constraints, public-private partnerships have been seen as attractive vehicles for promoting these projects. PPPs are still relatively little-used in Italy, but—as noted in Chapter V—are expected to become increasingly common. The chapter stresses, however, that experience in a number of countries has shown that while these types of operations can play an important role in promoting investment, they should not be seen as a means of evading budgetary restrictions. In addition, considerable care needs to be taken in implementing these projects, including by strengthening project prioritization and evaluation; enhancing transparency in the recording of these operations; and transferring an adequate degree of risk to the private partner, to ensure that it operates efficiently.

6. Recent events regarding high-profile takeover bids for two Italian banks have focused attention on issues related to competition in the banking sector. The importance of this issue extends beyond the headlines, however, as a competitive and efficient financial sector is essential to promoting growth. Chapter VI examines the issue of competition in Italian banking in detail. It finds that while competition has increased in recent years, banks still operate in a relatively high-cost, high-income environment, suggesting that consolidation has yet to produce significant gains in efficiency. Greater market contestability would serve as a powerful stimulus to innovation and growth.

## II. REGAINING COMPETITIVENESS: A CHALLENGE “MADE IN ITALY”<sup>1</sup>

### Core Questions, Issues, and Findings

- **What is the *aim* of the chapter?** Amid rapidly accelerating international trade, the growth of Italian exports has not kept pace with that of foreign demand. Market share in volume terms has declined steadily since the second half of the 1990s, although in value terms market share has held up better. The shortfall in export growth contributed to the Italian economy’s growth gap, including vis-à-vis the euro-area as a whole.<sup>2</sup> This chapter investigates the factors behind the deterioration in Italy’s international competitiveness.
- **What are the *main conclusions* of the chapter?** The loss of competitiveness accumulated by Italian firms in recent years is mainly a consequence of weak long-run productivity performance. Such weakness is likely to be rooted in country-specific factors, such as the dynamic inefficiency of Italy’s model of specialization, the predominance (and vulnerability) of small and medium-sized firms, and the presence of rigidities and inefficiencies in input and product markets.

### A. Introduction

1. **For the last several years, the euro area’s export performance has fallen short of that of the global economy.** A complex set of demographic and economic factors explains this tendency. Some of the causes are structural, connected with the convergence of poorer regions in the world toward higher levels of development, although shorter-term developments have also played a part. More specifically, in the last two years the appreciation of the euro adversely affected the growth of European exports of goods and services, while helping to sustain imports (whose expansion was however curbed by the weakness of economic activity.) As a consequence, while the external sector contributed positively to aggregate euro-area output growth in 2001-02, the strengthening of domestic demand and the more appreciated currency caused the sector to exert a mild drag on growth in 2003 and 2004.

2. **However, the external sector’s contribution to growth differed markedly among the largest euro-area countries.** In Germany, it was strongly positive, against a contraction in domestic demand during 2001-04. In Spain, the country with the highest GDP growth rates among the four largest euro-area economies, the contribution from the external sector was sharply negative. France incurred moderate, though substantially negative, contributions by historical standards, with the contribution of the external sector switching from

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<sup>1</sup> Prepared by Silvia Sgherri (EUR)

<sup>2</sup> The chapter builds on a previous cross-country study analyzing the differences in external sector performance among large euro area countries, IMF (2005a).

marginally positive in 2001-02 to appreciably negative in 2003-04. In Italy, the weakness of domestic demand, especially in the investment component, has been coupled with a negative contribution of exports since 2002, extending a steady and significant decline in market shares that began in the mid-1990s. Thus, the weakness of the Italian economy has not prevented a further deterioration in the current account deficit, which rose from €0.7 billion in 2001 to €18 billion in 2003, before falling back to €12 billion (0.9 percent of GDP) in 2004, reflecting partly the strong acceleration of world trade.<sup>3</sup>

3. **The purpose of this paper is twofold.** First, it aims to assess what factors have been driving changes in Italy's trade performances over recent decades. Second, it looks at the role of external price competitiveness as a correction mechanism for cyclical differences across euro area members. In the absence of independent monetary and exchange rate policies, differences in competitiveness should have become the central adjustment process in an economic and monetary union. A country suffering more depressed cyclical conditions than the euro-area average should normally be expected to experience weaker inflationary pressures and thereby benefit from an improvement of its competitiveness relative to other countries. The competitiveness channel should then help reduce cyclical differences within the euro area. Unfortunately, this link is found to be extremely weak. Some member states with comparatively large positive output gaps in the late 1990s have managed to contain unit labor cost pressures, while some member states with comparatively lower cyclical pressures have registered large losses in competitiveness in the last few years. This has certainly been the case in Italy.

4. **The structural nature of the factors hampering Italian export growth is increasingly evident.** Italy's share of world exports in volume terms fell more or less steadily—and by a third—over the last decade, from 4.6 percent in 1995 to 3.1 percent in 2004. Nearly all industrial countries lost market share over this period, due to the gains achieved by the emerging regions of Asia and Eastern Europe. However, Italian exports also lost share to those of other industrial countries. The appreciation of the euro played a role in these developments—at least in the last three years—but the primary factor accounting for the loss of competitiveness of Italian products was the relative increase in Italian unit labor costs, due basically to an unfavorable differential in productivity growth. This development, in turn, was largely the consequence of a negative differential in the rate of growth of total factor productivity. TFP growth is a residual explanatory variable with respect to the contribution of labor and capital, and is hence influenced by long-term phenomena such as

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<sup>3</sup> However, an examination of the current account deficit composition shows that the recent improvement was mostly due to trade in services, which swung from a deficit of almost €2.4 billion to a surplus of €1.5 billion. In particular, the number of Italians traveling abroad fell sharply, probably as a consequence of the deterioration in economic conditions (ICE, 2005).

process innovation and qualitative improvements in the organization of work, managerial techniques, the level of education, and the type of capital goods employed.<sup>4</sup>

5. **Divergences in countries' international competitiveness are likely to be closely linked to differentials in underlying productivity growth.** Given that asymmetric shocks of the late 1990s were more sectoral than geographic in nature, the effectiveness of the competitiveness adjustment mechanism may have shifted over the period in countries characterized by strong sectoral specialization. In many cases Italian exports have been penalized by the fact that Italy's comparative advantages are concentrated in relatively slow-growing sectors of world demand. This "dynamic inefficiency" of the Italian model appears to have become more accentuated over time. In order to reduce the extent of the losses in competitiveness incurred by Italian exporters in the past few years, sectoral considerations thus underscore the need for investment in product upgrading and innovation. In technology-intensive sectors, for example, recent studies find some evidence of new Italian competitive advantages.

6. **The remainder of the paper is organized as follows.** Section II summarizes divergences in recent trade developments across the main euro-area countries, which are discussed in greater detail in IMF (2005a). Section III focuses on Italian trade performance and its determinants, while providing some evidence of shifts in the effectiveness of the competitiveness adjustment process over time. Section IV concludes by discussing causes and macroeconomic implications of these changes.

## **B. Diverging External Sector Developments in the Euro Zone**

7. **Differences in price and cost competitiveness are the most obvious explanation for the large disparity in export performance across member states observed in recent years.** Even though the euro-area countries have the same nominal exchange rate, their real effective exchange rates can differ substantially, depending on relative costs and pricing behavior.

8. **The data support the view that price and cost differentials can explain the varying export behavior across large euro-area countries** (Figure 1). As described by the evidence presented in IMF (2005a, 2005b), the appreciation of the euro has contributed to only a limited rise in the real effective exchange rate in Germany, owing to favorable productivity developments and cost retrenchment. Developments in France have been broadly in line with those in Germany. Italy, by contrast, has experienced a very substantial real appreciation—measured in terms of relative unit labor costs or export prices—thereby contributing to its poor export performance in recent years. The deterioration in price

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<sup>4</sup> For a detailed analysis of cyclical vs. structural productivity developments in Italy, see IMF (2005c) and Sgherri (2005).

competitiveness arises mainly from poor productivity growth and, to a lesser extent, from increases in production costs.

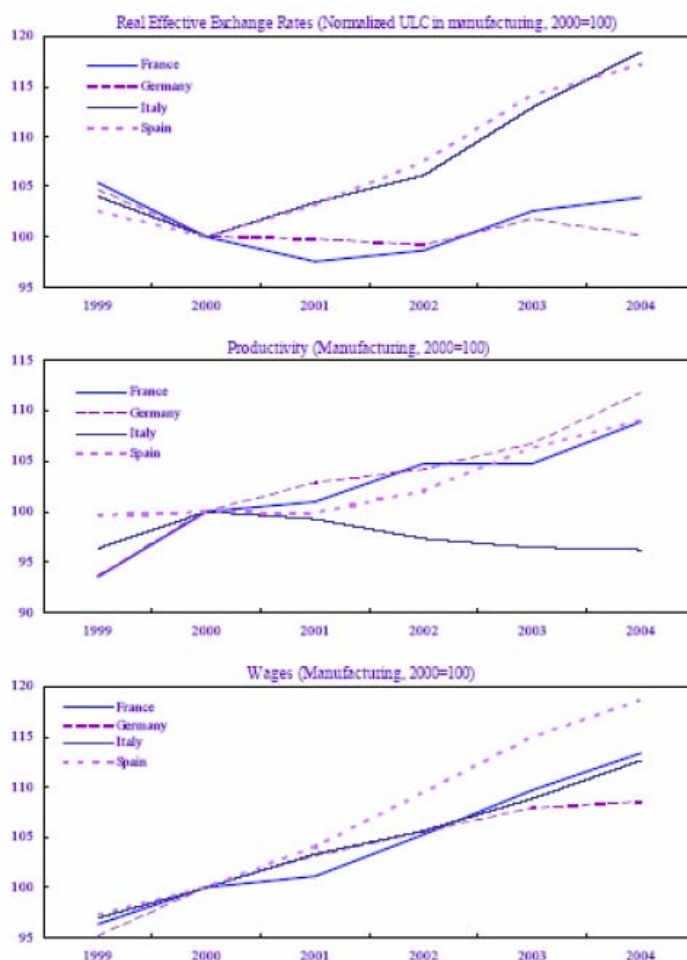
9. **These developments reflect a variety of structural factors, including differences in fiscal stances as well as country-specific and other shocks.** They are also indicative of different degrees of rigidities in product and labor markets across the zone. Differences in competitiveness can take considerable time to reverse, and—partly as a result—inflation differentials can be very persistent. This complicates national policymaking, particularly when the scope for offsetting policy action is limited.

10. **This may be one reason why the competitiveness channel has not generally smoothed cyclical differences within the euro area.** While member states with comparatively large positive output gaps in the late 1990s have typically contained labor cost pressures, some member states with comparatively weaker cyclical pressures, including Italy, have registered large competitiveness losses in the last few years.

11. **The behavior of exporters' margins has also dampened the effectiveness of the competitiveness adjustment mechanism among euro-area countries.** If margins are maintained in the face of deterioration in competitiveness arising from unfavorable developments in productivity, export performance will suffer, with additional negative effects on growth. In Italy, for example, exporters appear to have responded to the appreciation of the euro by passing on to export prices a higher-than-average percentage of the increase in unit labor costs, in order to preserve profitability.

12. **Finally, traditional macroeconomic measures of the real effective exchange rates may not fully capture competitiveness developments, especially in countries with strong sectoral export specialization.** Real exchange rate measures ignore this sectoral dimension and tend

Figure 1: Real Effective Exchange Rates, Productivity, and Wages



Sources: IMF, WEO and IFS.

therefore to provide only a partial gauge of international competitiveness. The effectiveness of the competitiveness adjustment mechanism may be limited in countries whose exports display have a strong sectoral specialization.

13. **In all these respects, the experience of Italy is telling.** The Italian case allows one to outline various reasons why the degree of effectiveness of the competitiveness adjustment mechanism may have changed in recent years, accentuating (rather than smoothing) structural differences with respect to other euro area economies.

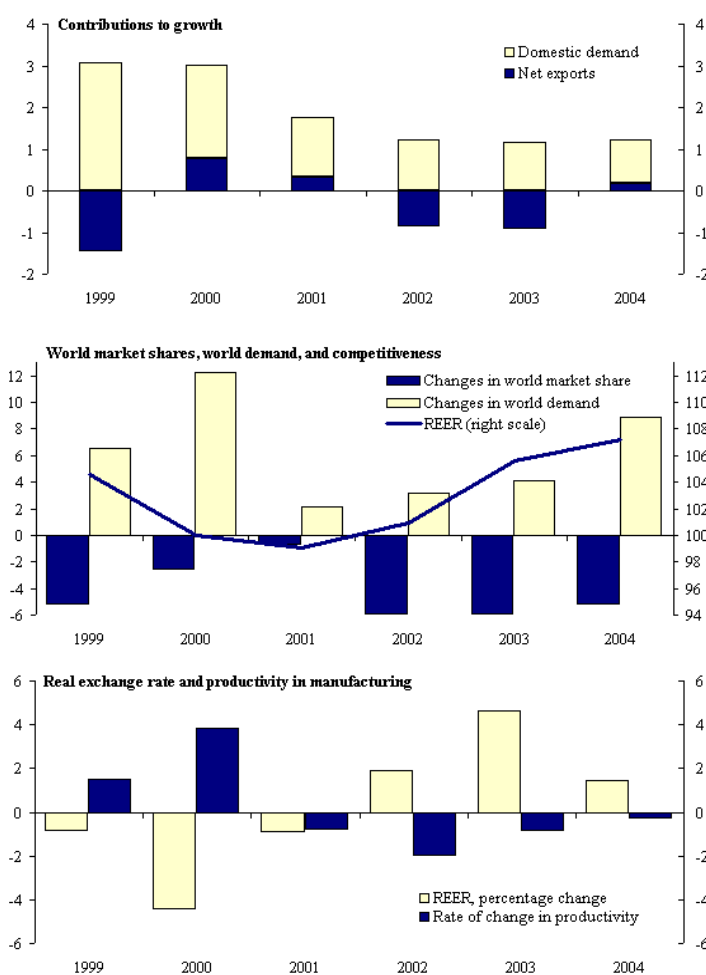
### C. The Deterioration of Italy's International Competitiveness

#### Recent developments

14. **The Italian economy continues to lose competitiveness on international markets, reflecting slow productivity growth and, to a lesser extent, fast-rising production costs** (Figure 2). At constant prices, Italy's share of the world market fell by about one-seventh between 1999 and 2004 (from almost 3.6 percent to 3.1 percent), extending a negative trend that began in 1995. In spite of the recovery of world trade, Italy has lost export share in real terms not only to the emerging countries, but also with respect to the rest of the euro area.

Notwithstanding such a steady deterioration of competitiveness in recent years, the extent of external drag at the turn of 2004-05 exceeded expectations. This likely reflected other factors, including the surge in Asian textile imports due to the elimination of MFA quotas.

Figure 2. Italy: What's Behind Deteriorating Trade Performances?, 1999-2004



Source: WEO, IFS, IMF staff calculation.

15. **Recently, however, Italy's market share in terms of values has held up rather better.** Market share in value terms fell by about one-fifth between 1996 and 2000, but broadly stabilized (at about 4 percent) over the next four years. The divergence between the volume and value measures of market share reflects a high rate of growth in the relative unit values of Italian exports and is not easy to interpret. It involves, in the first place, the nominal impact of the appreciation of the euro, which is generally stronger than its substitution effects on the volumes exported, as can be observed for different periods and currencies. This trend can be either reinforced or curbed by firms' pricing policies. Data suggest some variation in this respect depending on destination. The increase in the unit values of Italian exports was more accentuated in EU markets (where it was in line with the average rise in producer prices), likely reflecting greater market power of Italian firms. It was more moderate in non-EU markets, where Italian firms sought to limit the loss of competitiveness due to the appreciation of the euro. In addition, it appears likely that the euro appreciation gave a further boost to long-term trends in the qualitative composition of Italian exports: firms shifted toward products having a higher unit value and exporters of low-end goods exited the markets.<sup>5</sup>

16. **Composition effects are also very important for an understanding of the trend of market shares, shedding light on the links between the structural characteristics of models of specialization and success in international trade.** In many cases, Italian exports have been penalized by the fact that their comparative advantages are concentrated in goods for which world demand has grown relatively slowly. This "dynamic inefficiency" of the Italian model appears to have become more accentuated over time, with increasing incidence of specialization in the slower-growing sectors. Overall, around one-third of Italy's loss of world export market share and two-thirds of its loss with respect to euro area competitors can be attributed to these structural effects.<sup>6, 7.</sup>

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<sup>5</sup> In evaluating these developments, it should be borne in mind that ISTAT recently modified the method it uses for calculating the indices of unit value of foreign trade. For the period 1997-2002, these changes imply an upward revision of the average annual increase in export unit values, from 1.7 percent to 3.7 percent, and a corresponding reduction in the rate of increase in volumes.

<sup>6</sup> A statistical analysis presented in ICE (2005) shows that they derive largely from the so-called "dynamic inefficiency" of the Italian economy's model of international specialization, i.e. from the fact that Italy's comparative advantages are concentrated in relatively slow-growing sectors of world demand. This accounts for more than 70 per cent of Italian exports' loss of share at current prices with respect to the euro area in the period 1997-2004. In other words, there is a negative correlation between Italy's initial comparative advantages and the changes in the sectoral structure of world demand, accentuated by the Italian model's rigidity, its inability to change in the same direction as world demand. By contrast, the geographical structure of trade played a basically neutral role, given the limited differentiation among the euro-area countries in this respect.

<sup>7</sup> Many recent studies have looked into the determinants of Italy's loss of competitiveness. Among these, some underscore the predominance (and vulnerability) of small firms in the economy (Pagano

(continued...)

17. **The deterioration in the trade balance involved nearly every sector, with the notable exception of machinery and equipment, imports of which fell sharply owing in part to the fall in investment.** The overall results for intermediate and capital goods have been fairly positive, while exports of consumer goods have contracted further. Over a longer time horizon as well, the most marked contraction in shares has involved “typical” Italian finished products, while shares of intermediate goods and of capital goods used to make such products have grown.

18. **Small firms’ share of the value of exports has continued to fall.** While the number of Italian exporting firms rose in the last decade, prolonging a trend that appears to be independent of the variation in the value of exports, small firms’ share of the value of exports fell from 32 percent in 1996 to 30 percent in 2003. The proportion of exports produced by large firms rose, but the incidence of these firms, as measured by their share of employment, nonetheless remains far smaller in Italy than in other European countries. The difficulties that small firms have experienced for years in international oligopolistic competition play an important role in Italy’s overall results for exports (ICE, 2005).

19. **Evaluation of the demand-side geographical composition effect is problematic.** Examining the figures at constant prices, Italian exports no doubt have been hobbled by their relative weakness in the more dynamic markets, such as North America and the euro area. But if one looks at market shares in value terms the effect appears to have been reversed in the last three years, because in this case the nominal impact of the appreciation of the euro also lent greater weight to the dynamics of the European market, where Italian exports enjoy a more favorable position. Reflecting global trends, the geographical distribution of Italian foreign trade has shifted increasingly over time toward emerging markets, though it continues, inevitably, to be affected by disparities in trade costs due to distance and trade barriers. In particular, the share of exports and imports to and from Central and Eastern Europe has risen by 4 percent over the last decade. East Asia’s gain in share of Italian imports was slightly smaller, having not yet overcome the collapse provoked by the region’s crisis of 1997-98.

20. **Lastly, Italian exports’ loss of share is partly attributable to the country’s limited ability to attract foreign investment.** Italy’s share of the global stock of inward FDI is only about 2 per cent. To be sure, Italy cannot compete with the emerging countries for FDI inflows motivated by cost advantages, but the country has demonstrated little appeal among multinational corporations interested in investing abroad in order to gain access to

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and Schivardi, 2003) and the low degree of internationalization in the ownership structure of Italian firms (Mariotti and others, 2002; Capitalia, 2005); some call attention on the slowdown of capital accumulation (Caselli and others, 2003) and the country’s low propensity to invest in IT (Bugamelli and Pagano, 2004); others stress the importance of high sunk costs for Italian exports (Bugamelli and Infante, 2003). Larch (2005) points to unfavorable product specialization as the main cause of Italy’s dismal growth performance, while Faini and Sapir (2005) argue that such a product mix reflects the low level of human capital in the economy.



skilled resources and/or to consolidate their market power. Measures that continue to limit competition, above all in the services sector, appear to play a negative role.

### **Empirical evidence**

21. **To quantify the relative role of their determinants, four reduced-form equations for the volumes of Italian exports and imports were estimated**, using quarterly data (1980-2004) for goods and services, respectively. Each of the four long-run equations was estimated in levels within a univariate context and tested for the existence of cointegrating relationships using a battery of unit root tests. As a second step, the full error-correction models were estimated, and dynamic contributions computed to quantify the role of the various explanatory variables in the evolution of trade variables over the last few years.<sup>8</sup>

22. **The empirical framework adopted has the desirable property of distinguishing shifts in long-run relations from the corresponding short-run adjustments toward this equilibrium**, thereby allowing for an analysis of the corrective role of competitiveness factors in trade dynamics. At the same time, however, the results need to be interpreted while bearing in mind the limitations of the tool at hand. First, the sample considered transcends different monetary regimes, raising concerns about the relevance (and the stability) of the estimates. Second, a univariate model rules out by construction any endogeneity between trade volumes and their determinants, among them prices and competitiveness indicators. Third, the estimation of reduced-form equations mixes supply and demand behaviors, thus preventing identification of the structural parameters of theoretical interest. To settle some of these issues, recursive estimates of the relevant parameters are presented to discern how shifts in policy have affected trade dynamics, while instruments are allowed for those contemporaneous variables suffering from possible endogeneity bias.

23. **Empirical evidence for Italy supports the presumption that world demand shapes export volumes.** The long-run elasticity of exports of goods to world demand is found to be very close to 2, while the corresponding estimate for services is slightly lower, but above 1½. In both cases, the hypothesis of unit elasticity is rejected by the data. As for exports of services, the sensitivity to global demand was not invariant over the sample: after falling steadily over the 1980s, the long-run response has strengthened significantly since the turmoil in the exchange rate mechanism of the European monetary system in 1993, possibly reflecting the benefits of currency stability for trade integration in the services sector.

24. **Since the last currency devaluation, real competitiveness has played a key role as a correction mechanism in the external sector.** After 1993, Italian exporters were no longer able to adjust fully their export prices in domestic currency in response to (lasting) exchange rate shocks. Currently, exporters of services are likely to bear entirely any loss of real competitiveness over the long run. Results indicate that, if margins are kept unchanged,

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<sup>8</sup> Annex 1 describes the data sources. Estimates for each error-correction model are reported in the Annex 2, along with corresponding cointegration and stability tests.

a 10 percent increase in the real exchange rate implies a 10 percent drop in export volumes. Similarly, exporters of goods are now able to pass through to their export prices in domestic currency just a part of the variation in the exchange rate, thus suffering some squeeze in their profits over the long run. Specifically, a 10 percent loss in real exchange rate competitiveness is likely to entail a 7 percent drop in export volumes, everything else equal. This result is consistent with different theses, including (i) a loss of market power of Italian exports in foreign markets (more acute in the services sector) after 1993, or (ii) asymmetric mark-up behavior of Italian exporters in the event of currency appreciation or depreciation, with export prices becoming insensitive to competitive pressures as the currency depreciates.<sup>9</sup>

**25. Overall, corrections of disequilibria in export performance are as twice as fast for goods as for services.** Interestingly, however, exports of goods have tended to adjust more slowly to their equilibrium level over recent years. Estimates indicate that it took just under two years to correct 90 percent of any deviation of the volume of exported goods from its equilibrium level in 2004, compared to slightly more than 2 quarters in 1996. This means that productivity losses in manufacturing, for instance, take longer to become evident through declines in export growth than they used to.

**26. Changes in the cost-based real effective exchange rate also significantly affect short-run export dynamics.** According to the estimates, a 1 percent temporary appreciation of the real exchange rate (due, for instance, to stronger inflationary pressures) is expected to slow export growth (q-o-q) by 0.4 percent in the goods market and by 0.7 percent in the services sector.

**27. Over the long run, imports of goods are entirely demand-determined, whereas imports of services are also affected by relative prices.** The long-run demand elasticity of imports to domestic demand is estimated to be over 1.6, while their elasticity to exports is somewhat lower, around 1.2. Conversely, imports of services are found to be more sensitive to foreign demand than are imports of goods, with a long-run response of about 0.75 for services versus 0.4 for goods. Tellingly, the long-run elasticity of imports (for both goods and services) to foreign demand has strengthened significantly since the regaining of currency stability, although—for services—it has slightly receded over the most recent years. On the other hand, the import content of domestic demand for goods has exhibited much more stable behavior over the sample, though dwindling recently. Overall, this evidence seems consistent with ISAE (2005), which finds that the deterioration of export performance and the decline of the import content of domestic demand have been chiefly responsible for the recent weakening in imports.

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<sup>9</sup> Bugamelli and Rosalia (2004) and Bugamelli and Tedeschi (2005) suggest that the insensitivity to the real exchange rate in cases of currency depreciations may be consistent with the existence of “one-off exporters”, e.g. firms entering marginal markets only to exploit competitive exchange rate advantages and exiting the market as competitive gains disappear.

28. **In line with previous evidence for the euro area, effective measures of international competitiveness are found to be insignificant determinants of imports.**<sup>10</sup>

However, imports of services appear to respond significantly to changes in relative prices both in the short and in the long run. Specifically, as import prices for services rise by 1 percent relative to domestic prices (proxied by the domestic demand deflator), corresponding import volumes are expected to fall by  $\frac{3}{4}$  percent in steady state. In addition, a temporary widening in the inflation differential between import and domestic prices is likely to hold back import (q-o-q) growth in the services sector by the same proportion. Imports of goods are instead insensitive to relative price behavior.<sup>11</sup>

29. **In the case of imports, the speed of adjustment toward equilibrium is greater in the services than in the goods sector.** However, for both services and goods, import volumes have tended to adjust more slowly to their equilibrium levels over time. In the case of services, the structural break associated with the regaining of currency stability is striking, but the deceleration seems to have continued even over 2003-2004. Estimates over the whole sample indicate that 90 percent of any given deviation of the volume of imported goods from equilibrium is likely to be reversed in less than 2 years. The same adjustment process takes approximately 5 quarters in the case of services.

30. **The computation of dynamic contributions confirms that the deterioration of Italy's export performance since 2001 reflects the substantial loss of international competitiveness of the economy.** Results for Italy are reported in IMF (2005a) vis-à-vis those for the other major euro-area countries. Between 2001 and 2004, increases in the real exchange rate are estimated to have shaved export growth by a cumulative  $1\frac{1}{2}$  percent for goods and  $2\frac{1}{2}$  percent for services. As for exports of goods, it is interesting that as the contribution to the real exchange rate has turned from positive to negative since 2001, the estimated residuals have also followed suit, as if the mean growth rate of the aggregate had shifted down. As expected, the strength of global demand has limited the damage by contributing positively to export growth over the whole period, in spite of a slight slowdown over the years 2001-2003.

31. **The key question is, however, how much of the recent weakening in export growth is due to productivity misalignments rather than to stronger inflationary pressures.** Although both phenomena bring about losses in international competitiveness—thereby translating into a slowdown in export growth—productivity shifts (or, equally,

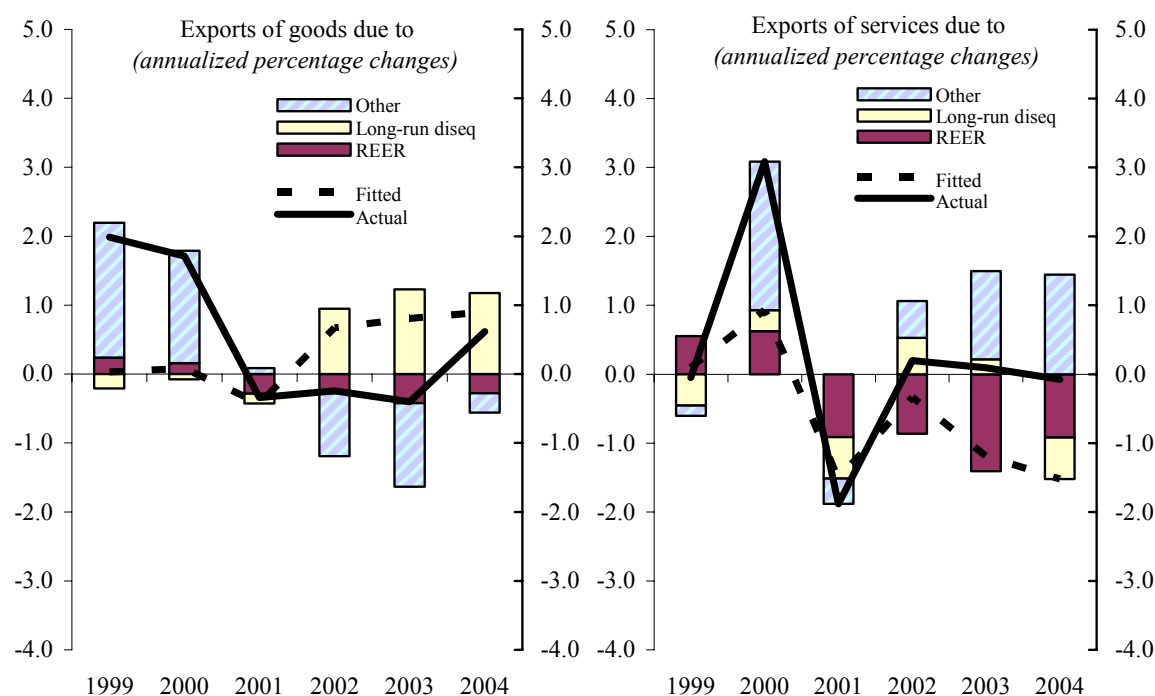
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<sup>10</sup> See, for instance, Faruquee (2004).

<sup>11</sup> This may simply reflect an inherently lower degree of trade integration characterizing the services sector. Unlike the goods market, where product differentiation seems to give exporters some power over domestic competitors, in the services sector foreign competitors do not seem to have any power in the domestic market.

increases in the *level* of prices) are likely to have permanent effects on exports and are unrelated to the economy's cyclical position. This difference is thus essential to assess the effectiveness of external price competitiveness as a correction mechanism for cyclical differences within the euro area. To do this, we try to explain export growth both in terms of "long-run adjustments" in the *levels* of exports and in terms of the contribution of short-run changes in the real exchange rate to export growth. As Figure 3 suggests, our time-invariant error correction model does not indicate the presence of a *downward shift* in the equilibrium level of *exports of goods* occurred over recent years, independent of short-term developments in price competitiveness.

Figure 3. Italy: Accounting for Export Growth



32. **Import growth has been curbed by weak exports.** Overall, the estimates seem to confirm that swings in import volumes are mainly determined by demand, particularly foreign demand. Conversely, the contribution of domestic demand to import growth has proven more resilient over recent years. Likely, the high import content (mainly intermediate goods) of Italian exports (structurally oriented toward consumer goods) makes import growth move more in line with exports than with domestic demand. In the services sector, the overall contribution of relative prices to the growth rate of imports has hardly been noticeable.

33. **As this study relies on aggregate data, nothing can be inferred on the role of sectoral specialization of Italian exports on export dynamics.** In this respect, other empirical studies on Italian export performance may help. For instance, a recent study by

ISAE (2005) on bilateral trade flows shows that the Italian sectoral specialization model—which is based on traditional labor-intensive sectors—has suffered significantly due to competitive pressures from emerging market countries (especially China) over the second half of the 1990s. According to the authors, significant substitution effects seem to characterize Italian and French exports, on one hand, and Chinese exports on the other. This is not the case for German exports. Amighini and Chiarlone (2002) move one step further by analyzing OECD imports in the manufacturing sector. They confirm that Chinese and Italian specializations are very similar. However, there is no evidence of widespread trade overlapping at the product level, and when overlapping is present, Italian goods show a substantially higher quality level. Nonetheless, during the last decade, trade overlapping increased and the quality gap narrowed, which suggests that Chinese firms are an increasing source of competitive pressure for Italian manufacturing. Monti (2003) goes further, by focusing her attention on disaggregated data up to the fifth figure of the SITC classification. Looking at quality overlapping of exports in Italy, France, Germany, and Spain using unit average values, the study finds very limited evidence for Italian export specialization on high-quality products. The percentage of high-quality products in French and German exports appear to be higher than it is the case for Italian exports, while the opposite is true for Spanish exports.

#### **D. Concluding Remarks**

34. **This chapter examines the factors accounting for Italy's deteriorating external sector performance, building on a previous cross-country study analyzing the differences in trade performance among large euro-area countries.** Standard variables of demand, relative prices and relative costs are able to explain only a limited part of the recent evolution of trade across European countries. In particular, the appreciation of the euro since the turn of the century has negatively affected performance of exports in all countries, although to different degrees, while the recent recovery in world demand seems to have mitigated, overall, further deterioration in external sector's dynamics.

35. **In the absence of independent monetary and exchange rate policies, differences in competitiveness should be a central adjustment process in a monetary union.** For instance, a country suffering more depressed cyclical conditions than the euro-area average is also likely to experience weaker inflationary pressures and, thereby, an improvement of its competitiveness. The competitiveness channel should then help reduce cyclical differences within the euro area. The coexistence of Italy's weak cyclical condition and poor external competitiveness is thus a particular concern.

36. **The loss of competitiveness accumulated by Italian firms in the last few years is mostly explained by an unfavorable differential in factor productivity.** The chief causes of Italian exports' loss of share are hence structural and do not hinge exclusively on the appreciation of the euro. They reflect a variety of country-specific factors, such as the country's model of specialization, the vulnerability of its small and medium-sized firms, and the presence of rigidities and inefficiencies in input and product markets. Long-term losses in

factor productivity may lead to unit labor cost slippages and loss in competitiveness even in the absence of economic overheating.

37. **The effectiveness of the competitiveness adjustment mechanism may have shifted over the period in countries like Italy characterized by strong sectoral specialization.** In many cases Italian exports have been penalized by the fact that their comparative advantages are concentrated in relatively slow-growing sectors of world demand. This “dynamic inefficiency” of the Italian model appears to have become more accentuated over time.

38. **Lastly, another factor that may dampen the effectiveness of the competitiveness adjustment mechanism in Italy is exporters’ margin behavior.** If margins are maintained in the face of a deterioration in competitiveness due to unfavorable developments in productivity, export performance will suffer, with additional negative effects on growth. In Italy, exporters appear to have responded to the appreciation of the euro by passing on to export prices a higher-than-average percentage of the increase in unit labor costs, in order to preserve profitability. Although the pricing behavior of Italian exporters appears to have changed significantly since 1993, there may be still scope for margin retrenchment to prevent further erosion of their market shares.

39. **While the reorientation of the model of specialization toward more dynamic sectors is a *sine qua non* for regaining international competitiveness, it can only be achieved in the long term.** An important contribution of industrial policy must accordingly consist in removing impediments to technological innovation and diffusion, and to investment in product upgrading and in human capital. It could also be useful to foster forms of cooperation between firms that can help them overcome the limits imposed by their small size and gain access to foreign markets, stimulating the development of appropriate brand strategies and advanced arrangements for the internationalization of production. Most importantly, structural reforms are needed to increase the degree of competition in domestic markets, so as to stimulate the growth of the best firms and create the conditions for attracting a larger share of high quality FDI to Italy.

## **Data sources**

### Italian data:

From ISTAT (<http://www.istat.it/comest/>) quarterly data over 1980Q1-2004Q4:

- Exports and imports in volume for goods and services, respectively, seasonally adjusted and corrected for working days, and expressed in 1995 euros;
- Total domestic demand in volume (for all goods, as no breakdown is available);
- Export, import and domestic demand deflators for the similar breakdown.

### External environment data:

From the WEO data base:

- Foreign demand faced by selected countries: weighted GDP at constant prices of trade partners, with weights defined as the share of country's exports to the trade partners (we kept the trade partners whose share is greater than 1 percent of total country's exports). Detailed export data are derived from the IMF Direction of Trade statistics.
- Foreign competitors prices (for all goods) for main European countries: weighted GDP deflators converted in euros, with weights similar to the ones used for foreign demand. As for foreign demand, the data are only available on an annual basis.
- Export relative prices (for export equations) are then defined as the ratio of foreign competitors prices, expressed in euros, over domestic exporters prices. Import relative prices (for import equations) are defined as the ratio of importers prices over domestic demand prices. Hence in both cases, an increase in the ratio signals an increase in price competitiveness.

### Other data:

From the International Financial Statistics (IFS):

- Real Effective Exchange Rate based on relative unit labor costs (2000=100).

### Error-Correction Models for Italy's Trade Equations

#### A. Exports of Goods:

$$\Delta \text{Log}(\text{Ex\_Goods}) = \underset{(0.004)}{0.015} - \underset{(0.09)}{0.22} \Delta \text{Log}(\text{Ex\_Goods})_{-1} - \underset{(0.16)}{0.41} \Delta \text{Log}(\text{REER}) - \underset{(0.08)}{0.28} \text{ECM}_{-1}$$

$$\text{Where } \text{ECM} = \text{Log}(\text{Ex\_Goods}) - 2.32 - 1.93 \text{Log}(\text{World\_Demand}) + 0.69 \text{Log}(\text{REER})$$

Sample: 1980Q1-2004Q4, Diagnostics:  $\bar{R}^2 = 0.41$ , SE=0.035, P[Q(4)]=0.45, P[J-Bera]=0.60

#### B. Exports of Services:

$$\Delta \text{Log}(\text{Ex\_Services}) = \underset{(0.004)}{0.007} + \underset{(0.09)}{0.28} \Delta \text{Log}(\text{Ex\_Services})_{-1} - \underset{(0.16)}{0.69} \Delta \text{Log}(\text{REER}) - \underset{(0.05)}{0.16} \text{ECM}_{-1}$$

$$\text{Where } \text{ECM} = \text{Log}(\text{Ex\_Services}) - 4.55 - 1.61 \text{Log}(\text{World\_Demand}) + 1.05 \text{Log}(\text{REER})$$

Sample: 1980Q1-2004Q4, Diagnostics:  $\bar{R}^2 = 0.48$ , SE=0.034, P[Q(4)]=0.75, P[J-Bera]=0.09

#### C. Imports of Goods:

$$\begin{aligned} \Delta \text{Log}(\text{Im\_Goods}) = & \underset{(0.003)}{-0.007} - \underset{(0.09)}{0.24} \Delta \text{Log}(\text{Im\_Goods})_{-1} + \underset{(0.05)}{0.44} \Delta \text{Log}(\text{Ex\_Goods}) + \underset{(0.07)}{0.14} \Delta \text{Log}(\text{Ex\_Goods})_{-1} \\ & + \underset{(0.22)}{2.20} \Delta \text{Log}(\text{Dom\_Demand}) + \underset{(0.29)}{0.95} \Delta \text{Log}(\text{Dom\_Demand})_{-1} - \underset{(0.07)}{0.24} \text{ECM}_{-1} \end{aligned}$$

$$\text{Where } \text{ECM} = \text{Log}(\text{Im\_Goods}) + 13.9 - 1.63 \text{Log}(\text{Dom\_Demand}) - 0.41 \text{Log}(\text{Ex\_Goods})$$

Sample: 1980Q1-2004Q4, Diagnostics:  $\bar{R}^2 = 0.69$ , SE=0.018, P[Q(4)]=0.42, P[J-Bera]=0.51

#### D. Imports of Services:

$$\Delta \text{Log}(\text{Im\_Services}) = \underset{(0.003)}{0.005} + \underset{(0.08)}{0.73} \Delta \text{Log}(\text{Ex\_Services}) - \underset{(0.13)}{0.78} \Delta \text{Log}(\text{Price\_Compet\_S}) - \underset{(0.08)}{0.40} \text{ECM}_{-1}$$

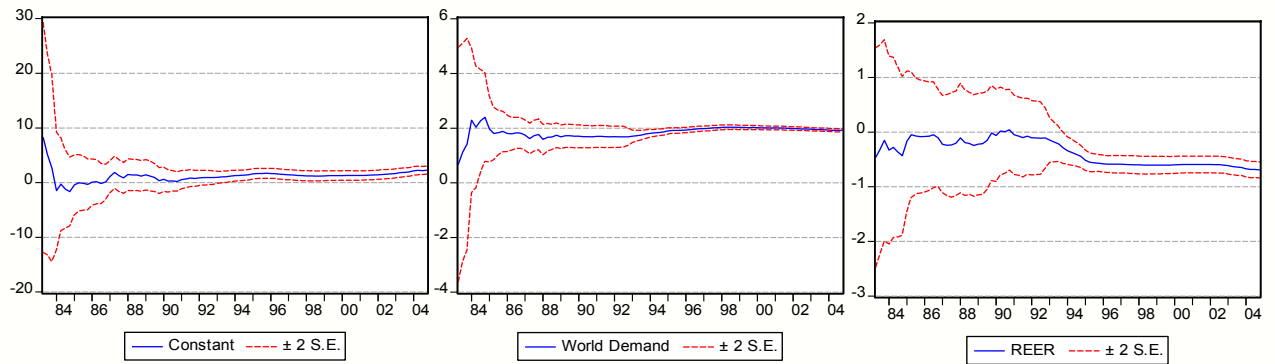
Where

$$\begin{aligned} \text{ECM} = & \text{Log}(\text{Im\_Services}) + 12.20 - 1.19 \text{Log}(\text{Dom\_Demand}) - 0.73 \text{Log}(\text{Ex\_Services}) \\ & + 0.75 \text{Log}(\text{Price\_Compet\_S}) \end{aligned}$$

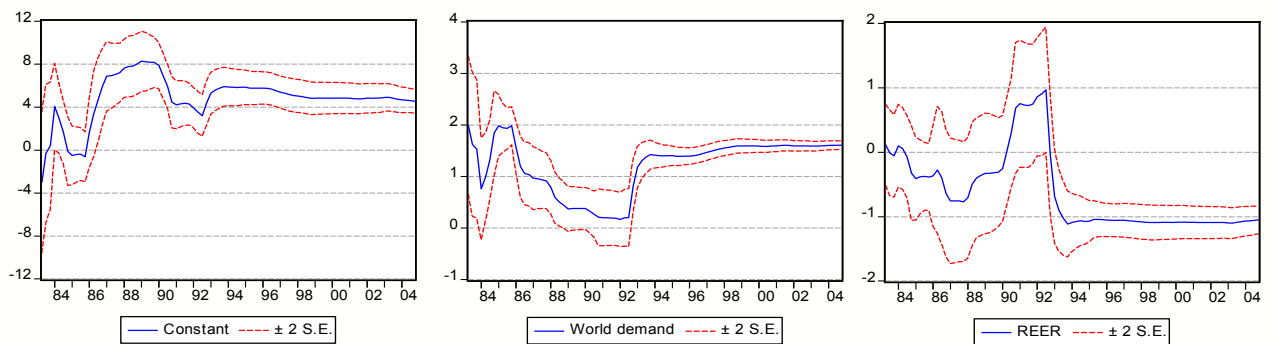
Sample: 1980Q1-2004Q4, Diagnostics:  $\bar{R}^2 = 0.58$ , SE=0.034, P[Q(4)]=0.29, P[J-Bera]=0.03\*



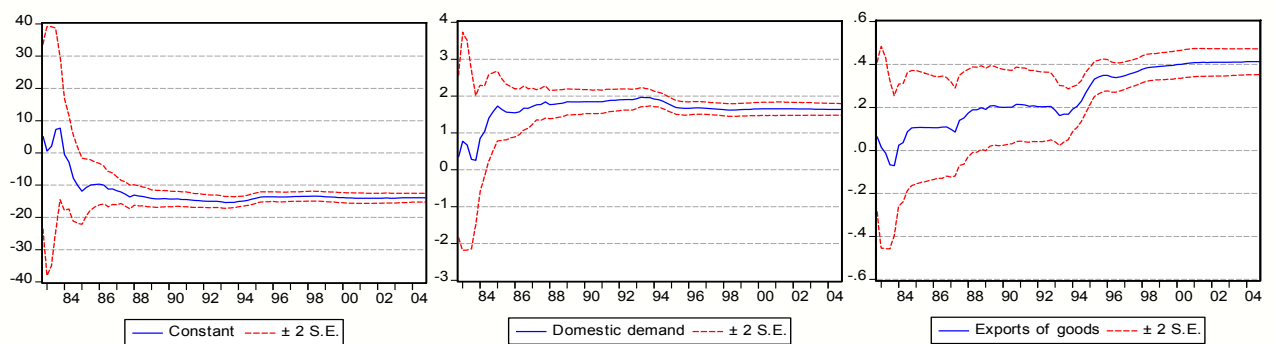
### A. Exports of Goods: Recursive Estimates of the Long-run Relation



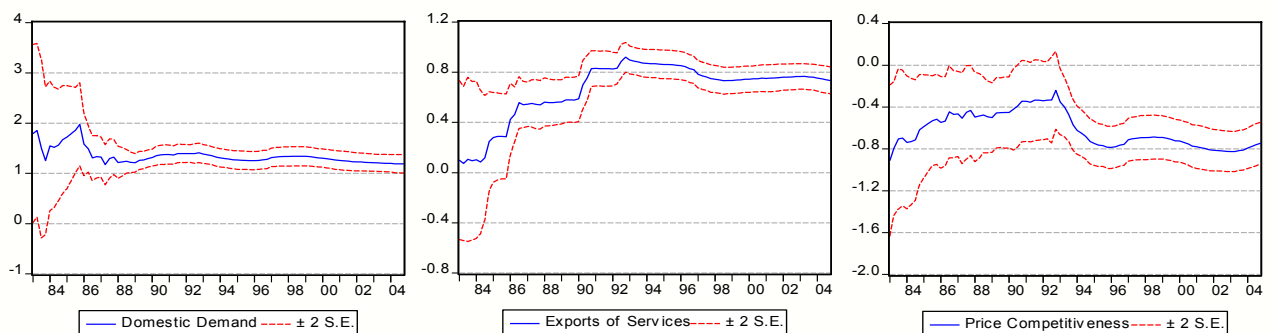
### B. Exports of Services: Recursive Estimates of the Long-run Relation



### C. Imports of Goods: Recursive Estimates of the Long-run Relation



### D. Imports of Services: Recursive Estimates of the Long-run Relation



### Testing for Cointegration

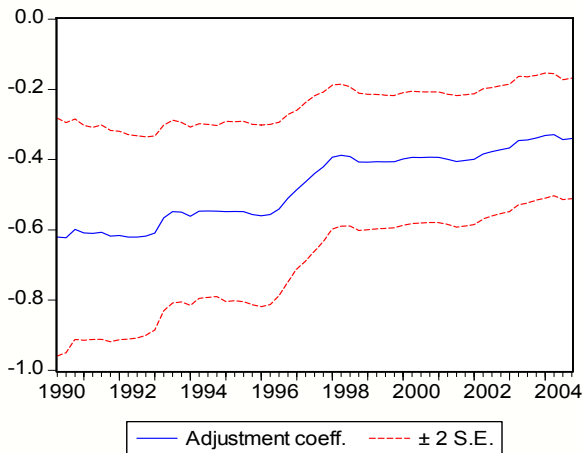
	<u>A. Exports of goods</u>	<u>B. Exports of services</u>	<u>C. Imports of goods</u>	<u>D. Imports of services</u>
ADF <sup>1</sup>	-3.58 p=[0.008]	-3.72 p=[0.005]	-3.71 p=[0.005]	-3.70 p=[0.006]
PP <sup>1</sup>	-6.16 p=[0.000]	-3.90 p=[0.000]	-5.35 p=[0.000]	-3.70 p=[0.006]
KPSS <sup>2</sup>	0.11 CV <sub>10%</sub> =0.35	0.08 CV <sub>10%</sub> =0.35	0.11 CV <sub>10%</sub> =0.35	0.12 CV <sub>10%</sub> =0.35

<sup>1/</sup> See MacKinnon (1996) for one-sided p-values.

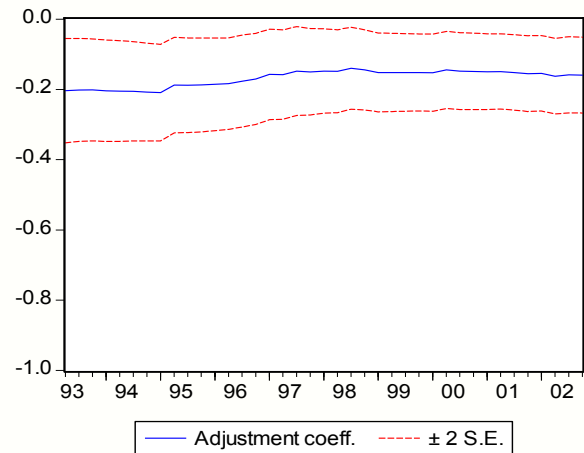
<sup>2/</sup> Critical values are from Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

### Recursive estimates of dynamic adjustments toward equilibrium

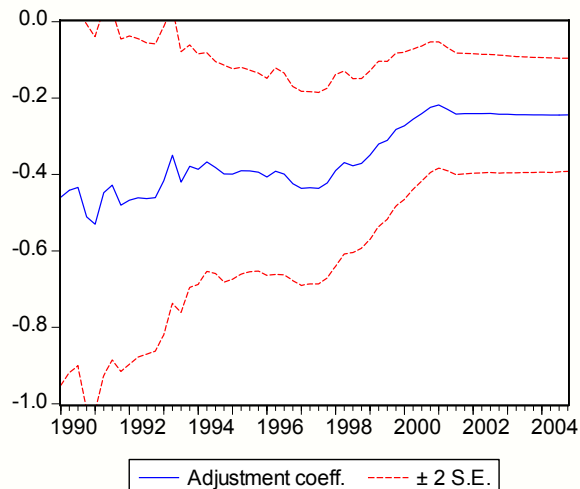
A. Exports of goods



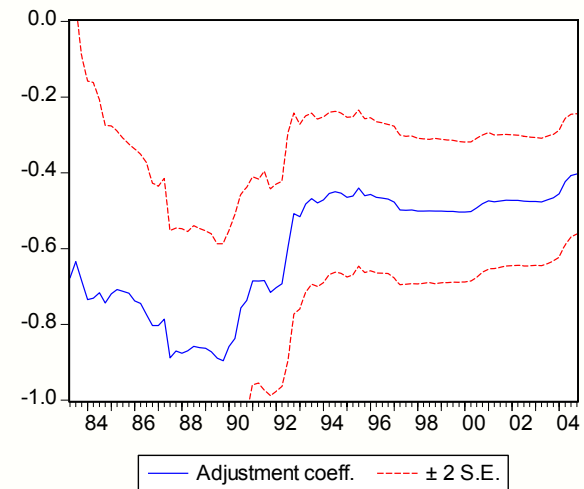
B. Exports of services



C. Imports of goods



D. Imports of services



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### III. REGIONAL GROWTH IN THE EU AND ITALY: POLICIES VERSUS (SECTORAL) LEGACY<sup>1</sup>.

#### Core Questions, Issues, and Findings

- **What is the *aim* of the study?** The chapter investigates factors behind recent growth performance in the EU and Italy using subnational (regional) data in cross-section and panel regressions for 1995-2004 (and various subperiods). Recent data advances permit a more consistent focus on the policy dimension, while recourse to subnational data augments testing power.
- **What are the main *results*?** Within the EU, controlling for regional convergence, nationwide product market rigidities (as measured by the OECD) and the tax burden (notably on labor) were associated with negative growth in 1999-2002. In line with recent research, the short-term effect of labor market reforms on output was found to be negative in the EU. Within Italy, regional data show some effect of the “unfavorable” regional export specialization on growth in 1996-2004. While the short sample period means the results should be treated with caution, they are intuitively appealing, consistent with those of other studies, and relatively robust to different specifications.
- **What are the *policy implications* of the chapter’s findings?** The results suggest scope for policies to overcome unfavorable initial conditions for growth, even in the medium-term horizon of 4-5 years. In particular, further product market liberalization and durable reductions in the tax burden may perceptibly help growth outcomes.

#### A. Introduction

1. **The last few years have been marked by slow growth in the euro area.** The consensus has been that this disappointing output performance reflected lingering structural weaknesses, possibly exacerbated by the “common” competitiveness problems brought on by the strong euro.<sup>2</sup> The picture is, however, complicated by (i) substantial differences (and, at times, diverging experiences) across the European economies; (ii) uncertainty over the required policy response; and (iii) the role of exogenous factors, notably trade-related shocks.

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<sup>1</sup> Prepared by Bogdan Lissovolik (EUR)

<sup>2</sup> See the discussion of and references to “Europessimism” in Blanchard (2004), as well as his relatively sanguine interpretation of Europe’s challenges.

2. **Conditions in Italy have been particularly worrying, as poor growth has been accompanied by competitiveness problems.** Unlike Germany, which has also suffered from slow growth, Italy's measured productivity and competitiveness indicators have been deteriorating. The Italian growth/competitiveness nexus has been linked to broad-based factors (see Bank of Italy (2004-2005)), partly common to some other European countries (high tax burden, structural rigidities in labor and product markets, etc.) and partly Italy-specific (continued comparative wage and inflation differentials, rigid and slow bureaucratic and legal system, and relatively "outdated" export specialization). Still, despite numerous studies on various aspects of Italy's performance, prioritization among the principal causes of weak growth – and the many proposed reforms – has remained an issue.<sup>3</sup>

3. **This paper examines Europe's and Italy's recent growth experiences through regional data.** While these data have already produced insights for both Europe and Italy, notably in terms of convergence, this study is different in some respects. First, the focus is on the medium term: 1995-2002 period for the Europe-wide dataset and 1995-2004 for Italy. While studies of growth determinants usually take a longer-term perspective, some important recent empirical work emphasizes medium-term growth experiences.<sup>4</sup> The most recent period could be particularly revealing, as data variation reflects the key event of euro adoption, as well as structural and policy changes associated with integration and the widening of the EU. Second, the chapter employs a structured approach to disentangle national from some subnational factors, examining recent cross-country information on the quality of national policy environments, notably the OECD's indices of market regulation. Third, with special reference to Italy-specific problems, regional data are used to gauge the role of competition from emerging markets compared to other measurable factors influencing concurrent output performance.

4. **The remainder of the paper is structured in two principal parts, Europe-wide and Italy-specific.** The first section examines the European NUTS-2 dataset, looking at pan-European regional convergence with and without country dummies, and then adding variables that summarize quality of national policy environments. The second section analyzes Italy's regional performance in 1995-2004, and focuses on the interaction of common determinants of growth with factors related to external specialization. Some methodological caveats and data issues are elaborated in the appendix.

5. **The main conclusions of the study are as follows:**

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<sup>3</sup> For example, earlier studies (i.e., Decressin (2000)) emphasized labor market rigidities, but ongoing progress on this front has so far done little to improve Italy's overall growth record.

<sup>4</sup> The literature on general determinants of economic growth has recently turned to these short-to-medium-term timeframes (see Cerra and Chaman Saxena (2005) and Jones and Olken (2005)).

- Growth in European regions appeared to converge in 1995-2002, at a rate similar to that found in studies of other areas or periods. The sign and significance of the estimates generally holds even in shorter periods, and could potentially be used in filtering other determinants of growth.
- Convergence disappears once country dummies are used as controls, which suggests that much of it has taken place among and not within countries – a result that could be reconciled with the view that the integration process has so far been largely a “top-down” phenomenon. However, country dummies are very coarse and difficult-to-interpret “controls.”
- The OECD index of product market regulations (PMR) and the tax burden had a significantly negative association with growth in 1999-2002. At the same time, employment protection legislation (EPL) index had a positive (short-term) association with growth. Both results are broadly consistent with available evidence from other studies.
- The country dummies in the augmented regressions have generally reflected differences in national growth rates. At the margin, the Italy country dummy influences cross-country results in a different way from the Germany country dummy, suggesting the relative importance of product market deregulation for Italy and of the tax burden on labor for Germany.
- Italy-specific data suggest that, controlling for convergence and some other factors, the country’s unfavorable export structure explains only a small part of the growth variation across regions. Of course, this does not necessarily mean that unfavorable export specialization is unimportant for country-wide growth or export performance.

## **B. Europe-wide regional growth**

### **Unconditional Convergence With and Without Country Dummies**

6. **Most studies of regional growth patterns have been based on the concept of convergence.** The latter has been used as a metric for complementing and “filtering” other determinants of growth. Despite its wide use, the theoretical foundations of convergence are not universally agreed. A stylized one-sector neoclassical growth model with exogenous technological change predicts unconditional convergence (Barro and Sala-i-Martin (1995)), while weaker versions of the “convergence hypothesis” have stressed the crucial role of free trade and competition. However, there are also credible theoretical priors behind diverging dynamics, based, inter alia, on “increasing returns” (Krugman (1991)), or endogenous growth (Romer (1990)).

7. **The empirical results of tests of the convergence hypothesis have – in Europe and elsewhere – reflected these theoretical ambiguities.** Many studies point to long-term unconditional (absolute) convergence among and within industrialized countries. For Europe,

the classic reference is Barro and Sala-i-Martin (1995), who, inter alia, found evidence of significant  $\beta$ - and  $\sigma$ - convergence in a group of European regions over 1950-1990, but their dataset excluded some European countries.<sup>5</sup> Vamvakidis (2003) found steady convergence within 197 European regions through 2000. Other research has, however, detected unconditional divergence in a world-wide cross-country dataset, or even for certain periods within industrialized countries, and in Europe in particular. For example, Canova and Marcet (1995), and Quah (1997) argued that European regions are separating into four distinct clusters. More recently, Boldrin and Canova (2001) examined the period through 1996, and found neither convergence nor divergence with respect to per capita income in Europe, arguing, inter alia, that convergence weakened substantially after the late 1970s.<sup>6</sup>

## Results

8. **European regions exhibited significant unconditional beta convergence in 1995-2002, with standard estimated speed.** Table 1 and Figure 1 present the main results in line with the basic convergence cross-section regression equation of Barro and Sala-i-Martin (1995):

$$(1/T)(\ln y_t - \ln y_0) = \alpha + \beta \ln y_0 + \mu \quad (1)$$

Where, for a given region, T is the number of years in the observed period (7 for the benchmark regression covering 1995-2002), and y is the level of PPP-adjusted per capita income at the beginning ( $y_0$ ) and at the end ( $y_t$ ) of the observed period.<sup>7</sup> The two main samples are (i) 254 regions for EU-25 and (ii) 210 regions of EU-14 (EU-15 minus Luxembourg and two outlier capital cities (London and Brussels). Other country subsamples (Eurozone and others) were also tested. The convergence coefficient ( $\beta$ ) is of the “expected” sign, and is equal to 1.3 percent for the EU-25 and 1.9 percent for EU-14, with the latter result close to the “standard” point estimate of 2 percent, reported for most cross- and within-country regressions by Barro and Sala-i-Martin (1995), including for their estimates in the

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<sup>5</sup>  $\beta$ -convergence essentially refers to the negative relationship of per capita real economic growth with the lagged initial level of real per capita income for a cross-section of countries or regions.  $\sigma$ -convergence denotes a decline in the cross-sectional standard deviation for the log of per capita income. See Barro and Sala-i-Martin (1995) for details.

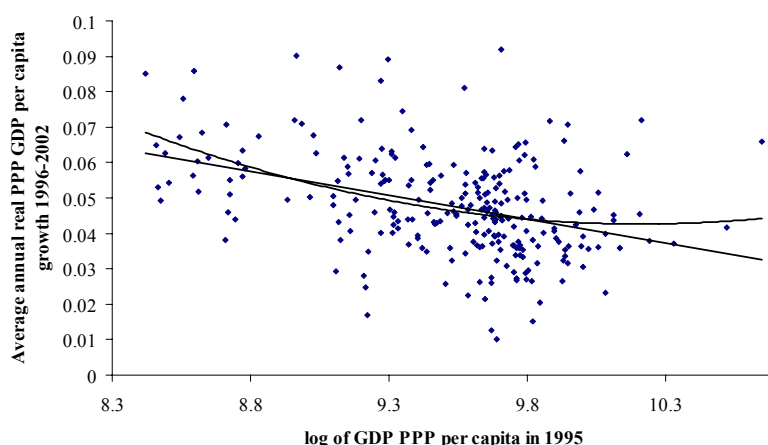
<sup>6</sup> They did find, however, convergence with respect to labor productivity.

<sup>7</sup> The PPP-adjusted per capita income has been used instead of the more common real per capita income, given that the updated NUTS-2 level data are available for a longer period of time. Both measures have been used in practice (Vamvakidis (2003)). In any case, results with these two measures of convergence are similar for those periods for which the available data overlap.



European regions.<sup>8</sup> The respective coefficient is confirmed in sign, but is much larger for panel regressions on annual data (especially the fixed-effects estimates), which is, again, consistent with the literature. In sum, these regressions suggest that, at least for the key period of 1995-2002, pan-European convergence did take place. Interestingly, however, fitting a non-linear trend (Figure 1) suggests that the convergence process tends to disappear among the richest regions.

Figure 1. EU-25, real PPP GDP per capita convergence, 1995-2002



9. **Convergence also holds for most sub-samples over this timeframe, although, as expected, there is short-term variation due to cyclical factors.** Still, even fairly short (3-year) subperiods yield quite strong and stable results on the direction and the strength of the pan-European convergence coefficients. As per Table 2, the convergence coefficient was again close to 2 percent for 3-year sub-periods for the EU-14, and for the first 3-year period (1996-98) for the EU-25. It declined to 1 percent for 1999-2002 for the EU-25, but remained highly statistically significant. The results for the individual years are much less stable (see Table 2), but most of the coefficients have the “expected” sign, including all those for the EU-25. Overall, this suggests that increasing the number of cross-section observations tended to smooth out short-term fluctuations around the medium-term trend.

10. **Including country dummies in the regional growth regressions provides little additional insight.** As can be seen from Table 3, the convergence result disappears, as the  $\beta$  coefficient becomes statistically insignificant and even changes sign if all country-dummies are used as controls within the EU-25. This may suggest that much of the observed

<sup>8</sup> The results would be, however, somewhat different for  $\sigma$ -convergence, which holds for EU-25, but there is no convergence or divergence for EU-14. However, this is consistent with the result that  $\beta$ -convergence is necessary but not sufficient for  $\sigma$ -convergence (see Young and others (2003)).

unconditional convergence has taken place between and not within countries.<sup>9</sup> (At the same time, introducing country dummies is an imperfect way of disentangling within-country from between-country convergence). The signs of particular national dummies reported in Table 3 are in line with the basic cross-country relative growth rankings: Germany has the lowest growth, followed by Italy. These results are, however, of limited value as country dummies are hard-to-interpret “catch-all” variables.

11. **Within-country results appear to confirm a predominantly cross-country nature of the recent convergence process.** Table 4 shows that, of the large EU-5 countries, only Italy exhibited statistically significant  $\beta$ -convergence among its regions. Regions in Germany, France, and Spain also appeared to converge, but not significantly so. (Indeed,  $\sigma$ -convergence (not reported here) for the same period occurred in Italy and France, but not in Spain or Germany). By contrast, the UK’s regions tended to diverge, although the extent and significance of the divergence would be smaller if London were removed from the sample.

12. **In any case, the unconditional convergence and/or country dummies can explain only a minor portion of regional and cross-country variation in growth rates.** The R-squared in these simple regressions was generally in single digits, and improved only marginally with the addition of the country-dummies. To investigate the underlying causes of regional growth, a more complex, multifactor approach is needed.

### **Structural Regional Growth Determinants in the EU**

13. **A more structured way to gauge the determinants of growth in the EU requires a balancing act between key priors and available data.** Existing cross-country literature on growth – which extends to regional issues – is fairly eclectic and considers a wealth of possible hypotheses, blending neoclassical growth determinants (based on capital and labor input accounting) with subsequent theoretical developments (i.e., human capital, innovation), institutions, and ad-hoc factors such as regional and country dummies (Barro and Sala-i-Martin (1995)). In practice, research has been driven by data availability and the development of methods comparing the relative explanatory power among the many potential determinants (see Sala-i-Martin et al. (2003)). The following analysis draws a number of parallels with IMF (2004), which analyzes 17 OECD economies. However, it differs with respect to the specificity of the European focus and the nature of the data.

14. **In the context of the EU, the key “priors” involve interaction of pan-European, national, and subnational causes of growth.** This distinction would be consistent with the stylized facts on the EU’s current economic and policy environment, such as: (i) a drive toward economic policy convergence, whether with respect to regulations or lower barriers

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<sup>9</sup> This may not be surprising given that much of the recent drive for European integration has occurred at the EU-wide level.

to the circulation of goods, services, and factors of production; (ii) the remaining scope for national policies and the less-than-perfect liberalization of cross-border flows and regulations, and (iii) developments influencing within-country variation in regional growth. In line with this three-fold distinction, per capita growth (expressed in the standard log-form) in a given region  $i$  in country  $k$  at time  $t$  could be expressed as a function of contemporaneous and lagged region-specific, national, and “global” factors:

$$Dy_{it} = F(R_i, (t, t-1), N_{k(i)}(t, t-1), G(t, t-1)) \quad (2)$$

where  $D$  is the usual difference operator,  $R$  stands for region-specific factors (including convergence);  $N$  denotes nation-wide variables, and  $G$  would be a collection of common/global factors.

**15. Among these three levels of analysis, national factors merit greater attention.**

First, despite ongoing efforts and progress in enforcing competition, regulation, and macroeconomic management at the EU-level (Blanchard (2004)), national macroeconomic and structural policies continue to play a central role in economic outcomes (see Sapir (2005)). Second, high-quality nationwide data are universally available, while the range of relevant regional data has been much more limited at the EU-wide level.<sup>10</sup> As to the global factors, they may explain performance of European countries compared to other parts of the world, but, generally, would not explain variation *within* Europe without an explicit consideration of their differential impact on different regions.

**16. Cross-country literature on advanced economies suggests multiple nationwide structural policy dimensions for augmenting the growth regressions.** IMF (2004) singled out five such areas for OECD countries: (i) product markets; (ii) trade reform; (iii) labor markets; (iv) fiscal reform and (v) financial reform. In addition to these, the cross-country regressions include controls such as the private investment to GDP ratio, terms of trade and population growth, measures of the stock of human capital, lagged GDP per capita level, and financial development.

**17. In the context the EU, a few specific structural rigidities have been considered particularly important.**

- **A high tax burden**, which is pointed to by many authors (Prescott (2004), Neil and Kirkegaard (2004)) as a major factor affecting incentives for labor and investment.
- Lack of regulatory flexibility in **labor markets** and high unionization, which could constrain labor supply (see Alesina et al. (2005)).

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<sup>10</sup> The usefulness of available region-specific data at the NUTS-2 level of disaggregation (beyond the concept of convergence) is so far limited, partly because of the lack of series for some variables and partly due to the absence of relevant deflators for others (see Appendix).

- Regulation of **product** markets, which, by limiting competition, can affect productivity and medium-term growth performance (Blanchard (2004)).
- **Poor business environment**, including rigid bureaucratic and legal processes that discourage investment.
- **Lack of financial sector** development, which, in line with contributions by Rajan and Zingales (1998), may have limited entrepreneurial opportunities, especially given the few options of arms-length financing in continental Europe.

These rigidities, while mostly (but not always, see Appendix) linked to nationwide policies, would clearly affect regional performance in the relevant countries.

18. **The empirical strategy is thus anchored to the interaction of regional convergence and the above nationwide factors in explaining (regional) growth.** In particular, equation (2) would be tested in the form of:

$$(3) \quad Dy_{i,t} = c + \alpha y_{i,t-1} + \{\beta PMR_{k,t-1} + \gamma EPL_{k,t-1} + Tax_{k,t} + \delta DPMR_{k,t} + \phi DEPL_{k,t}\} + \lambda X_{(t)} + \mu_{i,t}$$

The first term controls for convergence at the regional level. The expression in brackets seeks to capture the key country-level factors both in terms of their lagged levels and the rates of change. In particular, the following measures have been tested: (i) **PMR** is a comprehensive measure of product market rigidities, which is available from OECD as an index for two years: 1998 and 2003; (ii) **EPL** denotes labor market rigidities, in the form of employment protection legislation (EPL), which is also available from OECD in index form for the end-of 1990s and for 2003; and (iii) **Tax** reflects the extent of the tax burden, with various alternative measures standing for the total and its subcomponents (taxation of capital and labor), which are available from Martinez-Mongay (2003).<sup>11</sup> **X** denotes other potential (region-specific, nationwide, or global) control variables and interaction terms, including those referring to the business environment and financial development, which may or may not be time-specific (and will be reported below where relevant).

19. **The focus on the closely-knit EU economies, and the use of recent higher-quality data, permit a reasonably comprehensive but still parsimonious specification.** In particular, a number of customary cross-country controls may be omitted for the EU countries, given their limited variation across regions (due to, for example, the common currency and the setting of some regulations on an EU-wide basis). In addition, the OECD's economy-wide PMR index captures not only product market regulation per se, but also rules affecting domestic and external trade; this was not the case for the narrower such indices that

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<sup>11</sup> The contemporaneous change in the tax burden has not been included because of the clear potential for reverse causality, as slow growth may cause an increase in the tax ratio (see Appendix for more discussion of reverse causality).

were previously available. Thus, the data underlying equation (3) permit coverage of structural factors broadly comparable to that in IMF (2004), despite using a smaller number of explanatory variables (see Appendix).

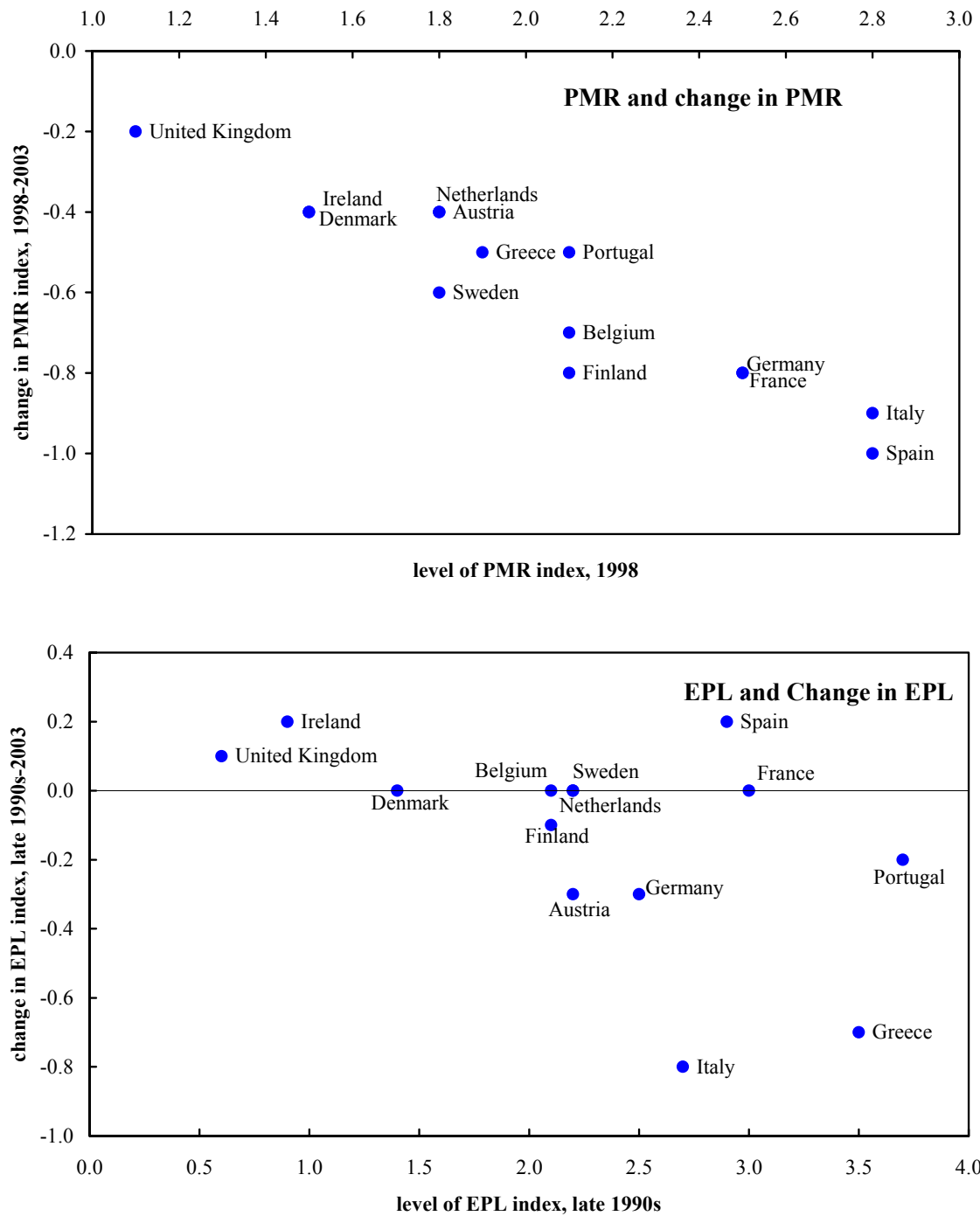
20. **Although the period and method of analysis is constrained by data availability, pronounced data variation accentuates the key relationships.** OECD data on labor and product market regulation are only available for late 1990s and 2003, thus (largely) overlapping with NUTS-2 data for 1998-2002. The other variables were chosen to match this latter period, in a cross-section regression (see Appendix for the definition and sources of the variables). The data are for the EU-14 countries, as Luxembourg was excluded due to the lack of the data on product market regulation in 1998. The key structural data over this period exhibited marked variation, as the initial level of the indexes was generally inversely correlated with the subsequent change, with the most regulated countries (notably Italy) experiencing greatest improvement, especially in terms of the PMR index (see Figure 2).

## **Results**

21. **Cross-section regressions suggest strong negative effects on growth of the tax burden (notably on labor) and of structural rigidities in product markets over 1998-2002.** The main results are presented in Table 5; they are largely in line with the related literature, and can be summarized as follows:

- In contrast to the above regressions with country dummies, regional **convergence** generally holds with additional controls, although the coefficient is somewhat smaller and less significant (but still significant at the 5 percent level) than in absolute convergence regressions. It is thus the case that differences in national fiscal and structural policies could be partly driving the observed unconditional convergence process.
- The effect of the nation-wide **tax burden** on economic growth is negative, large, and highly statistically significant. While the impact of the general tax burden indicator (tax/GDP) is strongly negative, there is substantial difference in the effects of its “subcomponents,” with labor taxes having a very significant negative association with growth, and capital taxes having a counterintuitive effect. This result is interesting in the context of the recent debate between Alesina and others (2005) and Prescott (2004) on the relevance of the tax rate as an explanatory factor for labor supply in Europe. It would seem to reinforce Prescott’s claim about the adverse effects of the high labor tax burden, especially as the labor market protection emphasized instead by Alesina and others is controlled for in these regressions. However, the dependent variable is not labor supply but growth, and the tax rate could feasibly affect it through channels other than labor supply (including through the correlation of the labor tax burden with other fiscal policy indicators). Still, the results are suggestive of relatively large “macroelasticities” of the labor tax rates for the 1999-2002 period.

Figure 2. EU-14: Product and Labor Market Indicators, 1998-2003.



Source: OECD

- National **product market regulation** is negatively (and significantly) related to regional growth (as an average over a 4-year horizon), both in terms of the lagged impact of the index of regulation and the contemporaneous effect of the change in the index. This effect is present both with and without the tax burden variable, although it is weaker in some specifications. The qualitative result compares to that of the IMF (2004), which establishes that product market reform would have a moderately positive contemporaneous effect that becomes slightly negative over a 3-year horizon and turns sharply positive thereafter. However, the broader specification of the new PMR index also includes trade reform indicators, which in the IMF (2004) specification is assessed as having a separate positive effect on growth. Adjusting for this difference, the results seem qualitatively consistent.
- The degree of **labor market regulation** is, however, “positive” for growth, although the economic significance is small. This may not be surprising in the short term, however, as more labor market flexibility can lead to wage moderation and a short-term contraction in demand (IMF (2004)). The statistical significance in the *level* of the index is somewhat surprising and appears to contrast with IMF (2004), which found that over a longer-term horizon the effect of increased labor market flexibility would be positive for growth. Some features of the current specification may, however, affect this finding: (i) the effect of labor market reform in the period prior to the initial measurement of the index conflicts with the interpretation of the index as embedding *only* long-term factors; and (ii) the index may be too narrow as a summary measure of the degree of labor market flexibility. In the latter case, as argued by Alesina and others (2005), the residual labor market rigidity could be correlated with the tax rate.<sup>12</sup>

The proposed baseline regression is reported in the fourth column of Table 5; it includes the labor tax burden, and the lagged level and contemporaneous change in the PMR index, but excludes the EPL index, given the instability in some of the above results.

22. **Controlling for potential methodological problems does not alter the thrust of the results.** There could be four principal caveats to this analysis: (i) possible endogeneity or simultaneity biases; (ii) multicollinearity in some regressors; (iii) a potential dominance of short-term cyclical factors in driving the results; and (iv) distortions in combining national with regional data. These problems are discussed in the Appendix (including by instrumenting for potential reverse-causality for some variables), and do not appear to have affected the results, although some issues remain open.

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<sup>12</sup> Indeed, replacing the labor tax rate with a more general tax/GDP ratio eliminates the significance of the *level* of the EPL index, while the contemporaneous change remains significant.

23. **An analysis of components of the PMR index indicates that “economic,” as opposed to “administrative,” liberalization had a greater short-term association with growth.** Table 6 shows how the values and significance of the various subcomponents of the index performed as alternative explanatory variables for growth (in lieu of the aggregate index). Of the two main subcomponents, economic regulation was statistically significant both for the level and the rate of change, while administrative regulation was only borderline significant for the level and not significant in terms of change in the index. Among the 16 primary subcomponents of the PMR index, the expected effects appeared strong and significant with respect to: (i) barriers to trade, investment, and entrepreneurship; (ii) license and permit system; (iii) size of the public enterprise sector; and (iv) regulatory barriers. On the other hand, such factors as (i) simplification of rules and (ii) absence of command and control regulation had a counterintuitive inverse association with growth over this period. This, however, may reflect the either the possible J-curve effect or methodological problems, especially given the partial nature of these explanatory variables.

24. **Measures of financial sector development do not play a stable role in these regressions, possibly reflecting data issues.** As per Table 7, beginning-of-period arms-length financial development indicators, such as capitalization of stock market/GDP ratio in 1975-1995 (or in 1998), did not add any explanatory power to the baseline regression. The intermediary credit-to-GDP ratio had a positive, but small and statistically insignificant, relationship with growth. This may, however, reflect the fact that financial depth may vary not so much between countries as between regions in the same country, and the latter is not incorporated in the regressions. In addition, some of the elements of the PMR index may already capture aspects that are highly correlated with financial sector development/reform.

25. **Alternative nationwide institutional factors – the length of legal procedures and rate of recovery of firm assets in bankruptcies – add explanatory power in line with intuition (Table 7).** The inclusion of the length of civil legal procedures (available only for the year 1996, which roughly approximates the beginning-of-period sample) predictably has a negative association with growth. The asset recovery index (from the World Bank’s “Doing Business” dataset) also has the expected positive sign with respect to growth, and is highly significant. However, its inclusion in the regression substantially weakens the significance of the PMR index (though the rate of change of the PMR would still remain significant).<sup>13</sup>

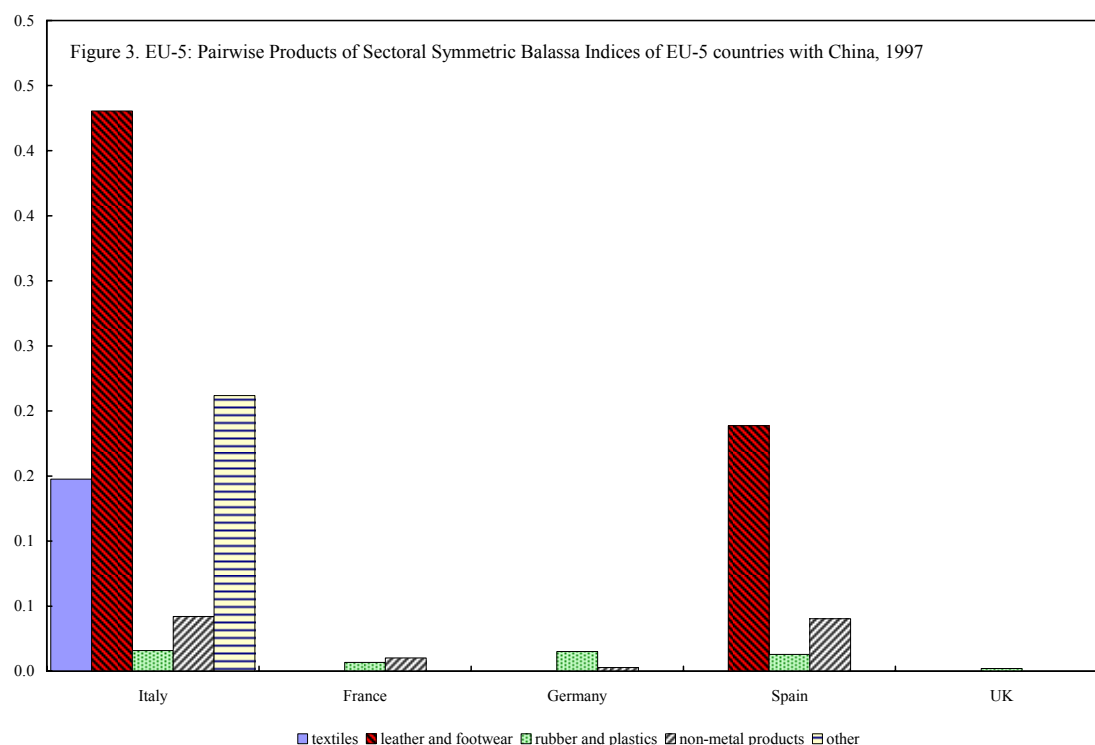
26. **Measures of competitive pressure from China appeared to have little explanatory power, although the limited number of observations likely affected the**

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<sup>13</sup> Most likely, this reflects the fact that the rate of recovery – as a broad measure of institutional quality – somewhat overlaps with the PMR. Our baseline specification is however based on the PMR, given that the data on the former measure is not available prior to 2004, raising concerns about reverse causality.



**results.** The key challenge involves finding suitable aggregate measures of such competition for the EU-14. There is a growing literature on measures of structural competitive pressure on exports, notably De Nardis and Trau (1999) and Monti (2005), who provide methodological and empirical contributions with particular reference to Italy, but no cross-country “aggregate” measures. A simple measure could be given by the extent of overlap in Balassa sectoral specialization indices of the EU-5 countries’ manufacturing exports with those of China (see Appendix). On this basis, competitive pressures on Italy appear indeed substantially higher than on other large EU countries (see Figure 3).<sup>14</sup> As can be seen from Table 8, the additional effect of this measure on EU-4/5 growth has not been robust. Still, the result hinges on the very few country observations and the full baseline specification of equation (3) could not be tested because of the lack of cross-country observations. Moreover, China is only one, albeit very important, element of competition from the emerging markets.



Source: SVIMEZ (see Appendix).

**27. The role of country circumstances is illustrated by the analysis of Italy and Germany dummies.** These two countries are useful to compare, given that they have both

<sup>14</sup> However, De Nardis and Trau (1999), on the basis of more disaggregated analysis, find that, accounting for quality differentials, competitive pressures on Italy would be much lower than implied by simple comparisons of sectoral structures.

recorded slow growth, although their experiences have differed in terms of the role of competitiveness. Table 9 shows that the inclusion of the Italy dummy, at the margin, significantly weakens the effect of the beginning-of-period product market regulation index on growth, suggesting that the latter plays an important role in the relative performance of Italy's regions (as a group). On the other hand, the inclusion of the Germany dummy appears to weaken appreciably the effect of the tax burden on labor, thus indicating that this burden – conditioned on the model – is a significant drag on growth in the German regions. Still, even with the inclusion of the dummy, the coefficient appears amply significant, suggesting that the high level of labor taxes has been associated with lower growth in other European countries as well. Interestingly, France or Spain dummies (not shown) do not noticeably affect the magnitude of these coefficients at the margin.

28. **A number of further variables were tested but did not add much explanatory power to the regressions.** In particular, this regarded data on investment/GDP ratios; Foreign Direct Investment; R&D expenditures; human capital, measures of infrastructure endowment (intensity of railway and highway networks); and various macroeconomic indicators (beginning-of-period and average inflation, budget deficits, employment rate). These could have been insignificant for different reasons, however, including (i) relative variations in the data, which may well be more pronounced between individual regions than between nations,<sup>15</sup> particularly for FDI and infrastructure; (ii) quality/comprehensiveness of the measures, for example infrastructure endowments are difficult to proxy in a comprehensive way; and (iii) the timeline effect of growth of some of the variables, particularly those related to the macroeconomic environment.

### C. Italy's medium-term regional growth

29. **An EU-wide focus may neglect important country-specific aspects.** In the above analysis, data limitations could have led to an omission of potentially relevant within-country, region-specific factors. In addition, the methodology for deriving some of the above country-wide variables may not be fully uniform. Alternative, and often more detailed, sets of data are available for national economies. For example, these would permit a characterization of various external and sectoral patterns, information on which is lacking at the NUTS-2 level of disaggregation.<sup>16</sup>

30. **Italy is an important case study of growth dynamics, not least because of the interplay of European, nationwide, and local factors in its overall growth record. A**

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<sup>15</sup> Including available region-specific data available for the NUTS-2 disaggregation (employment, unemployment, population size, human capital measures (education, etc.)) was likewise not significant.

<sup>16</sup> At the same time, however, a single-country focus also involves a loss of some data, since many variables available for cross-country analysis (i.e., structural indices) are not compiled on a within-country basis.

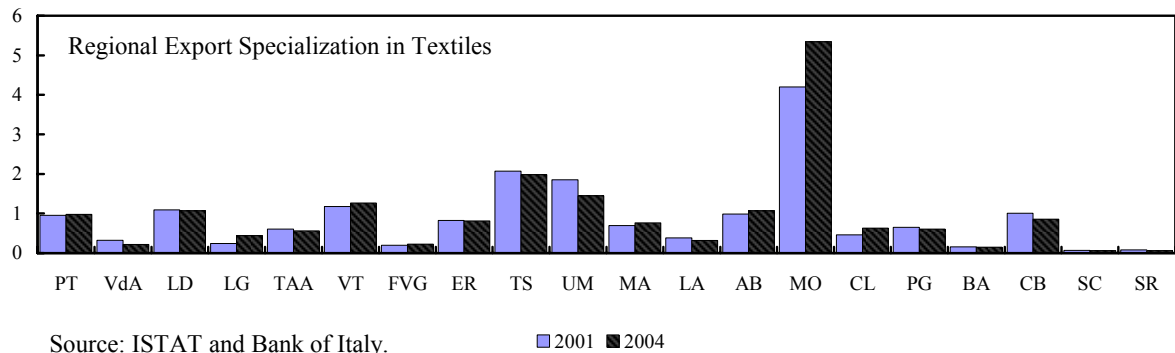
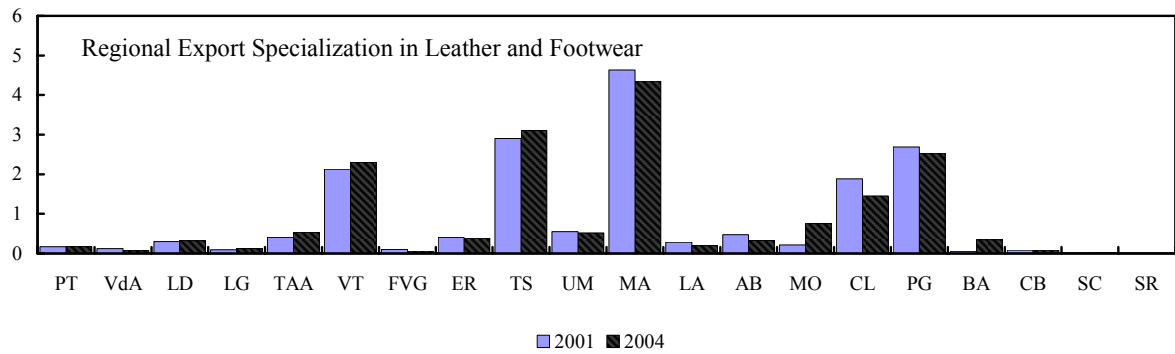
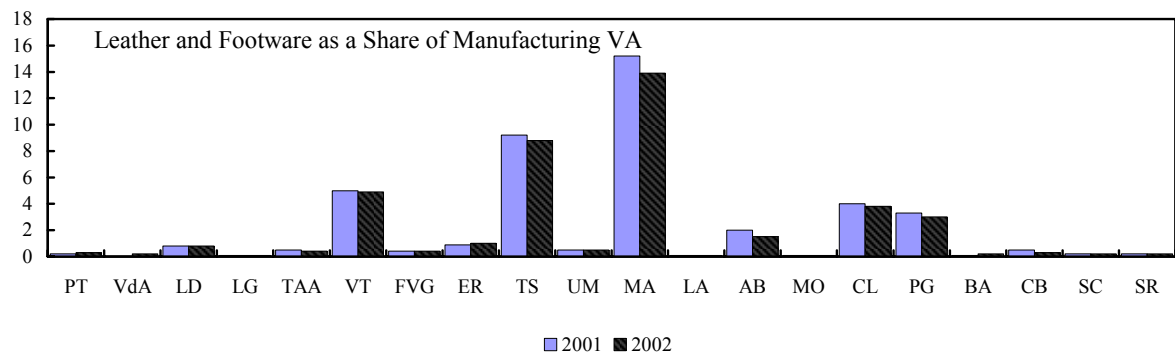
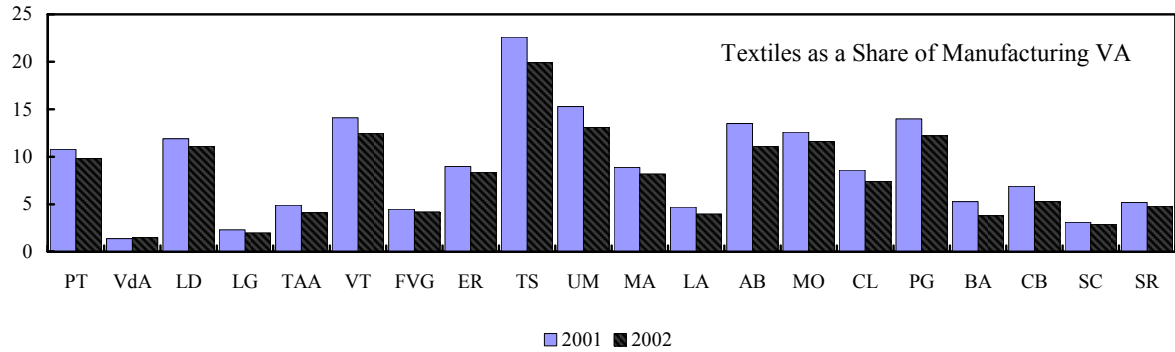
regional analysis of Italy may be particularly insightful given the wide territorial divergences. The coefficient of variation of income across regions, at about 25 percent, is higher than in most large European economies. There has been substantial research into many aspects of the deep differences in Italy's regional economic performance, which has been dominated by North-South issues (see Vamvakidis (2003) and references therein). In particular, variation in the size and nature of investment, institutional quality, and human capital has been traced to unfavorable economic outcomes in many Southern regions. Excessively rigid centralized wage bargaining (see Vamvakidis (2002)) may also have contributed to regional growth variations by inhibiting labor market clearing.

31. **This section focuses on Italy's recent medium-term performance.** In line with the previous section's framework, within-country regional growth could be assumed to depend on (i) convergence; (ii) policy variables, (iii) institutional quality, and (iv) other factors specific to the particular context, for example shocks that affect the regions differentially. However, consistent with available studies on regional growth, many of the typical policy and institutional variables do not need to be included, since they are often identical (or nearly so) for all regions. Regarding structural policies, most of these are in the purview of European and national authorities. To the extent these are influenced locally, no consistent data are available, in any case.

32. **A key issue widely debated in regard to Italy's growth in the past decade is its sectoral trade specialization, which also exhibits substantial regional variation.** As per Figure 3, Italy's manufactured exports have on the whole been more similar to those of emerging markets than those of other advanced economies. This "similarity" has been highest for leather/footwear and textile products. As follows from Figure 4, specialization in production and exports of these two sectors exhibited pronounced variation across regions. In particular, textiles as a share of regional manufacturing value-added varied from a minimum of 2 percent in Liguria to some 20 percent in Tuscany. Leather and footwear, while generally very small as a share of manufacturing value-added, was quite important in Marche and, again, Tuscany. The picture is similar in terms of regional export specialization. It would thus be interesting to gauge whether these differences in the "legacy" of sectoral specialization can be robustly linked to economic outcomes.

**Other, more commonly accepted, growth determinants at the regional level regard financial development and investment, although their impact would be uncertain over the medium term.** Financial development varies quite substantially across Italy's regions, and it has been linked to growth outcomes (Guiso and others (2002)), although the cross-country regressions reported earlier did not find it to be significant. At the same time, causality issues are particularly tricky with respect to the interaction of financial markets and growth, given the well-known hypothesis that the former may anticipate the latter (Rajan and Zingales (1998)). Regarding regional investment, Vamvakidis (2003) found some weak positive long-term effects of the infrastructure investment/GDP ratio. However, even over a long time frame, the effect of the non-infrastructure investment/GDP ratio was insignificant.

Figure 4. Italy, Asia-prone Production in Regional Manufacturing and Exports, 2001-2004.  
(in percent)



Source: ISTAT and Bank of Italy.

33. **The estimated equation for real per capita growth thus draws on cross-country and Italy-specific literature, and would rely on panel data for greater testing power.**

Thus, the key ex-ante variables, in addition to convergence, would be those denoting lagged and/or contemporaneous trade and sectoral structure and financial development. The estimated model would be as follows:

$$Dy_{i,t} = c + \alpha y_{i,t-1} + structure_{i,t,t-1} + findev_{i,t,t-1} + (inv/Y)_{i,t,t-1} + other_{i,t} + \mu_{i,t}$$

(4)

where *structure* would denote a variable characterizing Italy's export or production specialization, *findev* incorporates available regional financial sector variables, the ratio of regional investment to GDP, and "other" would include additional potentially important variables in explaining regional growth. We would proceed by sequentially augmenting equation (3), which would allow to pay particular attention to "structure," while considering other variables as controls. Of course, the caveats related to the sample length discussed in the cross-country section continue to apply.

34. **The absolute convergence among Italian regions found in the NUTS-2 level data also holds in terms of per capita GDP.** Using the data for Italy's 20 regions produced by ISTAT for 1995-2002 yields a coefficient of 1.7 percent for 1995-2002 for convergence in terms of real per capita GDP (comparable to 1.4 percent as found above in NUTS-2 PPP-adjusted data for Italy). Figure 5 shows that convergence held both during 1997-2000 and 2001-04. There were, however, important differences between these two subperiods, in that in the first period all regions were growing, while in the second convergence occurred against the backdrop of output declines in a subset of regions. This shift was also accompanied by a steeper slope in the convergence line in 2001-04, which suggests that the variation among regions may offer a relevant dimension for tracking the slowing of Italy's aggregate growth. In particular, one may check whether the absolute declines in output in some of Italy's regions could have been related to its specialization in products that are subject to increasing competition from emerging market economies.

35. **Superficial evidence on the interaction of sectoral and regional patterns suggests that the regional trade specialization in manufacturing did not have a strong association with regional growth.** Figure 6 augments the unconditional convergence graph for the cross-section of annual averages over four years (2001-04), by linking it to the extent of manufacturing export specialization in the key "Asia-competing" sectors: textiles and leather/footwear. The extent of regional specialization, given by the export specialization (Balassa) index at the beginning of the period, is denoted by the size of the bubbles. There does not appear to be a clear pattern with respect to textiles, as the bubbles are distributed more-or-less randomly along the convergence line. There appears to be a somewhat greater link with leather and footwear, whereby slower-growing regions in the lower-right corner

Figure 5. Italy: Real GDP per Capita Convergence.

Figure 5a. Italy, real GDP per capita convergence, 1996-2004

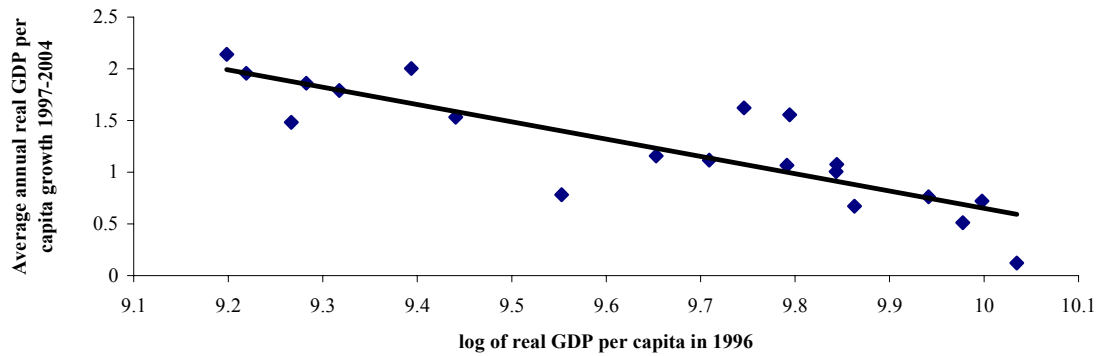


Figure 5b. Italy, real GDP per capita convergence, 1996-2000

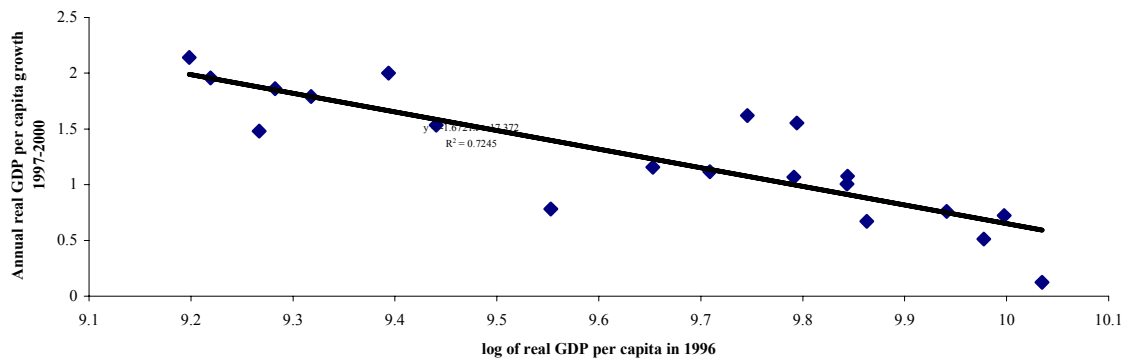
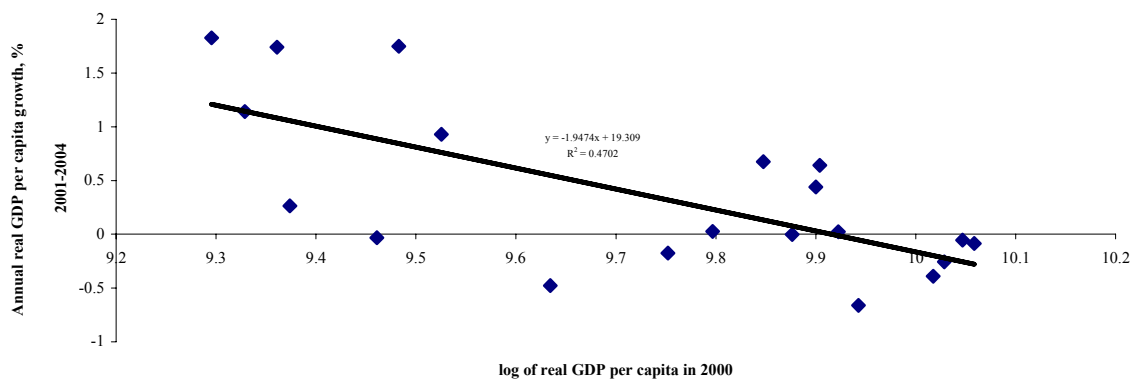
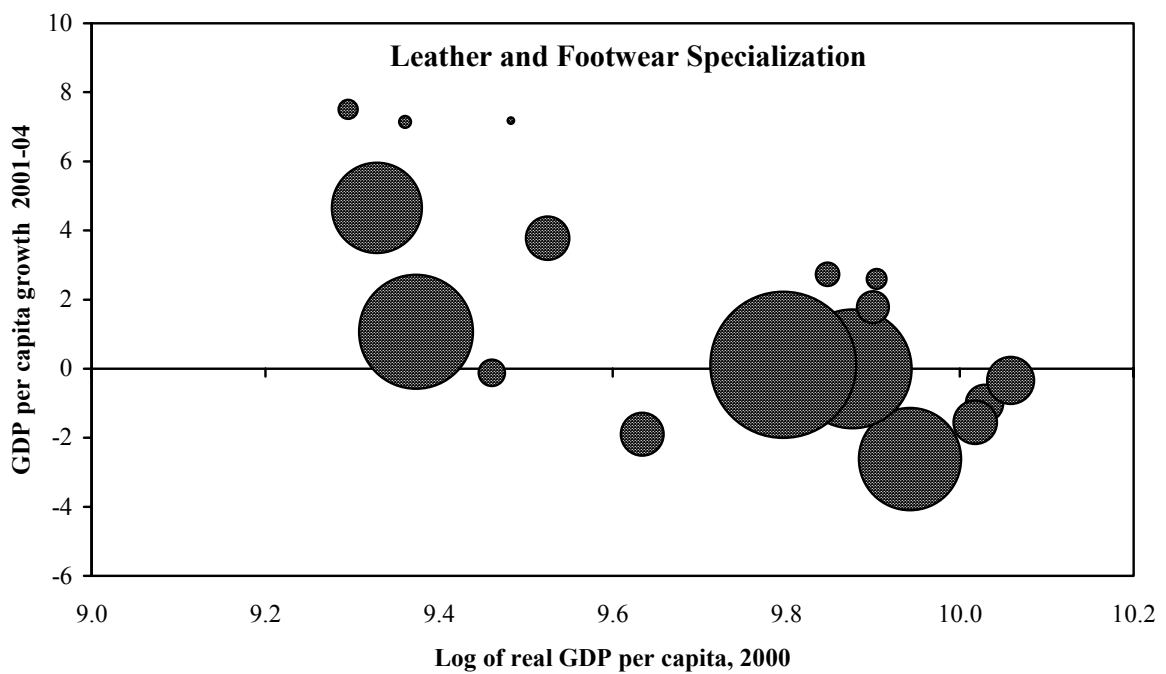
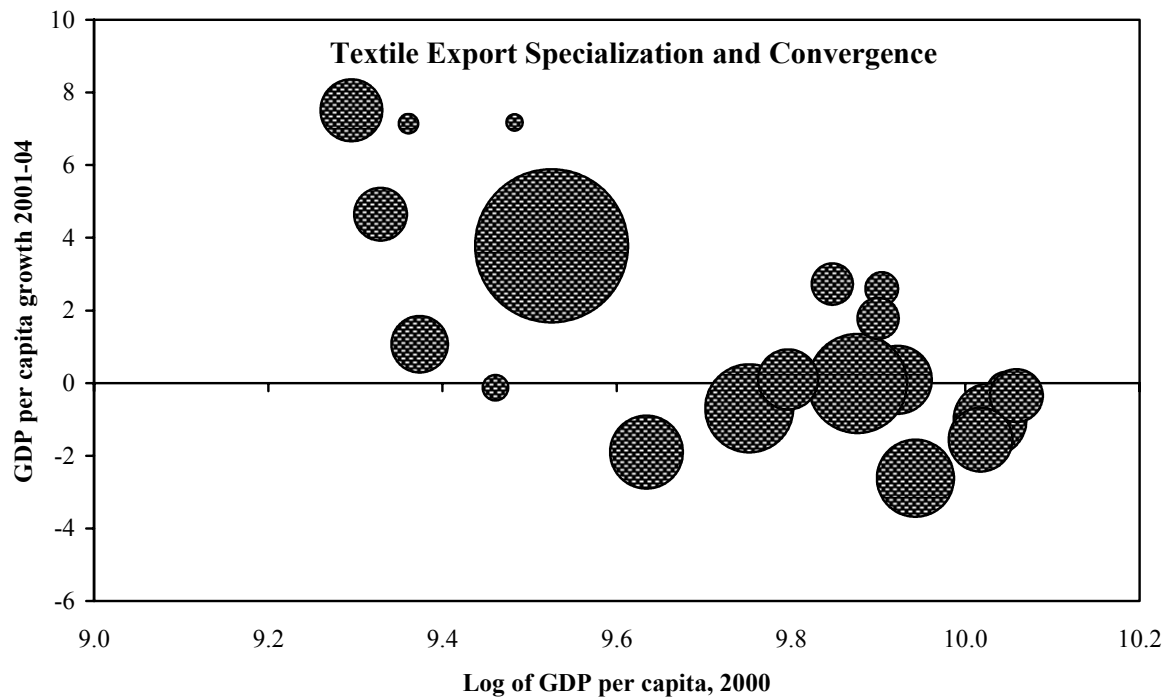


Figure 5c. Italy, real GDP per capita convergence, 2000-2004



Source: ISTAT

Figure 6. Italy: Regional Convergence and Asia-prone Sectoral Shares, 2001-04.  
(bubbles denote Balassa sectoral specialization indices)



Source: ISTAT and Bank of Italy

tend to have a somewhat higher export specialization in the sector. However, the weight of the latter sector is quite small in the overwhelming majority of regions. In any case, a more formal analysis is needed to check this link under various controls.

**36. Regression analysis also suggests a limited role of export specialization in the regional variation of output over the last few years.** Table 10 shows the results for measures of specialization in exports for 2001-04. In simple pooled OLS regressions, the coefficient on export specialization in textiles was neither economically nor statistically significant. While the coefficient on leather and footwear was just statistically significant at the 5 percent level, likely because of a sharper variation of the share of these products across regions, its economic significance was very small. Exploiting the time variation in the data through a fixed-effects regression renders the both sectoral specialization coefficients statistically insignificant, with the export specialization in textiles actually having a counterintuitive positive sign. The GLS “between/within” specification yields negative signs, but the coefficients are statistically insignificant for both sectors. Among the control variables in the 2001-04 data, convergence is highly statistically significant, but financial sector measures are not (share of financial intermediation in GDP (not shown), lagged and contemporaneous credit growth).

**37. The weak significance of the measured specialization does not change with the extended timeframe and addition of other variables.** Table 11 presents the results for the 1995-2003 period. In particular, the (lagged or contemporaneous) share of textiles and leather and footwear in value added is not significantly associated with regional growth. A “combined” share of all such sectors, including rubber, did not change this result. The role of other variables (controls) is roughly in line with the literature on regional growth in Italy (Vamvakidis (2003)), with a significant influence of convergence, marginal significance of the “South” dummy (negative), and insignificant role of the share of total investment in regional GDP. Time dummies (not shown) generally continue to exhibit a downward trend over time, indicating that the substantial worsening of performance at the end of the period remains fundamentally unexplained. The results for the specialization are broadly the same under different econometric specifications, including those that take into account potential endogeneity of the variables (General Method of Moments estimator).<sup>17</sup>

**38. A number of contributions suggest substantial role of unfavorable specialization, in exports and, ultimately, country-wide growth outcomes.** In particular, Bugamelli and Rosalia (2004) offer evidence that the sectors associated with competition from China experienced lower growth in output and exports than other sectors. Similarly, Chapter II of this set of papers cites other work that seem to arrive at the same conclusion with respect to

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<sup>17</sup> This estimator uses first differences to eliminate region-specific effects and employs lagged values of explanatory variables as instruments to deal with endogeneity problems. The underlying assumptions are that the error term is not serially correlated and the explanatory variables are weakly exogenous.



external market shares. However, from the analysis above, it appears that these differences have not affected the relative growth of Italian regions.

39. **The low role of sectoral export specialization in regional growth found here need not, however, conflict with the above literature.** First, the unfavorable effects of exports on growth could be in practice dampened due to offsetting effects of domestic demand and reallocation of resources between regions within Italy. Second, the simple sectoral disaggregation used here may be too coarse for pinning down the effects of specialization, and some authors have studied this at a more disaggregated level.<sup>18</sup> Third, the various controls typical for the growth literature, notably convergence, may not work as effectively in filtering short-term growth regressions, as in the longer-term regressions, thus possibly imparting a bias to some results. Still, convergence itself has been surprisingly robust, stable and unaffected by the “short-term bias” compared to the sectoral specialization, which warrants further research on the issue.

#### **D. Conclusion**

40. **This chapter offers an analysis of the recent medium-term growth experience in the EU and Italy.** It concludes that: (i) regional EU-wide convergence was observed in 1995-2002, though largely between, rather than within, countries, (though within Italy, convergence was significant over the past decade); (ii) greater national product market regulation and a higher tax burden were associated with lower growth in 1999-2002; and (iii) unfavorable sectoral “legacies” may have played some role in explaining regional growth variations among some EU countries and in Italy in particular over the last decade, but their impact was typically small.

41. **This research complements cross-country empirical literature on growth and structural reforms in the EU.** First, it confirms and extends evidence in favor of ongoing Europe-wide convergence (Vamvakidis (2003)) by finding it in the larger EU-25 sample, and even within fairly short (3-year) intervals. Second, liberalizing product market regulation and lowering the tax burden are found to be important for jumpstarting Europe’s growth, in line with evidence by Nicoletti and Scarpetta (2003) derived on the basis of firm-level cross-country data. Regional data permit an interpretation of this conclusion in broader terms, using a “whole-economy” PMR measure. Third, the chapter complements vast cross-country literature on the impact of institutions on growth (Acemoglu and others (2004)), in terms of its applicability to advanced economies, where the relevance of existing global classifications (i.e., the World Bank’s “Doing business” indicators, Transparency international, World Economic Forum, etc.) for empirical research has sometimes been questioned.

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<sup>18</sup> However, this argument to some extent contradicts the observed Italy-wide shortfall in growth in sectors such as textiles and leather.

42. **With respect to Italy's performance, European and country-specific data point to the primacy of structural and fiscal policies.** On the basis of Europe-wide analysis, the main priorities for Italy would be to pursue liberalizing structural reforms, especially product market deregulation. To the extent additional fiscal consolidation permits durable reductions in the tax burden, cross-country results suggest that labor tax cuts could be particularly effective. Regarding structural policies, however, it is somewhat less encouraging that Italy's improvement in the OECD PMR index between 1998 and 2003 was hardly reflected in its growth record. One partial explanation is that the index, while being an important objective measure of the formal regulations, does not capture "informal" factors affecting their implementation. If so, the role of de-facto policy improvements may be even greater than the regression results suggest.

43. **Further research may be needed to confirm or refine some conclusions, especially as data availability and quality improve.** The period of analysis is quite short, and the association of growth with structural variables, particularly in terms of the rate of change of the latter, would need to be investigated further with an extended time series of economy-wide structural data. A more representative dataset would also enhance the power of the panel regressions, wherein cyclical factors are so far controlled very imperfectly by time dummies. More detailed data, at the Europe-wide, national, and regional levels, would permit more sophisticated econometric tests, exploring the time series dimension with greater precision to better capture the evolving institutional and policy environment, including at the subnational level and more specific structural reforms. Even against these imperfections in the observed period, both the integration process and the remaining rigidities have been strong enough to be measurably associated with growth even over a short-to-medium-term span.

Table 1. Unconditional Convergence Regressions in the EU, 1996-2002. NUTS-2 Regions,  
Dependent Variable PPP Real per Capita Relative Changes (log-form)

	EU-25, OLS cross-section	EU-14, OLS cross-section	EU-4, OLS cross-section	Annual panel pooled EU-25	Annual Panel, with time effects, EU-25	Annual panel with regional-specific fixed effects, EU-25
Log PPP GPD per capita, 1995	-0.013** (-6.62)	-0.019** (-5.92)	-0.016** (-3.82)			
Log PPP GDP per capita, t-1				-0.014** (-6.38)	-0.013** (-5.43)	-0.063** (-11.2)
number of observations	254	210	107	1,784	1,784	1,784

Note: Regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at percent and \*\* at 1 percent;  
EU-14 excludes Luxemburg and twainfluential capital cities (London and Brussels), EU-4 includes Italy, Spain, Germany and France.

Table 2. Convergence Cross-section Regressions by Sub-period

	EU-25	EU-14	Eurozone	EU-4
1996-98	-0.018**(-6.42)	-0.016** (-3.72)	-0.019** (-4.61)	-0.020** (-3.75)
2000-2002	-0.010** (-3.89)	-0.016** (-3.94)	-0.018** (-4.31)	-0.009 (-1.82)
1996	-0.018** (-4.89)	-0.006 (-1.04)	-0.007 (-1.27)	-0.015* (-2.17)
1997	-0.026** (-5.86)	-0.031** (-4.43)	-0.040** (-5.65)	-0.032** (-3.95)
1998	-0.007 (-1.82)	-0.006 (-0.92)	-0.008 (-1.25)	-0.009 (-1.10)
1999	-0.004 (-0.88)	-0.019** (-2.85)	-0.022** (-3.54)	-0.026** (-3.57)
2000	-0.002 (-0.42)	0.014* (1.98)	0.014* (1.98)	0.024* (2.47)
2001	-0.011** (-2.71)	-0.021** (-3.28)	-0.020** (-3.06)	-0.028** (-3.51)
2002	-0.016** (-3.82)	-0.039** (-5.79)	-0.043** (-6.37)	-0.021** (-2.68)

Note: regressions include a constant (not reported), t-statistics in parentheses.

\* denotes significance at 5 percent and \*\*at 1 percent

Table 3. Convergence Cross-section Regression with Country Dummies, 1996-2002 1/

	EU-25 with country dummies	EU-14 with country dummies	Annual panel with countrie dummies, EU-25, time effects	Annual panel with country dummies EU-25
Log PPP GDP per capita, 1995	0.002 (0.84)	-0.005 (-1.62)		
Log PPP GDP per capita, t-1			0.002 (0.729)	-0.005 (-1.49)
Italy dummy	-0.032** (-3.16)	-0.006 (-0.63)	-0.032** (-13.8)	-0.036** (-16.8)
France dummy	-0.026* (-2.58)	-0.001 (-0.11)	-0.026** (-10.7)	-0.031** (-12.8)
Germany dummy	-0.037** (-3.73)	-0.011 (-1.23)	-0.037** (-17.5)	-0.041** (-18.9)
Spain dummy	-0.017 (-1.67)	0.007 (0.777)	-0.017** (-3.84)	-0.022** (-5.26)
# of observations	254	210	1,784	1,784

Note: regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\*at 1 percent

1/ Includes country dummies for all 25 countries, but these are not reported for small countries.

Table 4. OLS Convergence Cross-section Regressions within Large EU Countries, 1996-2002

	Italy	Germany	France	United Kingdom	Spain
Log PPP GDP per Capita, 1996	-0.012** (-3.57)	-0.007 (-1.56)	-0.008 (-1.48)	0.016* (2.31)	-0.024 (-1.46)
# of observations	21	40	26	37	19

Note: t-statistics in parentheses

Table 5. Europe-wide Regional Growth and National Policy Environments, EU-14 (excluding Luxembourg),  
Basic Cross-section Regression, Dependent variable PPP real Change per Capita in 1999-2002, log-form

	OLS regressions				IV regressions 1/	
	(1)	(2)	(3)	(4)	(5)	(6)
Log PPP GDP per Capita, 1998	-0.017** (-4.95)	-0.003 (-0.843)	-0.011** (-3.26)	-0.007* (2.33)	-0.006 (-1.85)	-0.012 (-1.94)
PMR index, 1998	-0.019** (-3.06)	-0.033** (-4.62)	-0.021** (-3.55)	-0.018** (-3.37)	-0.120* (-2.26)	-0.127* (-2.16)
Change in PMR index, 1998-2003	-0.037** (-2.69)	-0.062** (-5.08)	-0.053** (-3.89)	-0.046** (-3.92)	-0.278* (-2.30)	-0.282* (-2.11)
Tax burden		-0.114** (-11.00)	-0.083** (-4.77)	-0.102** (-9.58)	-0.118** (-5.89)	
EPL index, late 90s		0.008** (4.40)				
Change in EPL index, late 1990s-2003		0.006* (2.30)				
Number of observations	210	210	210	210	210	210
R-sq	0.15	0.49	0.23	0.41		

Note: regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\* at 1 percent

1/ Evaluated with robust standard errors. Instruments are selected among the components of the PMR index based on their correlation properties that would maximize their validity.

Table 6. Subcomponents of the Product Market Regulation Index in the Convergence Regressions, eu-14.  
Dependent Variable: PPP Real Growth per Capita in 1999-2002, log-form

Main Subcomponents	Administrative Regulation	Econ. Regulation	Barriers to Trade and Investment	Barriers to entrepr.	State Control	EPL
Level in 1998	-0.004 (-1.83)	-0.008** (-2.76)	-0.007** (-3.06)	-0.009** (-3.27)	-0.003 (-1.39)	0.001 (0.51)
Change in 1998-2003	0.000 (0.027)	-0.014* (-2.42)	-0.020** (-3.53)	-0.004 (-1.14)	-0.005 (-1.05)	0.01** (3.64)
<b>Low-level indicators</b>	<b>Ownership barriers</b>	<b>Discrimination Procedures</b>	<b>Regulatory barriers</b>	<b>Tariffs</b>		
Level in 1998	-0.003* (-2.57)	0.001 (0.35)	-0.007** (-2.72)	Non-applicable		
Change in 1998-2003	-0.008** (-4.05)	0.005 (1.44)	-0.017** (-4.44)	Non-applicable		
<b>Low-level indicators</b>	<b>Licence and permit system</b>	<b>Simpl. Of rules</b>	<b>Admin. Burden for corpor.</b>	<b>Sectoral admin burden</b>	<b>Legal barriers</b>	<b>Antitrust exempt.</b>
Level in 1998	-0.002** (-3.46)	0.003 (1.14)	-0.004** (-3.35)	0.001 (0.88)	-0.007** (-2.93)	-0.001 (-0.85)
Change in 1998-203	<b>-0.005** (-5.54)</b>	<b>0.009** (4.86)</b>	-0.004* (-2.2)	0.005** (3.04)	-0.004* (-2.15)	-0.007** (-2.70)
<b>Low-level indicators</b>	<b>Scope for public enterprise sector</b>	<b>Size of Public enterprise sector</b>	<b>Direct control over business</b>	<b>Command and control regulation</b>	<b>Price controls</b>	
Level in 1998	0.005* (2.30)	<b>-0.006** (-5.80)</b>	-0.001 (-0.723)	0.004** (4.87)	0.002 (1.67)	
Change in 1998-2003	-0.009** (-3.07)	<b>-0.017** (-4.36)</b>	-0.002 (-1.86)	<b>0.009** (9.27)</b>	0.001 (0.49)	

Note: Regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\* at 1 percent.

The coefficients that passed robustness checks are marked in bold.

Table 7. Role of Financial and Institutional Development measures.  
Dependent Variable PPP: Real Growth per Capita in 1999-2002.

	(1)	(2)	(3)	(4)	(5)	(6)
Log PPP GDP per Capita, 1998	-0.007* (-2.33)	-0.007* (-2.3)	-0.007* (-2.33)	-0.005 (-1.51)	-0.008** (-2.65)	-0.006* (-2.04)
PMR index, 1998	-0.018** (-3.37)	-0.018** (-2.64)	-0.020** (-3.56)	-0.020** (-3.85)	-0.005 (-0.928)	-0.008 (-1.45)
Change in PMR index, 1998-2003	-0.046** (-3.92)	-0.046** (-3.46)	-0.053** (-4.01)	-0.069** (-5.28)	-0.03* (-2.55)	-0.046** (-3.37)
Tax burden (labor)	-0.102** (-9.58)	-0.102** (-8.57)	-0.102** (-9.58)	-0.129** (-10.0)	-0.083** (-7.80)	-0.103** (-7.44)
Stock cap/GDP 1998		-0.000 (-0.04)				
Intermediary credit/GDP			0.005 (1.16)			
Legal length, 1996				-0.014** (-3.56)		-0.009* (-2.21)
Asset recovery rate, 2004					0.017** (5.12)	0.015** (4.23)
Number of observations	210	210	210	210	210	210
R-sq	0.41	0.41	0.41	0.44	0.48	0.49

Note: regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\* at 1 percent.

Table 8. Europe-wide Regional Growth and National Policy Environments, EU-4/EU-5, Cross-section Regression,  
Dependent variable PPP Real Growth per Capita in 1999-2002.

	EU-4	EU-5	EU-4	EU-5	EU-4	EU-5
Log PPP GDP per Capita, 1998	-0.006 (-1.85)	-0.008* (-2.39)	-0.007* (-2.02)	-0.009* (-2.58)	-0.016** (-3.61)	-0.012** (-2.77)
PMR index, 1998	-0.123** (-4.71)	-0.044 (-1.86)				
Change in PMR index, 1998-2003	-0.261** (-4.59)	-0.108 (-1.97)				
Tax Burden (labor)	-0.133** (-8.49)	-0.097** (-5.95)	-0.183** (-10.1)	-0.106** (-9.95)		
China export similarity dummy, 1997			-0.011** (-4.34)	-0.004 (-1.64)	0.002 (0.562)	-0.004 (-1.15)
Number of observations	107	143	107	143	107	143
R-sq	0.57	0.47	0.55	0.45	0.11	0.06

Note: regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\* at 1 percent

Table 9. The Role of Italy and Germany Country Dummies,  
Dependent Variable PPP Real Growth per Capita in 1999-2002, EU-14

	Without the tax burden variable			With the tax burden variable		
	General	Italy dummy	Germany dummy	General	Italy dummy	Germany dummy
Log PPP GDP per Capita, 1998	-0.017** (-4.95)	-0.015** (-4.34)	-0.015** (-4.90)	-0.007* (-2.33)	-0.002 (-0.679)	-0.008** (-2.73)
PMR index, 1998	-0.019** (-3.06)	-0.015* (-2.33)	-0.011 (-1.86)	-0.018** (-3.37)	-0.009 (-1.75)	-0.014** (-2.69)
Change in PMR index, 1998-2003	-0.037** (-2.69)	-0.032* (-2.34)	-0.016 (-1.24)	-0.046** (-3.92)	-0.037** (-3.35)	-0.034** (-2.86)
Tax burden (labor)				-0.102** (-9.58)	-0.116** (-11.2)	-0.082** (-6.47)
Country dummy		-0.007* (-2.1)	-0.014** (-7.15)		-0.014** (-5.38)	-0.006** (-2.85)
Number of observations	210	210	210	210	210	210
R-sq	0.15	0.16	0.32	0.41	0.48	0.43

Note: regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\* at 1 percent

Table 10. Italian Regions: Dependent Variable: Change in Log Real per Capita GDP, panel data, 2001-04.

	OLS with time dummies			Fixed effects with time dummies 1/		GLS with time dummies 1/	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP per capita, t-1	-0.021** (-4.31)	-0.021** (-5.09)	-0.021** (-5.31)	-0.58** (-3.99)	-0.69** (-7.06)	-0.021** (-3.40)	-0.021** (-3.39)
Textiles export specializ. 2/		-0.001 (-0.90)	-0.001 (-0.80)	0.001 (0.20)	-0.002 (-0.26)	-0.001 (-0.48)	-0.001 (-0.47)
Leather export specializ. 2/		-0.002* (-2.02)	-0.002* (-2.29)	-0.002 (-0.23)	-0.005 (-0.68)	-0.002 (-1.28)	-0.002 (-1.37)
Bank loan growth			0.000 (0.84)		0.000 (0.84)		0.000 (0.98)
Number of observations	80	80	80	80	80	80	80
R-sq	0.13	0.16	0.16	0.61	0.59	0.32	0.32

Note: regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\* at 1 percent

1/ Evaluated with robust standard errors.

2/ Logs of regional Balassa export specialization indices.

Table 11. Italian Regions: Dependent Variable: Change in Log Real per Capita GDP, Panel Data, 1996-2003

	OLS				Fixed effects		GLS	GMM 1/
	(1) Lagged shares	(2) Current shares	(3) Current shares	(4) Current shares	(5) Current Shares	(6) Current shares	(7) Lagged shares	(8) Current shares
Log GDP per capita, t-1	-0.028** (-3.00)	-0.026** (-3.38)	-0.026** (-4.05)	-0.029* (-2.55)	-0.50** (-6.23)	-0.53** (-6.46)	-0.027** (-2.86)	
Share of textiles in VA 2/	-0.048 (-0.71)	0.005 (0.08)		0.017 (0.21)	1.79 (1.84)			
Share of leather in VA 2/	0.005 (0.06)	0.004 (0.06)		-0.01 (-0.02)	1.19* (2.28)			
South dummy	-0.007 (-1.47)	-0.005 (-1.30)	-0.005 (-1.49)	-0.007 (-1.12)	-0.27** (-5.21)	-0.28** (-5.25)	-0.007 (-1.38)	
Share of textiles, leather and rubber 2/			0.003 (0.125)			1.14 (2.17)	-0.019 (-0.51)	0.23 (0.22)
Inv/GDP, t 2/				0.000 (0.51)				0.01 (0.11)
Number of observations	160	140	140	140	140	140	160	120
R-sq	0.4	0.32	0.32	0.32	0.51	0.51	0.41	

Note: regressions include a constant (not reported), t-statistics in parentheses. \* denotes significance at 5 percent and \*\*at 1 percent. All regressions include time dummies.

1/ Evaluated in first differences, Sargan test: 3.926.

2/ Also evaluated with logs; results were essentially similar.



## A. Data description.

### Europe-wide data:

The **NUTS-2-level data** are available for 254 (or in some samples 258, including 4 French territories) European regions of the EU-25, on Eurostat's online **Regio database** [http://epp.eurostat.cec.eu.int/portal/page?\\_pageid=1090,30070682,1090\\_33076576&\\_dad=portal&\\_schema=PORTAL](http://epp.eurostat.cec.eu.int/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL). These specific variables include: (i) **PPP-adjusted GDP** for 1995-2002; (ii) **employment**; (iii) **population**; (iv) **education**; (v) **spending on research and development**, and (vi) **sectoral composition of business activities**. Other potential control variables from the NUTS-2 disaggregation are also available, but have not been used, partly because of the large data gaps across time or sectors.

Several **tax burden** indicators are from Martinez-Mongay (2003) for EU-15 countries through 2002, including: (i) **average effective tax rate on labor income**, which is the ratio of the *sum* of non-wage labor costs plus the personal income tax revenue attributed to labor income; and (ii) **average effective tax rate on capital income**, which is the sum personal income from capital, taxes on corporate income, and property taxes. The **tax/GDP ratio** was taken from Eurostat.

**Product Market Regulation (PMR)** index is an *objective* measure of the *formal rules* governing product market regulation across the *whole economy*, collected over 16 primary measures (low-level indicators) in the three broad areas of (i) state control; (ii) barriers to entrepreneurship; and (iii) (external) barriers to trade and investment for most OECD countries. A consistent aggregation of the different components is achieved through the method of principal components. The data were first compiled for the year 1998 and were later updated for 2003, together with the revision of 1998 data. (See Conway and others (2005) for further details). Among the EU-15, data for Luxembourg are not available for 1998, and thus most regressions exclude Luxembourg.

The **Employment Protection Legislation (EPL)** index refers to restrictiveness of (i) protection of regular workers against dismissal; (ii) specific requirements for collective dismissals; and (iii) regulations of temporary forms of employment. Some factors, including the role of contractual provisions and judicial practices, do not get reflected in the indicator. The data are available for late 1990s and 2003 for OECD countries. For more information see OECD (2004).

**Measures of financial development** comprise (i) **stock market capitalization ratio to GDP in 1975-95 and for 1998** (source: Beck et al. (2001)); and (ii) **intermediary credit to GDP ratio** (source: Beck et al. (2001)).

**Length of civil legal procedures** is measured by data on average duration of the three degrees of judicial process, expressed in months. These are available for all EU countries for 1996 (see European Commission (1998)).

**Rate of asset recovery** (in terms of cents on the dollar) is available from the World Bank's "Doing business" indicators database, for the year 2004. Given that no corresponding data exist for the previous period, the underlying assumption is that the cross-country variability with respect to this statistic had not been changing much between 1998 and 2004.

**A measure of the similarity of exports and export specialization in manufacturing.** The data for this calculation have been provided by *Svimez* for 1997 and 2002 (on the basis of a 3-digit-disaggregated export commodity classification (ATECO)), whereby Balassa indices have been calculated for 17 large advanced and emerging countries, only 5 of which are members of the EU (Italy, Spain, France, Germany and the UK – EU5)).

**Balassa indices.** The common Balassa index of revealed comparative advantage (RCA) is defined as follows:

$$RCA_{ij} = \frac{X_{ij} / \sum_j X_{ij}}{\sum_i X_{ij} / \sum_i \sum_j X_{ij}}$$

where the ratio in the numerator is the share of country/region *j* in sector *i* world manufacturing exports (on the basis of the Global Trade indicators (GTI) database, which covers around 80 percent of world trade), while the ratio in the denominator represents the same share for total exports. The index varies between zero and infinity, with values greater than unity denoting the presence of "positive" specialization.

The symmetric Balassa index is a monotonic transformation of the RCA index set to vary between -1 and 1, with values greater than zero representing "positive" specialization:

$$RCAS_{ij} = \frac{RCA_{ij} - 1}{RCA_{ij} + 1}$$

The "China overlap" in the Balassa indices (a variable used in EU-4 and EU-5 cross-country regressions) is computed as a weighted (by manufacturing trade shares of a given EU country) sum of pairwise products of sectoral symmetric Balassa indices (provided both are positive), of China and the relevant EU country respectively.

#### **Italy-specific data:**

These are available from ISTAT, Italy's statistical authority ([www.istat.it](http://www.istat.it)), including:  
(i) **regional GDP per capita in constant and current prices;** (ii) **gross fixed capital**

**formation; (iii) value added in industry and in individual industrial sectors; (iv) employment; and (v) wages.**

Bank of Italy (2001-04) was used for regional financial sector data and regional export specialization indices.

### **B. Methodological remarks.**

The basic specification for **Europe-wide data** is the **cross-section growth regression** of Barro and Sala-i-Martin (1995), given that there is no extended time series for whole-economy structural data. While these simple regressions do not permit testing dynamic effects of reforms in line with the recent panel data-based research, they are still extensively used (see Sala-i-Martin and others (2003)), and offer a preferred initial test for cross-country relationships. With respect to the effect of structural reform on growth, using only cross-country data in a cross-section regression would limit the power of the tests (which would be based on 14 observations). Subnational data increase the power of these cross-section tests, but the specifications have to be parsimonious given the limited number of countries and the likelihood of specification problems once the number of country-wide explanatory variables becomes very large in a single regression. The regressions would however have some potential methodological problems and caveats.

**Multicollinearity.** Some regressors appear to have potential for being collinear. However, the bilateral correlation coefficients (not reported) are generally not so high as to indicate the multicollinearity problem, with the possible exception of the *levels* of the PMR and EPL indices, which exhibit bilateral correlation of around 90 percent. The latter variable, however, is not included in the baseline specification. In any case, none of the regressions (including those with the EPL measure) appear to exhibit the common multicollinearity symptoms of high R-squared accompanied by high standard errors.

**Reverse causality.** Instrumental variable regressions (estimated by two-stage least squares) have been used to check for potential endogeneity between the concurrent change in the product market regulation index and growth; these regressions are reported in the right-hand part of Table 5 and do not affect the signs and significance of the variables (but do affect the magnitude of some elasticities). In practice, reverse causality from growth to the explanatory variables is very unlikely in these regressions because of the inverse relationship between the level and the change in the PMR index over the observed period (Figure 2). (In case of significant reverse causality these are more likely to be positively correlated). In addition, a priori theoretical link from reforms to growth is ambiguous, and possibly non-linear. (Reforms have been considered easier to implement during spells of good growth, but also in times of crises).

Another possibility is the reverse causality between GDP growth and the tax burden, with the latter being partly driven up by slow growth. In this respect, one may note that a substantial inertia in the *levels* of cross-country tax burdens makes the reverse causality over the

medium-term growth horizon less likely, except in the event of substantial long-term prior inertia in differences in cross-country growth rates. In any case, instrumenting for the link did not change the qualitative signs of the coefficients.

**“Shortness” of time horizon.** The basic cross-section regression for the EU covers a 4-year time span of 1999-2002, while other EU and Italy-specific regressions have been estimated over the horizon of 4-8 years. These periods are short, but not unprecedented in the analysis of growth, especially if annual averages are used for EU data. IMF (2004) employed 3-year intervals to smooth out “short-term” cyclical fluctuations for GDP. Furthermore, the particular horizon chosen limits *within-cycle* biases. In this respect, the 1999-2002 period in the EU, and the 1996-2004 period in Italy (and the estimated subsamples) as annual averages have captured, roughly in equal measure, periods of cyclical strength and weakness. Also, both conditional and unconditional convergence coefficients for the augmented regional sample have been relatively stable and consistent with “standard” values over these medium-term horizons.

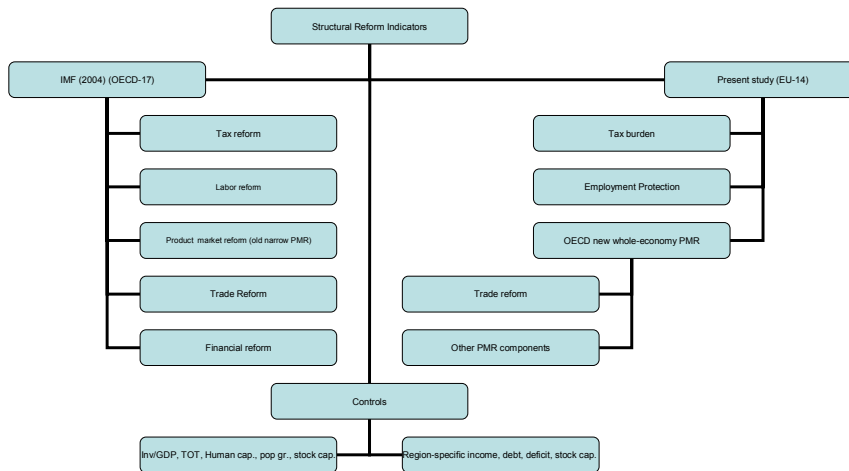
More generally, Jones and Olken (2005) criticize the prevailing focus on the literature on long-term growth experiences, as these appeared to be a summation of very different sequences of medium-term episodes, which, as they argued, have to be analyzed separately. (In addition, long-term growth regressions are likewise susceptible to biases arising from different temporal profile of beginning-of-period controls). The medium-term cross-section analysis allows a focus on the characteristics of the key period, incorporating its unique features. It is thus encouraging that the qualitative role of most (structural and other) explanatory variables has been in line with intuition. Finally, the expanded number of cross-sectional observations partly compensates for the shortness of the horizon.

**Particular combination of country-level versus region-specific data.** The chosen mix of country-level indicators and region-specific variables may not be fully optimal for EU-wide regressions. Intuitively, not all country-wide variables would be appropriate for explaining *regional* growth performance within the EU. In particular, within-country variation should ideally dwarf cross-country variation (otherwise there would be a need for the corresponding region-specific information). In this respect, macroeconomic variables, the tax burden, and structural reforms would largely fit these criteria, since most of their aspects are (so far) determined at the national level in the EU countries, although some of this may change as devolution of power to the regions progresses in some countries. Financial development may however differ among regions in one country quite substantially.

Two efforts have been made to further control for this problem. First, other available data on key country-level and region-specific (NUTS-2) indicators have been tested as additional controls, but generally have not added explanatory power. Second, the configuration of country-level factors is consistent with that of other studies, in particular IMF (2004). Figure 7 shows that there is a broad similarity in the dimensions of structural reform covered by the two studies. The main differences of the present study are (i) narrower treatment of the tax reform and labor market indicators – prompted by the desire to focus on key single aspects of

specific dimensions as opposed to “unweighted sectoral averages;” and (ii) omission of “financial reform” measures, whose effects turned out fairly weak in the IMF (2004) study, and given the presence of controls for financial development in some specifications.

**Figure 7. Comparison of coverage of structural reforms with the IMF (2004) study.**



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#### IV. HOW EXPANSIONARY ARE TAX CUTS IN ITALY?<sup>1</sup>

##### Core Questions, Issues, and Findings

- **What is the *aim* of the chapter?** The chapter provides estimates of fiscal multipliers based on an intertemporal model for nondurable consumption where households are myopic, discounting the future at a rate higher than the prevailing real rate of interest. In such a theoretical framework, the impact of any shock to income/net taxes on consumption depends on three characteristics—the persistence of the shock, whether it is anticipated or not, and the discount wedge, i.e., the consumers' excess of discount with respect to the market rate.
- **What are the main *results* of the analysis?** The model entails a discount wedge of about 6 percent a year and fairly small fiscal multipliers of 0.05-0.2—depending on the permanence of the change in taxes/transfers. Historically, shocks to the net tax rate have been extremely short-lived, implying point estimates in the low end of the range. Accordingly, it seems improbable that changes in net tax rates would have significant effects on private consumption and, thereby, on growth.
- **What are the *policy implications* of this chapter's findings?** Thinking of fiscal policy in an intertemporal setting provides a range of insights. For example, to the extent that automatic stabilizers associated with the economic cycle are less persistent than other policy changes, they will be associated to smaller multipliers. Similarly, while it is unlikely that large fiscal contractions could be expansionary due purely to supply effects, it is possible that reductions in the real interest rate and changes in the assumed longevity of future tax cuts could also play a role. Finally, the implied low discount wedge suggests that households might cushion expected effects of pension reforms on life-cycle consumption by engaging in greater accumulation of assets.

##### A. Introduction

1. **Fiscal policy remains an important lever for macroeconomic stabilization.** The main issue associated with its effectiveness is the degree of Ricardian equivalence.<sup>2</sup> Full Ricardian equivalence implies that changes in taxes and transfers have no impact on rational consumers spanning an infinite lifetime. This is because optimizing agents discount the

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<sup>1</sup> Prepared by Silvia Sgherri (EUR).

<sup>2</sup> See, among others, Ricciuti (2003) for a review, the seminal work by Barro (1974), and the contribution by Campbell and Mankiw (1990).

future using the interest rate on government paper, so the value of tax cuts and of subsequent tax increases exactly offset each other. Thus, rational consumers will fully offset a tax cut by increasing their saving.

2. **There are two main ways of creating more realistic short-term tax multipliers.** One is to assume that some individuals act as if they do not have access to financial markets, varying their consumption in line with their disposable incomes. The behavior of such credit constrained consumers is, however, highly mechanical, responding as much to a temporary tax cut as to a long-term one. The alternative is to assume that consumers have finite lives, adding a life-cycle dimension to consumption. This provides more realistic consumption dynamics, with spending responding less to a temporary tax cut than to a long-term one, as predicted by the permanent income hypothesis. In addition, the supply-side effects of fiscal policy can be incorporated by adding distorting taxes.<sup>3</sup>

3. **The chapter provides estimates of fiscal multipliers for Italy based on an intertemporal model for nondurable consumption where households are myopic, discounting the future at a higher rate than the prevailing real rate of interest.** In such a theoretical framework, the impact of any shock to income/net taxes on consumption depends on three characteristics—the persistence of the shock, whether it is anticipated or not, and the discount wedge, i.e., the consumers' excess of discount with respect to the market interest rate.

4. **The model entails a discount wedge of about 6 percent a year and fairly small fiscal multipliers of 0.05-0.2—depending on the permanence of the change in taxes/transfers.** Historically, shocks to the net tax rate have been extremely short-lived, implying point estimates at the low end of the range. Accordingly, it seems improbable that changes in net tax rates would have significant effects on private consumption and, thereby, on growth. Results seem to be consistent with previous empirical evidence for Italy, indicating that net revenue shocks are very short-lived and tend to have negligible—both statistically and economically—effects on other macroeconomic variables.<sup>4</sup>

5. **The chapter is organized as follows.** Section B provides the theoretical framework for the analysis. The intertemporal model is estimated in section C. Section D explores these interactions in more detail. The low discount wedge implied by the estimates has, however,

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<sup>3</sup> Clearly, changes in the tax wedge are also likely to affect aggregate demand through their effects on labor utilization. Such an effect will depend on the particular characteristics of the labor market at hand, e.g., the elasticity of labor supply and labor demand and the details of the wage-setting process (Coenen and others, 2005).

<sup>4</sup> See, for example, the recent study by Giordano and others (2005) and the evidence from macroeconometric models summarized in Henry and others (2004).

broader implications for policy analysis, which are briefly discussed in the concluding section.

## B. Some Theory

6. **In spite of practitioners' renewed interest in the use of fiscal policy for macroeconomic objectives, research on fiscal multipliers remains limited compared to the empirical literature on monetary policy.** To be sure, macroeconomic modeling groups continue to provide estimates of such multipliers, including in the context of a new breed of theoretically consistent “stochastic general equilibrium models,” and others have used vector autoregressive models for the same purpose.<sup>5</sup> There has also been a significant literature on conditions under which large fiscal contractions can be expansionary.<sup>6</sup> However, when compared with recent work on monetary policy, the volume of analysis is small.

7. **Macroeconomists have developed two theoretical approaches to break Ricardian equivalence, e.g., to allow fiscal policies other than government spending—notably, lump-sum taxes and transfers—to have real effects, even though households are optimizing subject to intertemporal budget constraints.** The first, which is the focus of this chapter, assumes that consumers have finite lives and, therefore, discount the future more rapidly than implied by the government's budget constraint.<sup>7</sup> As a result, a tax cut (or an increase in transfers) has an expansionary effect on consumption because the net present value of the tax cut exceeds that of the subsequent increase in taxes needed to keep the government solvent. The alternative approach, which is simpler theoretically and is also investigated in this chapter, assumes that some households have full ability to participate in financial markets and can intertemporally smooth consumption, while others are subject to

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<sup>5</sup> Bryant and others (1988) includes results from a range of traditional macroeconomic models. Vector autoregression analysis includes Blanchard and Perotti (2002), Fatás and Mihov (2001), Moutford and Uhlig (2002), and Perotti (2002). A summary of results is contained in IMF (2003). Bayoumi (2004) discusses the new approach to large macroeconomic models embodied in “stochastic dynamic equilibrium models”, while Laxton and Pesenti (2003), Erceg and others (2004), and Smets and Wouters (2004) describe such models. The IMF's Global Fiscal Model, described in Ganelli (2004) and Botman and others (2005), is the only one of the new generation of models primarily designed for fiscal policy analysis.

<sup>6</sup> Giavazzi and others (2005) provide a recent review of empirical studies on expansionary fiscal contractions.

<sup>7</sup> It should be stressed that the term “death” or “finite life” defines *economic* death rather than its physical counterpart. This can occur through unexpected events that make previous optimal consumption plans irrelevant—examples would include winning the lottery, or a sudden and unexpected job loss or bankruptcy.

credit constraints and cannot participate in any type of asset market. These households, therefore, just consume their after-tax disposable incomes in each period.<sup>8</sup>

### Basic Model

8. **To simplify the modeling, we assume that the economy is in a stationary steady state, so income does not trend over time and deaths equal births in each period.** Utility is quadratic, which ensures certainty equivalence. Crucially, in addition to the usual discount rate,  $\beta$  (assumed equal to the real interest rate), consumers face an additional discount wedge,  $\lambda$ , reflecting the probability of death. The assets/liabilities of the dead are transferred outside of the model. Finally, we assume that income follows a first order autoregressive process.<sup>9</sup>

9. **The consumer's problem is:**

$$\begin{aligned} & \text{Max} \sum_{i=0}^{\infty} \frac{U(c_{t+i})}{(r + \lambda)} \\ & \text{s.t.} \sum_{i=0}^{\infty} \frac{c_{t+i}}{(1+r)} = \sum_{i=0}^{\infty} \frac{y_{t+i}}{(1+r)} \\ & \Delta y_{t+i} = \theta^y y_{t+i-1} + \varepsilon_{t+i}^y \\ & U(c_{t+i}) = c_{t+i} - \Gamma c_{t+i}^2 \end{aligned} \tag{1.1}$$

where  $y$  is income,  $c$  is consumption,  $r$  is the real interest rate prevailing on the market,  $\varepsilon^y$  is an unexpected shock to income,  $\Delta$  is the first difference operator, and Greek letters reflect underlying parameters. Note that in this model the probability of death is equal to  $\frac{\lambda}{(1 + \lambda)}$ , where  $\lambda$  is an unknown parameter to be estimated.

10. **The resulting path for consumption depends on whether the individuals were “alive” last period or not.** If they were “alive” then the following equation applies:

$$\Delta c_t = \frac{\lambda}{r + \lambda - \theta^y} \Delta y_t + \frac{r}{r + \lambda - \theta^y} \varepsilon_t^y \tag{1.2}$$

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<sup>8</sup> Galí and others (2005) and Coenen and Straub (2005) have extended the standard New-Keynesian sticky-price model by allowing for the coexistence of “non-Ricardian” and “Ricardian” households.

<sup>9</sup> The model can be easily generalized to other income processes and assumptions. The current framework is utilized as it provides a simple closed form estimating equation.

11. If they are “born” this period, the equation is similar except it does not include lagged values:

$$c_t = \frac{r + \lambda}{r + \lambda - \theta^y} y_t \quad (1.3)$$

12. Weighting the two equations appropriately implies the following aggregate consumption function:

$$\Delta c_t = \frac{\lambda}{r + \lambda - \theta^y} \Delta y_t - \frac{\lambda}{1 + \lambda} \left( c_{t-1} - \frac{\lambda}{r + \lambda - \theta^y} y_{t-1} \right) + \frac{r}{r + \lambda - \theta^y} \varepsilon_t^y - \frac{\lambda}{1 + \lambda} \frac{r}{r + \lambda - \theta^y} (y_t - \varepsilon_t^y) \quad (1.4)$$

13. **The change in consumption depends on:** (i) the change in income, reflecting the excess discount rate; (ii) an error correction mechanism, because of the “birth” of new individuals, whose level of consumption is heavily determined by current income; (iii) the error on income familiar from the random walk model of consumption;<sup>10</sup> and (iv) a second order term that reflects the difference in saving behavior between those who were and were not born that period.

## Fiscal Policy

14. **The crucial difference between fiscal policy and changes in income is that the government’s budget constraint needs to be satisfied.** Hence, a cut in taxes (net of transfers) that boosts income will need, at some point, to be counterbalanced by a future increase in taxes. We model this by assuming that, like incomes, taxes follow a first order autoregressive process, but that the trajectory is relative to a long-term level of taxes,  $t^*$ , that reflects the additional cost of unanticipated changes in net taxes. Specifically,

$$\Delta(t_t - t_t^*) = -\theta^r (t_{t-1} - t_{t-1}^*) + \varepsilon_t^r \quad (1.5)$$

where  $t_t^* = t_{t-1}^* - \frac{r}{r + \theta^r} \varepsilon_t^r$ .

15. **Hence, an unexpected fall in taxes is simultaneously accompanied by a permanent increase in the expected permanent tax rate from this point forward.** The resulting consumption function looks very much like the earlier one except that unanticipated cuts in taxes ( $\varepsilon_t^r$ ) lower consumption through a Ricardian offset, whereas unexpected increases in income ( $\varepsilon_t^y$ ) raise consumption through higher saving:

<sup>10</sup> Indeed, if  $\lambda$  is set equal to zero, the model simplifies to a random walk.

$$\begin{aligned} \Delta c_t = & \frac{\lambda}{r + \lambda - \theta^y} \Delta y_t - \frac{\lambda}{1 + \lambda} \left( c_{t-1} - \frac{\lambda}{r + \lambda - \theta^y} y_{t-1} \right) + \frac{r}{r + \lambda - \theta^y} \varepsilon_t^y - \frac{\lambda}{1 + \lambda} \frac{r}{r + \lambda - \theta^y} (y_t - \varepsilon_t^y) \\ & - \frac{\lambda}{r + \lambda - \theta^t} \Delta t_t - \frac{\lambda}{1 + \lambda} \left( c_{t-1} - \frac{\lambda + r}{r + \lambda - \theta^t} t_{t-1} \right) + \frac{\lambda r}{(r - \theta^t)(r + \lambda - \theta^y)} \varepsilon_t^t \end{aligned} \quad (1.6)$$

### Credit Constrained Consumers

16. **An alternative theoretical approach allowing fiscal policies to have real effects is to assume that all consumers are infinitely lived, but a proportion of them,  $\eta$ , have no access to credit markets and can thus just consume their after-tax disposable income.** Again, there are two consumption processes. The credit unconstrained consumers follow the random walk model:

$$\Delta c_t = \frac{r}{r + \theta^y} \varepsilon_t^y \quad (1.7)$$

while constrained individuals consume all of their disposable income:

$$c_t = y_t. \quad (1.8)$$

17. **This results in the following aggregate consumption function:**

$$\Delta c_t = \eta \Delta y - \eta (c_{t-1} - y_{t-1}) + (1 - \eta) \frac{r}{r + \theta^y} \varepsilon_t^y. \quad (1.9)$$

18. **One can also add credit constrained consumers to the myopic model discussed above.** The resulting equation is obtained by simply substituting the consumption process in equation (1.6) for the random walk model in the equation (1.9) above.

### Supply effects

19. **It is often argued that, in addition to their direct effects on intertemporal consumption choices, increases in taxes (or cuts in transfers) have negative supply effects coming from disincentives to work.** This is relatively easy to model in our framework, as  $t^*$  reflects this long-term change in the burden coming from government. Assuming that long-term income falls by some proportion,  $\gamma$ , of the implied permanent level of taxes, this adds a further term in the unexpected change in taxes to the consumption function described by equation (1.6):

$$- \frac{\gamma r}{r + \theta^t} \varepsilon_t^t \quad (1.10)$$

### C. Some Estimates

20. **Empirically, an unrestricted version of the consumption model derived in the last section is estimated first.** The coefficient restrictions implied by the presence of myopic and credit constrained consumers are then tested. Specifically, the deep parameters are estimated for the myopic model, and various additional considerations such as including credit constraints and supply effects are subsequently explored.

21. **The model was estimated from 1960 using annual data for real consumption of nondurable goods and services, personal income excluding transfers, payments of direct taxes less transfers, disposable income (income minus net taxes).** Annual data were used because taxes are levied on yearly income and it simplifies the time series characterization of the data (Figure 1), while official ISTAT data have been extended backwards to 1960 using OECD household sector data. Estimates take into account the presence of a break in the growth rate of real personal income in 1976, by allowing for parameter shifts in both the income and the tax equations.<sup>11</sup>

22. **The estimated unrestricted system comprises:**

$$\begin{aligned}\Delta c_t &= \alpha^c + \beta^y \Delta y_t + \beta^t \Delta t_t + \beta^{ecm} (c_{t-1} - \mu(y_{t-1} + t_{t-1})) + \varepsilon_t^c \\ \Delta y_t &= \alpha^y + \gamma^{trend} trend + \gamma^{ecm} y_{t-1} + \varepsilon_t^y \\ \Delta t_t &= \alpha^t + \tau^y \Delta y_t + \tau^{ecm} t_{t-1} + \varepsilon_t^t\end{aligned}\tag{1.11}$$

where  $c$  and  $y$  are the logarithm of consumption and income while  $t$  is the net tax rate (net taxes as a ratio to income).

23. **These equations correspond to the theoretical specification derived above taking account of the following considerations.** *In the net tax rate equation*, because the tax and transfer system is progressive and the rate varies over the cycle, the growth of income is included. Also, the endogenous evolution in the equilibrium tax rate, which depends on the dynamic path of net taxes over time, is ignored. *In the income equation*, a time trend is included to take account of the steady rise in income over time, so the autoregressive process refers to deviations from this trend. *In the consumption function*, the terms in the unexpected innovation in income/net taxes are assigned to the coefficient on the change in income/taxes as attempts to estimate these terms separately produced extremely high standard errors due to collinearity. In addition, as the upward trend in both income and consumption implies that their levels are nonstationary, the coefficient on disposable income in the error correction

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<sup>11</sup> Following the standardization of the wage indexation system in conjunction with sizeable wage increases upon renewals of contracts in the industry sector, average *real* personal income surged dramatically in 1976. Personal income taxes increased accordingly, implying no change in the average tax rate and disposable income growth. See Banca d'Italia (1976).

mechanism is set at unity—the value implied by a nonstationary income process. Finally, second order terms associated with the saving of the newly born are dropped.

24. **Results from estimating the unrestricted model are reported in Table 1.** To test the robustness of the results, the model was estimated both directly (using seemingly unrelated regressions, hereafter SUR) and instrumental variable techniques (using the Generalized Method of Moments, or GMM). Instrumental variables are often used in consumption regressions in order to eliminate the impact of unexpected innovations in income on the specification.<sup>12</sup> Estimating the model with and without this effect provides a useful check on the empirical plausibility of the model. The instruments comprise all of the independent variables except the contemporaneous change in income, which was substituted by its first two lags.

25. **Table 1 reports the coefficient estimates and fit of the unrestricted system estimated using both techniques.** The SUR results reported in the first column imply that consumers spend less than one-tenth of the change in their income, while there is no significant change in consumption following a change in net taxes.<sup>13</sup> It also implies that any deviation between the underlying level of consumption and disposable income is reversed at a rate of about 16 percent a year. The equation for income implies that any unexpected disturbances revert to trend at a rate of around 35 percent a year—implying a half life of less than two years. Interestingly, in the net tax rate equation, revenues *fall* by about 4 cents on a euro *increase* in income—indicating that the personal tax and transfer system is in fact not progressive—while underlying changes in the net tax rate are extremely short-lived, reverting to trend at a rate of about 35-40 percent a year. The consumption and income equations fit relatively well, with R-squares of 0.66 and 0.85, respectively, and little evidence of correlation in the residuals. The equation for net taxes fares much worse, with changes in personal income and convergence dynamics being able to explain only a limited share of the total variation in (net) tax rates.

26. **The GMM results in the second column are generally similar.** As expected, the impact of change in income on taxes rises somewhat, but standard errors remain too large for it to be significant. Other coefficients are essentially unchanged, with a one euro change in income resulting in less than 10 cents impact on consumption.

27. **Wald tests indicate that—if tested individually—neither the hypothesis of myopic consumers nor the assumption of credit constrained consumers can be rejected by the data at conventional levels,** using either SUR or GMM. Wald tests of the coefficient

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<sup>12</sup> We assume underlying tax rates are known ahead of time, although the short-term impact of changes in income on tax rates is instrumented.

<sup>13</sup> The (unrestricted) response of consumption to changes in taxes and transfers remains insignificant even when a system allowing for separated equations for taxes and transfers is considered.



restriction implied by the two models are reported in Table 1 (assuming that the real interest rate is 4 percent a year). As discussed earlier, given the high collinearity of the two series, the impact of unexpected disturbances to income and net taxes are included in the coefficients on changes in these terms. Hence, the restrictions implied by the myopic model (with those included in the SUR estimates but not in the GMM ones in brackets) are:

$$\begin{aligned}\beta^y &= \frac{\lambda(+r)}{r + \lambda - y^{ecm}} \\ \beta^t &= \frac{\lambda}{\lambda - \tau^{ecm}} \left( 1 - \frac{r}{1 + r + \tau^{ecm}} \right) \\ \beta^{ecm} &= \frac{\lambda}{1 + \lambda}\end{aligned}\tag{1.12}$$

28. **Table 2 reports results from estimating the deep parameter of the myopic model—the wedge on the discount rate—using SUR and GMM.** The specification for consumption, which explicitly includes innovations to income and net taxes, is as follows (in the GMM results, the coefficient on  $\varepsilon_t^y$  is excluded):

$$\Delta c_t = \alpha^y + \frac{\lambda}{r + \lambda - y^{ecm}} \Delta y_t \left( + \frac{r}{r + \lambda - y^{ecm}} \varepsilon_t^y \right) + \frac{\lambda}{r + \lambda - \tau^{ecm}} \Delta t_t - \frac{r}{r + \tau^{ecm}} \varepsilon_t^t + \varepsilon_t^c \tag{1.13}$$

To compare these results with the unrestricted coefficient estimates reported in Table 1, the implied coefficients on the change in income ( $\beta_t^y$ ), change in net taxes ( $\beta_t^t$ ), and error correction mechanism ( $\beta_t^{ecm}$ ) are reported.

29. **Both SUR and GMM results imply a statistically significant excess discount rate of 6 percent for the private sector, hence rejecting the fully-Ricardian model.** The implied discount rate for Italian consumers seems consistent with the range of discount rates considered by the vast literature on retirement choices.<sup>14</sup> At the same time, corresponding estimates for the United States are found to be much higher, suggesting that Italian consumers are prone to be much more patient than their US counterparts.

30. **Changes in net taxes are found to be somewhat more persistent in the restricted model than the unrestricted model (the rate of convergence falls from 45 to 30 percent a year) while the dynamics of the tax rate are essentially unaffected.** The implied coefficients for the unrestricted regressions are all extremely close to the freely estimated values, consistent with the results from the Wald test, and the fit of the model is largely unaffected. The implied SUR coefficients on the change in income, in net taxes, and the error

<sup>14</sup> See, among others, Samwick, 1998; Hubbard and others, 1996; Leimer and Richardson, 1992.

correction mechanism are somewhat larger (in absolute terms) than the unrestricted estimates reported in Table 1, but remain within one-and-a-half standard deviations of the unrestricted values in all cases.

31. **Further, the myopic model is extended to allow for a proportion  $\theta$  of consumers to be credit constrained.** The results, reported in Table 4, suggest that including credit constraints provides no benefit to the myopic model. In this specification, both the proportion of credit constrained consumers and the excess discount rate are poorly estimated, so that the model becomes observationally equivalent to a purely Ricardian one.

32. **The possible role of supply effects is also investigated.** This is done by adding a negative supply effect in addition to the losses to consumption from a higher long-term net tax rate. To simplify interpretation of the coefficient on the supply effect, it is calculated as a multiple of this permanent change in taxes. Hence, for example, a coefficient of  $\frac{1}{2}$  implies that supply effects lower consumption by half of the long-term increase in taxes.

33. **Unfortunately, it proved impossible to estimate the supply terms directly due to simultaneity of the regressors.** Instead, a grid search is used to identify the coefficients that minimized the Wald test of coefficient restrictions on the unrestricted model. This procedure implies extremely small coefficients of 0.05 for the direct estimation and 0.10 for the instrumented regression. Both estimates are well below the magnitude of the parameter on the disincentive to work from taxes assumed in many microfounded “dynamic stochastic general equilibrium” models relying on the Frisch elasticity of labor supply.<sup>15</sup>

34. **As can be seen in Table 4, imposing these coefficients results in extremely similar estimates of the other parameters in the model.** Consequently, the only real change in the properties of the equation is that the implied coefficient on the change in net taxes is reduced in absolute value, from -0.11 to -0.07 in the direct estimation and -0.13 to -0.09 when instruments are used. In sum, while plausible supply effects are statistically indistinguishable from the basic model, they do somewhat reduce the implied size of fiscal multipliers.

#### D. Some Analysis

35. **A fundamental feature of the intertemporal model used in this chapter is that the impact of a change in income/net taxes on consumption depends on its characteristics**—its persistence, whether it is anticipated or not, and the degree to which consumers are myopic. This section explores these interactions in more detail.

36. **First, the impact of a change in income/net taxes is assessed for any given level of myopia.** In particular, the wedge of the discount rate over the real interest rate is assumed to

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<sup>15</sup> Laxton and Pesenti (2003), for example, consider a Frisch elasticity of labor supply equal to 0.3, whereas Coenen and others (2005) calibrate the parameter at 0.5.

be 6 percent, in line with the parameter values reported in Table 2. Figure 2 graphs how the impact of a change in disposable income on consumption varies with its type (underlying income or net taxes), its persistence (measured on the x-axis), and whether it is anticipated or not. The upper line shows the effect of an unanticipated change in underlying income, which rises steadily from around 10 cents per euro for a temporary change to a one-for-one impact if the change is permanent, with rates of convergence of income disturbances of 50, 25, and 10 percent a year giving rise to consumption multipliers of one-sixth, one-fourth, and one-half, respectively. The impact of a fully anticipated change in income (or net taxes) follows a similar path, but the effects are shrunk by about one-half as there is no boost to consumption from unanticipated saving.

**37. The effect of an unanticipated change in net taxes is even lower because of the Ricardian offset.** The net tax multiplier rises from around 5 cents per euro to peak at just below 20 cents for a shock that converges at 10 percent a year. At convergence rates below 5 percent, the multiplier starts to fall as the Ricardian offset increases more rapidly. Indeed, it falls to zero for a “permanent” shock to net taxes, as this violates the intertemporal budget constraint and hence the “change” in taxes is fully offset by the movement in the long-term tax rate. The difference in consumption multipliers coming from unanticipated increases in underlying income and from equivalent changes in net taxes rises steadily as the changes become more persistent—from 4 cents for a temporary disturbance to 7, 14, and 29 cents at convergence rates of 50, 25, and 10 percent, respectively—as the Ricardian offset becomes more pertinent.

**38. The impact of an unanticipated change in income varies with its own persistence as well as with the level of consumers’ myopia.** The upper panel in Figure 3 plots the size of fiscal multipliers associated with an unanticipated change in income, as the private sector discount wedge is varied from 2 to 12 percent—the span of estimates in the range of  $\pm$  two standard errors. The impact of unanticipated changes in income rises as the level of myopia increases, and, even though the multipliers all converge to unity for a permanent change in income, these differences are quite persistent across plausible levels of income persistence. For example, the difference in income multipliers implied by a 6 and 12 percent wedge rises slowly from 5 cents per euro for a temporary income disturbance to around 12 cents for disturbances with moderate to long levels of persistence (from 40 percent a year to 10 percent). The difference falls rapidly only at persistence levels lower than 5 percent a year, but the longevity of such processes appears implausible (the half life of a change is well over a decade).

**39. The impact of net taxes on consumption also increases with myopia.** The lower panel of Figure 3 repeats this exercise for unanticipated changes in net tax rates rather than income. Temporary tax changes raise consumption by 2-10 cents per euro depending on the size of the discount wedge, and these changes peak at 10-33 cents for convergence rates slightly below 10 percent. Again, the differences in multipliers produced by different values of the wedge in the discount rate are relatively persistent—the difference between a 6 percent and 12 percent wedge is 5-10 cents per euro for all reasonable rates of convergence.

40. **The model also allows for a calculation of the dynamic effects on consumption of a policy change.** As can be seen in the top panel of Figure 4, a long-lived reduction in net taxes produces an initial boost to consumption that erodes slowly before leading to a significant permanent reduction in consumption, reflecting the substantial increase in net taxes needed to pay for the implied rise in debt. By contrast, a short-lived increase in net taxes leads to a smaller boost to consumption that dissipates much faster, but the long-term effects are comparable. The middle panel shows that adding supply effects with a coefficient of 0.05 lowers the short-term benefits to consumption and raises the long-term losses. As these effects are larger for longer-lived change in net taxes, this also reduces the difference in multipliers between short- and long-term tax changes. Given the estimated low persistence of the changes in net taxes, unanticipated and anticipated shocks to taxes and transfers end up having similarly small effects on consumption, as shown in the bottom panel.

41. **The final issue discussed in this chapter refers to the possibility that large fiscal contractions could be expansionary.** It has been argued that fiscal consolidations can be expansionary due to their effects on private sector expectations concerning future taxation. If forward-looking consumers anticipate long-run tax reductions because of cuts in expenditure today, then they may increase expenditure now and so offset the direct effects of the fiscal contraction. This perverse effect, which has spawned a significant literature, is often ascribed to beneficial supply-side effects, such as incentives for labor participation. Our own calculations suggest that even if the large deficit were assumed relatively long-lived, the supply benefits on income would need to be several times the implied long-term change in net taxes, a result that strikes us as implausible. More likely, in our view, is that the economy is boosted by two further mechanisms. First, the expected value of the real interest rate may fall. Such a change would provide a direct boost to the economy and would also tend to increase the Ricardian offset, thereby cushioning consumption from the impact of fiscal consolidation. The second effect comes through expectations of the rate of future consolidation. As the effect of fiscal policy on consumption depends on the net present value of the future path of net taxes, a large fiscal consolidation conveying expectations that future consolidation will occur more slowly may offset the impact of higher taxes on the net present value of income.

## **E. Some Conclusions**

42. **The chapter provides estimates of fiscal multipliers based on an intertemporal model for nondurable consumption where households are myopic, namely they discount the future at a higher rate than the prevailing real rate of interest.** In such a theoretical framework, the impact of any shock to income/net taxes on consumption depends on three characteristics—the persistence of the shock, whether it is anticipated or not, and the discount wedge, i.e., the consumers' excess of discount with respect to the market rate.

43. **The estimated excess rate of discount is of the order of 6 percent—broadly consistent with previous findings for Italy indicating negligible direct effects from changes in taxes or transfers on consumption and, thereby, on growth.** The model does not produce a single estimate of the multiplier associated with (say) income taxes. Rather,

this value can vary between 5 and 20 cents per euro, depending on longevity of the disturbance and the degree to which it is anticipated. Historically, shocks to the net tax rate have been extremely short-lived, implying point estimates in the low end of the range. Strikingly, adding credit constrained consumers to the myopic model does not improve the fit. On the other hand, adding supply effects generates some reductions in the estimated multipliers, but the results are statistically indistinguishable from the baseline model.

44. **A low discount wedge has broad policy implications.** If most people discount the future at a rate just slightly higher than the borrowing rate for the government, the direct real effects of fiscal policy on consumption are likely to be limited. Similarly, the implied low discount wedge suggests that households might smooth the future expected effects of pension reforms over their lifetime consumption by engaging in greater accumulation of assets.

45. **Overall, the main advantage of our framework is that it brings the intertemporal nature of disturbances to income, taxes, and transfers back to the fore of analysis.** Thinking of fiscal policy in an intertemporal setting provides a range of insights. For example, to the extent that automatic stabilizers associated with the economic cycle are less persistent than other policy changes, they will be associated to smaller multipliers. Similarly, while it is unlikely that large fiscal contractions could be expansionary purely due to supply effects, it is possible that reductions in the real interest rate and changes in the assumed longevity of future tax cuts also play a role. Last but not least, the theoretical framework employed in the paper also allows one to distinguish the short-sightedness of consumers—which is mirrored by the wedge between their own discount rate and the borrowing rate of the government—from short-sightedness of fiscal policy—which determines the risk premium on government bonds. Such a distinction is crucial both from a normative and from a positive standpoint. Indeed, while the former can be seen as a structural parameter reflecting preferences, the latter is policy-determined and is therefore unlikely to be time invariant.

Table 1. Italy: Estimates of Unrestricted Model

$$\Delta c_t = \alpha^c + \beta^y \Delta y_t + \beta^t \Delta t_t + \beta^{ecm} (c_{t-1} - \mu(y_{t-1} + t_{t-1})) + \varepsilon_t^c$$

$$\Delta y_t = \alpha^y + \gamma^{trend} trend + \gamma^{ecm} y_{t-1} + \varepsilon_t^y$$

$$\Delta t_t = \alpha^t + \tau^y \Delta y_t + \tau^{ecm} t_{t-1} + \varepsilon_t^t$$

	<i>No Instrumental Variables</i>	<i>Instrumental Variables</i>
<b>Consumption equation</b>		
$\alpha^c$	.48 (.08) **	.49 (.01) **
$\mu$	.40 (.13) **	.42 (.09) **
$\beta^y$	.08 (.04) **	.08 (.08) **
$\beta^t$	-.38 (.35)	-.48 (.38)
$\beta^{ecm}$	-.16 (.07) **	-.17 (.06) **
$R^2$	.66	.66
$DW$	1.45	1.41
<b>Income equation</b>		
$\alpha^y$	1.67 (.14) **	1.63 (.14) **
$\gamma^{trend}$	.020 (.002) **	.020 (.002) **
$\gamma^{ecm}$	-.35 (.03) **	-.34 (.03) **
$R^2$	.85	.85
$DW$	1.71	1.70
<b>Net tax rate equation</b>		
$\alpha^t$	-.03 (.01) **	-.03 (.01) **
$\tau^y$	-.04 (.02) **	-.07 (.03) **
$\tau^{ecm}$	-.45 (.12) **	-.41 (.12) **
$R^2$	.19	.08
$DW$	2.11	1.96
<b>Wald test of coefficient restrictions</b>		
Myopic model: $\chi^2(2)$	4.0	5.2
Credit constrained consumers: $\chi^2(2)$	5.9	5.5

Notes: Instrumental variable estimates used system GMM with instruments comprising all independent variables except the change in income, plus the first two lags of this change. Non-instrumental variable model was estimated using seemingly unrelated regressions. One and two asterisks denote that the coefficient is different from zero at 5 and 1 percent significance level, respectively.

Table 2. Italy: Estimates of Restricted Model with Myopic Consumers

$$\Delta c_t = \alpha^c + \frac{1}{r + \lambda - \gamma^{ecm}} (\lambda \Delta y_t + r \varepsilon_t^y) - \frac{\lambda}{r + \lambda - \tau^{ecm}} \left( 1 - \frac{r}{r - \tau^{ecm}} \right) \Delta t_t$$

$$- \frac{\lambda}{1 + \lambda} (c_{t-1} - (y_{t-1} + t_{t-1})) + \varepsilon_t^c$$

$$\Delta y_t = \alpha^y + \gamma^{trend} trend + \gamma^{ecm} y_{t-1} + \varepsilon_t^y$$

$$\Delta t_t = \alpha^t + \tau^y \Delta y_t + \tau^{ecm} t_{t-1} + \varepsilon_t^t$$

	<i>No Instrumental Variables</i>	<i>Instrumental Variables</i>
<b>Consumption equation</b>		
$\alpha^c$	.37 (.04) **	.04 (.01) **
$\lambda$	.06 (.00) **	.06 (.02) **
$\gamma^{ecm}$	-.36 (.03) **	-.34 (.03) **
$\tau^{ecm}$	-.30 (.08) **	-.38 (.14) **
$R^2$	.64	.66
$DW$	1.65	1.55
<b>Income equation</b>		
$\alpha^y$	1.74 (.15) **	1.66 (.15) **
$\gamma^{trend}$	.016 (.002) **	.016 (.002) **
$R^2$	.80	.81
$DW$	1.48	1.47
<b>Net tax rate equation</b>		
$\alpha^t$	-.02 (.01) **	-.03 (.01) **
$\tau^y$	-.04 (.02) **	-.06 (.04) *
$R^2$	.18	.12
$DW$	2.13	2.03
<b>Implied Coefficients</b>		
$\hat{\beta}^y$	.22	.13
$\hat{\beta}^t$	-.13	-.11
$\hat{\beta}^{ecm}$	-.06	-.06

Notes: See Table 1.

Table 3. Italy: Estimates of Restricted Model with Credit Constrained Consumers

$$\Delta c_t = \alpha^c + \left[ \theta + \frac{(1-\theta)\lambda}{r + \lambda - \gamma^{ecm}} \right] \Delta y_t + \frac{(1-\theta)\lambda r}{r + \lambda - \gamma^{ecm}} \varepsilon_t^y - \left\{ \theta + (1-\theta) \frac{r}{r + \lambda - \tau^{ecm}} \left[ 1 - \frac{r}{r - \tau^{ecm}} \right] \right\} \Delta t_t - \left[ \theta + (1-\theta) \frac{\lambda}{1 + \lambda} \right] (c_{t-1} - (y_{t-1} + t_{t-1})) + \varepsilon_t^c$$

$$\Delta y_t = \alpha^y + \gamma^{trend} trend + \gamma^{ecm} y_{t-1} + \varepsilon_t^y$$

$$\Delta t_t = \alpha^t + \tau^y \Delta y_t + \tau^{ecm} t_{t-1} + \varepsilon_t^t$$

	<i>No Instrumental Variables</i>	<i>Instrumental Variables</i>
<b>Consumption equation</b>		
$\alpha^c$	-.14 (.01) **	.04 (.01) **
$\theta$	.04 (.24)	.07 (.13)
$\lambda$	.06 (.10)	.03 (.05)
$\gamma^{ecm}$	-.35 (.03) **	-.34 (.03) **
$\tau^{ecm}$	-.34 (.08) **	-.40 (.13) **
$R^2$	.54	.50
$DW$	1.53	1.39
<b>Income equation</b>		
$\alpha^y$	1.68 (.16) **	1.66 (.15) **
$\gamma^{trend}$	.020 (.002) **	.016 (.002) **
$R^2$	.81	.81
$DW$	1.46	1.47
<b>Net tax rate equation</b>		
$\alpha^t$	-.03 (.01) **	-.03 (.01) **
$\tau^y$	-.04 (.02) **	-.06 (.03) **
$R^2$	.17	.10
$DW$	2.07	2.00

Notes: See Table 1.



Table 4. Italy: Estimates of Restricted Model with Myopic Consumers and Supply Effects

$$\Delta c_t = \alpha^c + \frac{1}{r + \lambda - \gamma^{ecm}} (\lambda \Delta y_t + r \varepsilon_t^y) - \frac{\lambda}{r + \lambda - \tau^{ecm}} \left( \Delta t_t - \frac{r}{r - \tau^{ecm}} \varepsilon_t^t \right) - \frac{\lambda}{1 + \lambda} (c_{t-1} - (y_{t-1} + t_{t-1})) + \beta^s \frac{r}{r - \tau^{ecm}} + \varepsilon_t^c$$

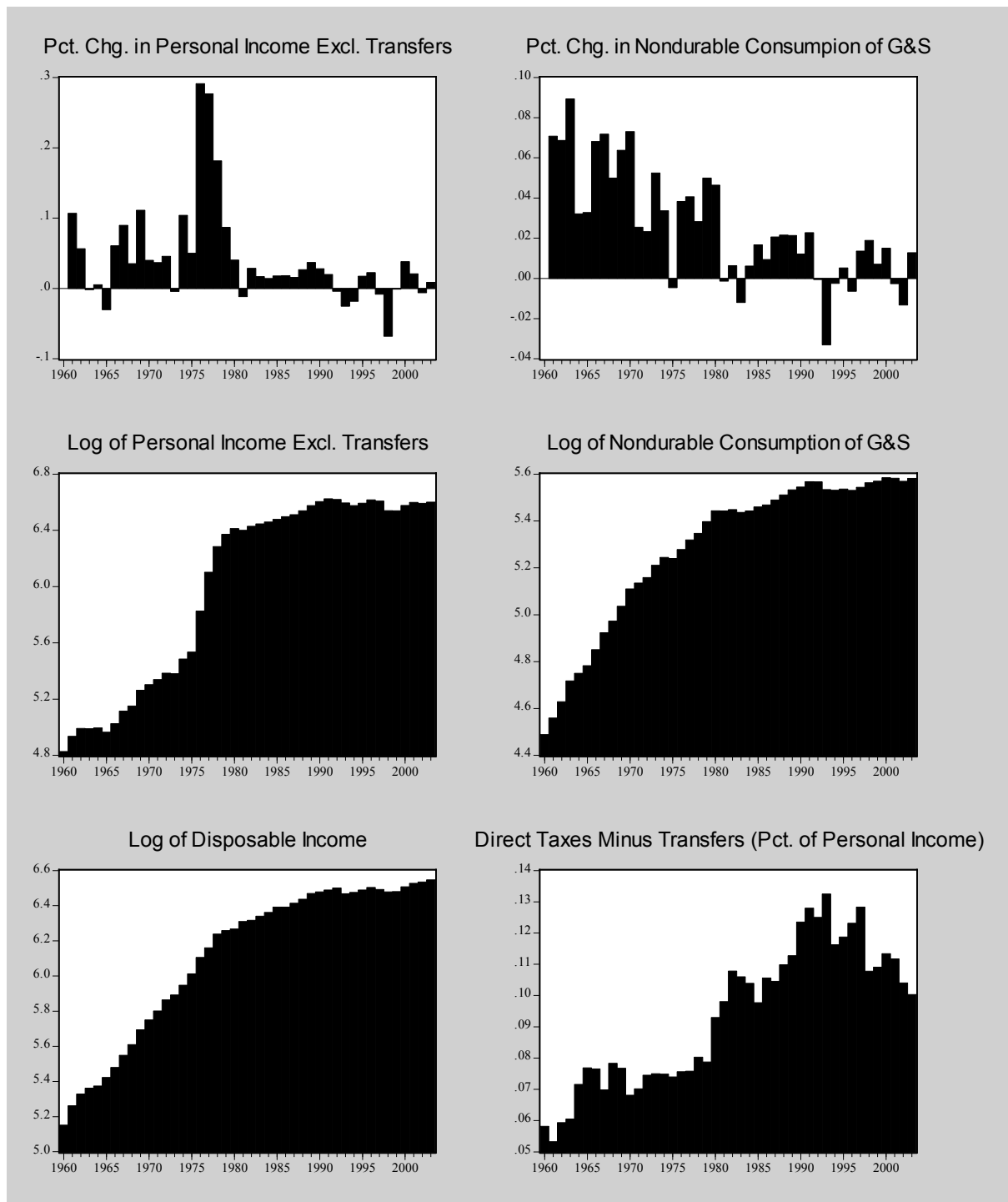
$$\Delta y_t = \alpha^y + \gamma^{trend} trend + \gamma^{ecm} y_{t-1} + \varepsilon_t^y$$

$$\Delta t_t = \alpha^t + \tau^y \Delta y_t + \tau^{ecm} t_{t-1} + \varepsilon_t^t$$

	<i>No Instrumental Variables</i>	<i>Instrumental Variables</i>
<b>Consumption equation</b>		
$\alpha^c$	.37 (.04) **	.04 (.01) **
$\beta^s$	.05 (--)	.10 (--)
$\lambda$	.06 (.00) **	.07 (.03) **
$\gamma^{trend}$	-.12 (.03) **	-.16 (.06) **
$\tau^{ecm}$	-.30 (.08) **	-.38 (.13) **
$R^2$	.64	.50
$DW$	1.65	1.35
<b>Income equation</b>		
$\alpha^y$	1.74 (.15) **	1.66 (.15) **
$\gamma^{trend}$	.016 (.002) **	.016 (.002) **
$R^2$	.80	.81
$DW$	1.48	1.47
<b>Net tax rate equation</b>		
$\alpha^t$	-.02 (.01) **	-.03 (.01) **
$\tau^y$	-.04 (.02) **	-.06 (.03) **
$R^2$	.18	.12
$DW$	2.14	2.04
<b>Implied Coefficients</b>		
$\hat{\beta}^y$	.22	.16
$\hat{\beta}^t$	-.09	-.07
$\hat{\beta}^{ecm}$	-.06	-.07

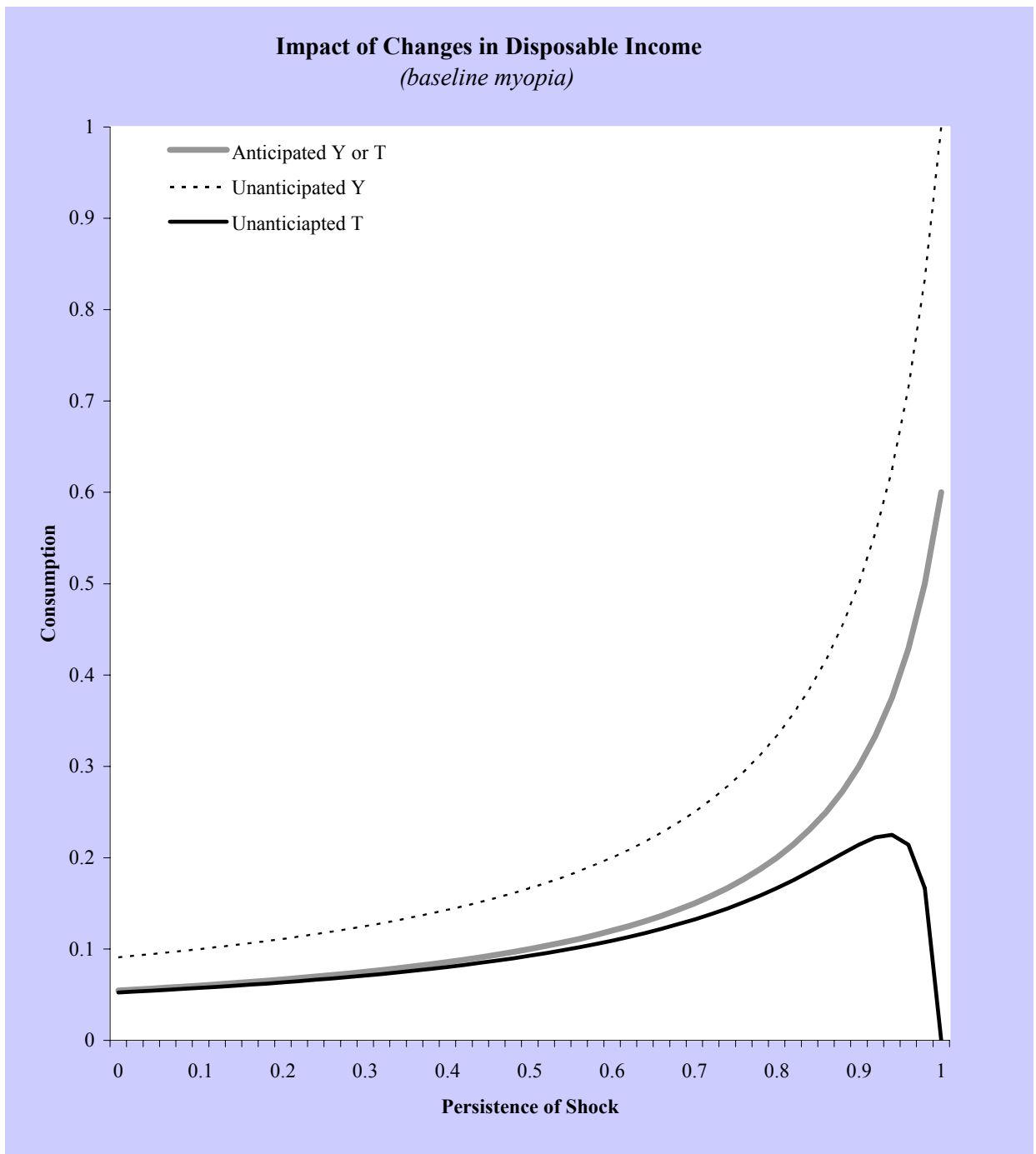
Notes: See Table 1.  $\beta^s$  was estimated using grid search methods.

Figure 1. Italy: The Data



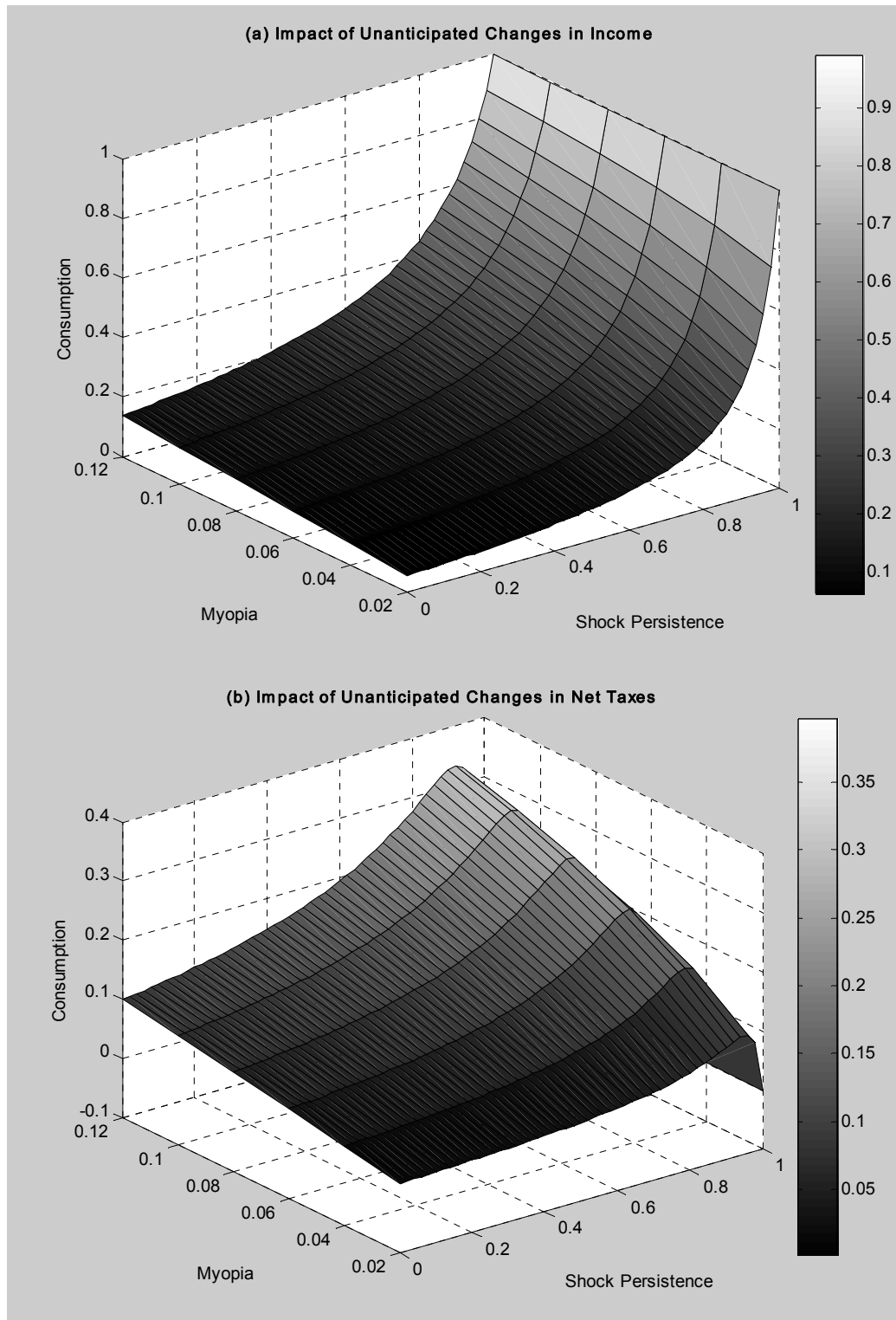
Source: ISTAT, OECD, and IMF staff calculation.

Figure 2. Italy: Impact of Changes in Disposable Income



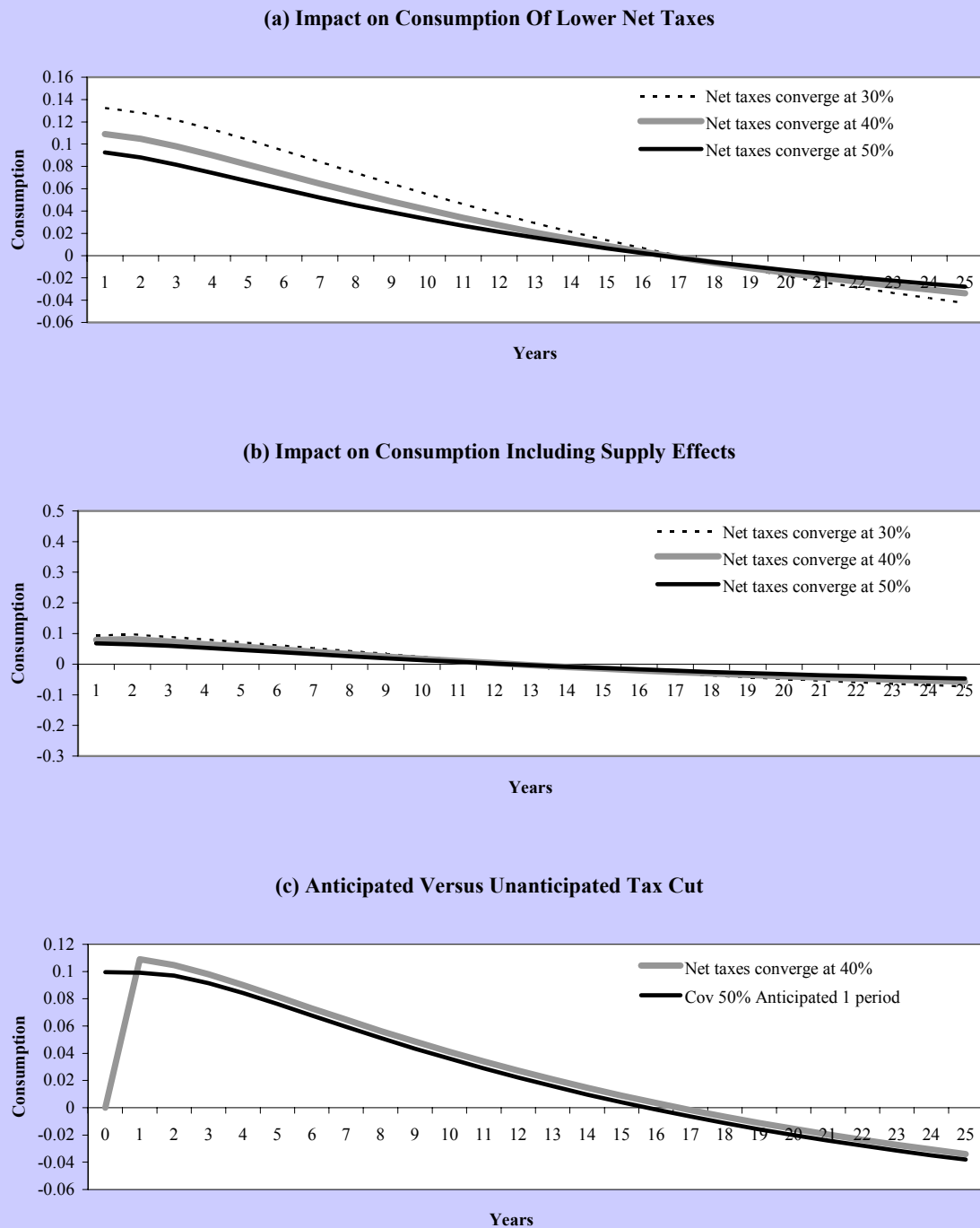
Source: ISTAT and IMF staff calculation.

Figure 3. Italy: Impact of Changes in Disposable Income for Different Degrees of Myopia



Source: ISTAT, OECD, and IMF staff calculation.

Figure 4. Italy: Impact of Lower Net Taxes



Source: ISTAT and IMF staff calculation.

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## V. INFRASTRUCTURE INVESTMENT AND PPPS<sup>1</sup>

### Core Questions, Issues, and Findings

- **What is the *aim* of the chapter?** The chapter looks at issues related to infrastructure investment in Italy. Revamping key infrastructure projects is an important objective of the Italian government, as these are seen as an engine for future growth. In an environment of tight budget constraints, Public Private Partnerships (PPPs) also represent a promising avenue to involve the private sector in the provision of infrastructure services; accordingly, recourse to PPPs is increasing in Italy, although from a very low base.
- **What are the main *results* of the analysis?** Despite policy intentions, the number of project completed to date has fallen short of plans. While financing constraints have played a role, other factors appear to limit severely implementation capacity, including administrative hurdles, inadequate project selection and evaluation, and a general lack of coordination and monitoring of public projects.
- **What are the *policy implications* of this chapter's findings?** Project prioritization and evaluation should be strengthened, especially at the local level. In addition, transparency in the recording of PPPs and associated contingent liabilities, including in budget documentation, should be ensured. As these operations may involve significant government obligations in the future, these measures will be essential to safeguard fiscal sustainability in Italy's high debt environment.

### A. Background

1. **Promotion of infrastructure projects has long been on the agenda of the Italian government.** The authorities have repeatedly stated their intention to increase public investment, as a key driver to higher growth and productivity. A number of initiatives in recent years, including the adoption of a framework law on “strategic” public projects in 2001, have sought to revamp infrastructure programs. However, policy intentions have often clashed with the reality of tight budgetary envelopes and sluggish bureaucratic procedures, and the government is concerned that infrastructure investment is lagging.<sup>2</sup>

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<sup>1</sup> Prepared by Annalisa Fedelino (FAD).

<sup>2</sup> For example, the Medium-Term Economic Program (DPEF 2006-2009) issued in July 2005 states that “the endowment of infrastructure is below that of other European partners” and “investing in infrastructure projects [...] is an absolute priority for economic policy” (page 36). The report is available at [http://www.mef.gov.it/Documentazione/DPEF\\_2006-2009/DPEF\\_2006-2009.pdf](http://www.mef.gov.it/Documentazione/DPEF_2006-2009/DPEF_2006-2009.pdf). These objectives were repeated in the December 2005 update of Italy's Stability Program.

2. **In this environment, public private partnerships (PPPs) might be seen as an attractive alternative to direct public investment in infrastructure.** The authorities are mindful, however, that the private sector will not participate in the construction and provision of infrastructure services without a supporting regulatory and legal framework. While PPPs are increasingly being used in Italy, they nonetheless remain at a very low level, especially when compared to experiences in other advanced economies.

3. **This paper reviews the recent experience with public infrastructure investment and PPPs.** It illustrates the legislative and institutional framework for public investment and PPPs, highlights the experience so far, and offers some policy suggestions for further development in these areas. The main conclusion is that Italy's project selection and execution currently appear to fall short of best-practice (see IMF, 2004). Also, while PPPs may bring efficiency gains in the provision of infrastructure services, they also harbor risks that may have adverse implications for fiscal sustainability over the medium term. Priority should therefore be given to ensuring that projects are properly selected and planned, and that clear and transparent accounting rules and reporting procedures are followed.

#### **B. Public Investment Projects: Too Few or Too Many?**

4. **Italy's public investment declined in the early 1990s, but has recovered somewhat in recent years** (Figure 1). As a share of GDP, public investment dropped from above 3 percent in 1991 to just above 2 percent in 1995, and increased again to below 3 percent in the last few years. In addition to fiscal consolidation efforts in the run-up to EMU entry, the slowdown in the mid-1990s was also due to the impact of judicial investigations into public works irregularities, with some projects being interrupted as a result. More generally, declining public investment is not necessarily a worrisome sign, as a general trend toward a smaller public sector is reflected in lower public investment figures.<sup>3</sup>

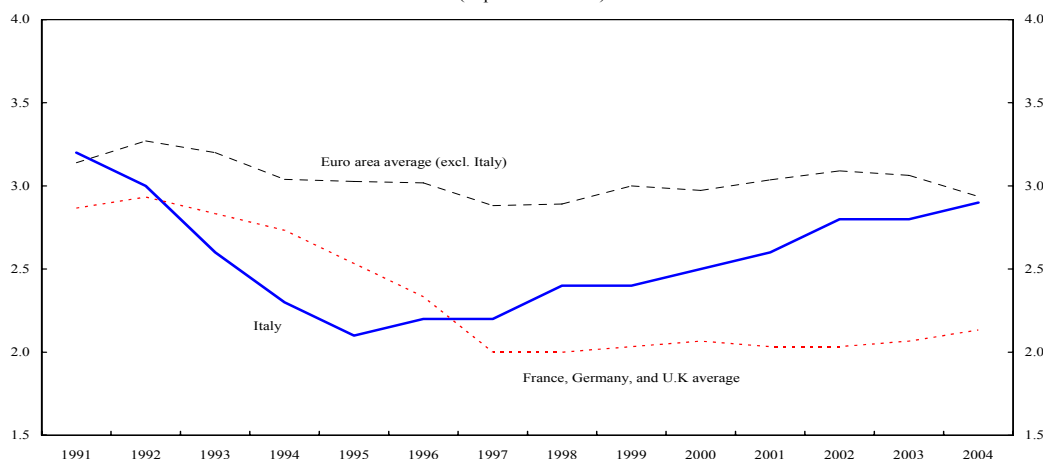
5. **At the beginning of this decade, a number of initiatives were promoted to bolster public investment.** In 2001, a new legislative framework for public projects was introduced, the so called Objective Law (*Legge Obiettivo* 443/2001), followed by implementing regulations in 2002 (legislative decree 190/2002). The main purpose was to streamline the realization of public works defined to be "strategic and of major national interest" by establishing new and simpler procedures for authorizations and permits (Box 1). Along with the Objective Law, a Strategic Infrastructure Program (*Programma Infrastrutture Strategiche*) was approved in December 2001. The program was formulated by the interministerial committee on economic planning (CIPE) in consultation with regional authorities; it originally foresaw total spending of €125.8 billion over a decade to promote major infrastructure projects. These included highways and railways, the construction of three mountain passes, rehabilitation of urban areas, installation of a hydrological system in the South, a bridge over the Messina strait, and a project for the Venice lagoon—for a total

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<sup>3</sup> IMF (2004) discussed these trends and issues in more detail.

of more than 220 projects. While some projects were new, others had long been in the making (for example, since the 1970s for the Salerno-Reggio Calabria highway) and were supposed to receive new impetus from the reform. Being the result of coordinated efforts across various level of governments, the program held the promise of faster and better selection and implementation of projects.

**Figure 1. Public Investment, 1991-2004 1/**  
(in percent of GDP)



Source: Eurostat.

1/ Data for Italy exclude sales of assets as of 2000 (which are recorded as negative capital spending under Eurostat accounting rules); sales of assets in the previous years were negligible. For the other countries, data include sales of assets and therefore may not be comparable.

### Box 1. Strategic Infrastructure Projects and the Objective Law

**The 2001 Objective Law established a fast-track system for “strategic” infrastructure projects identified by the central government, in cooperation with local governments.** The central player in this new framework is the “general contractor” (introduced by legislative decree 190/2002), who is responsible for *“the execution, by all means, of a work corresponding to the specific requirements of the contracting authority.”* The general contractor will enter in a time-bound, fixed-price turnkey contract with the awarding authority, according to a design, build, finance and transfer scheme (DBFT). As the general contractor is not responsible for the operation of the new infrastructure, which is transferred to the awarding authority upon completion of construction, projects undertaken under this framework are close to traditional procurement—where the private sector is involved in the construction, but not the management, of a project (the latter being a main feature of PPPs, see below).

**In contrast to a traditional procurement contract, the general contractor is responsible for all stages of project construction and has more flexibility in undertaking them.** While the awarding authority remains in charge of outline design, the general contractor is responsible for developing final design, securing all the necessary authorizations and permits, carrying out the construction—that can be sub-contracted in whole or in part to third parties—and for pre-financing (in whole or in part) the construction phase. Accordingly, the procedure under legislative decree 190/2002 is called “integrated procurement.” The possibility of assigning part of the work to third parties is the major novelty of this framework—this is supposed to result in faster execution, as tendering for subcontracts is not required. At the same time, if the project needs modifications, the general contractor can introduce them more freely than otherwise foreseen by the law for “standard” (non-strategic) projects. The law also sets time requirements for the various stages of project design (see Box 2).

6. **Despite its original intentions, the Objective Law has so far not delivered the intended results.** A recent report on the law's implementation prepared by the Services of the Chamber of Deputies points to a mixed record; another report by the Court of Auditors identifies a number of pitfalls.<sup>4</sup>

- *Insufficient project definition and specification.* This is more acutely felt at the local government level, where projects are selected and awarded.
- *Duplication of tasks.* In many cases, various agencies are duplicating valuations and project assessments, leading to unnecessary implementation delays.
- *Piece-meal approach to projects.* Implementing agencies focus on individual projects, rather than adhering to the overall strategic plan.
- *Inadequate financial coverage versus excessive number of projects.* From the beginning, there was a significant gap between the program's financing requirements and the available funding. While this could have led to better project prioritization, in practice it has led to "trickle" financing (*finanziamento a pioggia*), with limited resources being dispersed across a large number of projects (and resulting in insufficient financing for most of them).
- *Long and heterogeneous implementation.* Excessive implementation lags carry the risk of cost overruns and redefinition of projects.
- *Insufficient monitoring.* There is a lack of periodic and standardized reporting on project implementation. Work interruptions—often due to inadequate planning or weak execution and payment delays—are a major source of financial penalties. There also seems to be a general lack of knowledge about available funding and status of implementation of ongoing projects—even for completed projects: the Court could not find comprehensive records of incurred costs or possible contingent liabilities.

7. **Financing constraints may have contributed to the impression that too few public projects are undertaken in Italy, but the main problem appears to be institutional.** Lack of proper prioritization and procedural hurdles may have led to lower-quality projects being initiated at the expense of higher-return ones, and insufficient strategic planning may have resulted in very few projects being completed within the timelines established in the original contracts. A review of delays in implementing projects, regardless of their "strategic status," is sobering (Box 2).

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<sup>4</sup> Servizio Studi Camera dei Deputati (2005) and Corte dei Conti (2005). See also Virno (2005).

## Box 2. Public Projects: How Long Do They Take?

**Very long.** A recent study by the National Association of Builders (ANCE, 2005) presents results for a sample including 144 infrastructure projects (with a price tag of more than €10 million), subdivided in three groups:

- 50 “regular” projects (not covered by the Objective Law);
- 74 strategic projects included in the Strategic Infrastructure Program (of which 37 enjoyed the “expedited” approval procedures);
- 20 completed projects.

Each project is classified into eight implementation stages: three for project design (preliminary, final, and executive), tendering setup, tendering, construction startup (“consegna lavori”), construction, and final testing (“collaudo”). This allows a comparison across projects that follow different procedures.

**Project design alone required between some 1,400 days (4 years) and 2,200 days (6 years) on average for regular projects, with longer periods for larger projects (more than €50 million).**

Implementation lags for large infrastructure projects: from design to construction startup

Project amount	Project design				Tendering setup	Tendering	Construction startup
	Preliminary	Final	Executive	Total			
Non strategic projects							
< Euro 50 million	427	517	486	1,430	131	259	108
> Euro 50 million	554	1,143	552	2,249	172	430	58
							660
Strategic Projects (Law 190/2002)	421	> 365	n.a.	n.a.	n.a.	n.a.	n.a.
Days required by Law 190/2002	180	210					

Source: ANCE (2005).

**Once project design is complete, subsequent stages proceed faster, but only in relative terms.** The preparation of tendering documents, the actual tendering and the official startup of construction account for an additional 500 to 700 days, for smaller and larger projects, respectively. The tendering process is longest for road projects, where ANAS (the public road company) is found to be the slowest awarding authority.

**In all, projects design and selection take an average of 5 to 8 years—still excluding actual construction.** This is for the 50 non-strategic projects in the sample currently under implementation. For the 20 completed projects, delays were also significant (46 percent above the time required under the related contracts); the average implementation time was over six years.

**Surprisingly, implementation delays are not shorter for “strategic” projects, where the expedited procedures do not seem to be effective.** Out of the 37 projects eligible for expedited approval procedures, only one has received final design approval to date. For 12 projects that completed the preliminary design, the average time was 14 months (421 days, see table), 8 months longer than mandated by the law (180 days). For 10 projects that are still waiting for preliminary approval, the accumulated delay was 21 months at the time of the report’s publication. No strategic project has been completed to date.

**According to the ANCE report, a number of factors explain these delays.** Lack of prioritization and an excessive number of projects crowd out more meritorious interventions, clog administrative channels, and dilute financing across too many initiatives. The impact of litigation on implementation delays is significant: about one-third of projects under the Objective Law have been litigated (this share is 15 percent for regular projects). Better coordination among the involved entities would help minimize litigation risks.

8. **The private sector has so far played a limited role, but there is scope for progress.** The Court of Auditors report finds that uncertainty about project execution and timing, and costs and complexity of administrative procedures represent a deterrent to more significant participation of the private sector in investment projects. Some projects may also be simply too big to attract private sector participation, as was the case, for example, with the high speed train project (Box 3). However, there are reasons to believe that, if underlying weaknesses are properly addressed (as the authorities are doing in some areas), PPPs will help realize and manage some important infrastructure projects.

### **Box 3. High Speed Trains: From private to public**

**Treni Alta Velocita' (TAV) is the largest public investment project ever attempted in Italy.** The first stage (covering the axis Turin-Milan-Naples) is estimated to cost some €30 billion (2.5 percent of GDP) and is slated to be completed by 2009. It will be followed by a Genoa-Milan-Verona-Padua connection costing an additional €14 billion, to start operating in 2012/13. TAV is a special project company of Rete Ferroviaria Italiana (RFI, fully owned by the Ministry of Economy and Finance); it coordinates and manages all the construction related to this project (as a general contractor to build the tracks, with sub-contractors to build the urban junctions, according to the framework established by law 190/2002, see Box 1).

**At its inception in 1991, TAV was a joint venture company with private shareholders in the majority.** Its capital was provided by the government (43 percent) and the private sector (57 percent, composed of a consortium of major investment banks). In 1994, a state guarantee (guarantee of last resort) on TAV operations was introduced.

**In 1998, TAV was converted into a publicly-owned company—due to concerns about uncertain costs, implementation lags, and inadequate future revenue.** All its capital was taken over by RFI. Over time, the need to secure firm financing for such a costly program became more evident. The budget law for 2003 established that TAV is to be fully financed by Infrastrutture Spa (ISPA).<sup>1</sup> To date, TAV can rely on total financing of some €30 billion (from ISPA, of which about one third has already been made available) plus €5 billion in pre-ISPA financing.

**The TAV project has received new impetus under the Objective Law.** The latter has helped reduce implementation delays, which used to be very long. For example, for the Turin-Novara connection (some 90 Km), the project design stage required 6 years, even more than actual construction (5 years, to be completed in early 2006).

**When operating, TAV will not produce cash receipts sufficient to cover its debt service payments.** TAV will repay its loans over the period 2009-2043 via fixed payments (“*canone di esercizio*”). According to the 2003 Budget Law (article 75), in order to safeguard ISPA’s economic and financial balance, the state will integrate debt service costs that cannot be compensated by using the cashflow receipts from TAV; according to estimates provided by TAV, the state contribution will need to cover about half of these costs.<sup>2</sup>

**In principle, debt contracted by ISPA and onlent to TAV would not be counted as government debt.** However, Eurostat decided in May 2005 that ISPA’s debt contracted to finance TAV has to be included in government debt, as ISPA was found not to be carrying any risk, due to a state guarantee on RFI operations.

<sup>1</sup> Infrastrutture Spa (ISPA) is a financial intermediary created in 2001 and owned by the Cassa Depositi e Prestiti (see below). Its mandate is to provide long-term lending to help finance major infrastructure projects jointly with private sector companies, either directly or indirectly via the issuance of state guarantees.

<sup>2</sup> <http://www.tav.it/1/default.asp?id=90&codice=1&codice1=006>.

### C. PPPs: A Viable Alternative to Public Investment?

9. **In Italy, infrastructure projects have traditionally been financed by the state; PPPs were formally established only recently.** Although concessions, under which the private sector builds infrastructure assets and operates them only for a number of years, have existed since 1929, PPPs were formally established in 1998, when a series of amendments was introduced in the main framework law on public works (Box 4).

#### Box 4. The legal framework for PPPs in Italy

**The 1994 Merloni Law represents the main legal framework for private sector participation in the construction and operation of public infrastructure.** This law (Framework Law for Public Works 109/94, amended by Law 415/1998 and, more recently, by Law 166/2002) establishes concessions as the main contractual vehicle for the formulation and execution of a project and the provision of the related public services by the private sector.

**Under Italy's regulations, there are two main types of concessions:**<sup>1</sup>

- *Concession under public initiative*, where the public sector solicits the participation of the private sector in a project that has been selected and designed by the public administration (article 19);
- *Concession under private initiative*, where the “sponsor” (“*promotore*”) also initiates a project proposal and related design (article 37bis, introduced in 1998).

Both types of concessions are based on build-operate-transfer (BOT) schemes. Under both cases, the law mandates that each project be included in a (central or local) government's three-year investment plan and be based on a financial plan prescribing implementation methods, time requirements, financing and other factors connected with managing the project.

**The legal framework has evolved over time.** The law originally limited the public sector cash contribution to 50 percent of the total cost of a project; and a concession could not exceed 30 years. Both limits were eliminated in 2002, thus allowing more flexibility in undertaking projects—for example, the 50 percent limit had prevented the government from seeking PPPs in “accommodation services” (such as hospitals and schools), which by their nature are not amenable to generating fees from third parties receiving the related services. Under the revised legal framework, the government can now integrate the private investor's remuneration by paying service fees to the private partner.

<sup>1</sup> In addition to concession, traditional procurement is the other main typology of public works contracts, where the investor is in charge of formulation, construction, and financing of a project, without any involvement in its subsequent management. While both procurements and concessions require tendering procedures, public projects of small amounts (the so called “*lavori in economia*”) can be assigned without tendering.

10. **At present, Italy's PPP program remains small, although it is growing.** This is in line with trends in other European countries, where, with the exception of the United Kingdom and Portugal, PPPs are growing but remain limited to date.<sup>5</sup> In Italy, from a mere

<sup>5</sup> Vålilä and others (2005). In the EU, the UK accounts for almost 70 percent of the signed value of all PPP contracts (one quarter is accounted for by the London Underground project alone); Portugal accounts for an additional 10 percent of the signed value of all PPP contracts, and the rest of the EU for the remaining 20 percent. Outside the UK, PPPs in the transportation sector (in particular, roads)

(continued...)

€0.3 billion in 2000 (the first available year of data), projects called for bidding had grown to €2.4 billion (0.2 percent of GDP) in 2004—when projects under consideration reached €8.5 billion. The “mortality rate” in PPPs is very high: in most cases, procedures are started but not followed through or remain pending (Ricchi, 2004).<sup>6</sup> There are several reasons this could happen: for example, if no proposal is received from the private sector; proposals received are not deemed worthwhile by the awarding authority; or poor planning leads to the inability to carry through the necessary procedures to undertake the project. This explains why, out of an already relatively limited base of proposals, less than half actually get acted upon: over the period 2000-2004, the cumulative total amount of projects called for bidding was €9.8 billion, out of €22.8 billion of PPPs considered. As a result, the share of PPPs in the market for public works remains low, at around 10 percent.

11. **There are signs, though, that procedures are being expedited and PPPs could be increasingly used.** In the first half of 2005, the projects called for bidding (€2.8 billion, 0.3 percent of GDP) exceeded for the first time the new proposals under consideration (€2 billion), pointing to some catching up. Transportation and “public services” (mostly hospitals) account for 47 percent and 38 percent of contracts over 2000-2003, respectively. Water supply, environment, and utilities make up most of the balance.

12. **Reflecting the potentially increasing importance of PPPs, the mandate of a dedicated PPP unit at the Ministry of Economy and Finance has been expanded.** Created in 1999, the *Unità Tecnica Finanza Progetto* (UTF) had an original mandate covering mainly consulting services (technical, legal and financial) to public entities that intended to implement PPPs. Since 2002, public entities are required to secure UTF assessments when assigning feasibility studies relative to projects exceeding €10 million. For projects exceeding €50 million, UTF needs to be consulted to assess the bidding documents for concessions and related offers from private operators. Jointly with other public and private agencies, the UTF also keeps a database of PPP projects.<sup>7</sup>

13. **On the financing side, the Cassa Depositi e Prestiti (CDP) will likely take on an increasing role.** In operation since 1850, the CDP has traditionally been the main financier of local governments’ investment projects, using funds collected through the postal savings

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are dominant, and the median contract size ranges from €100-500 million. In both the UK and Portugal, annual investment through PPPs represented some 15–30 percent of total public investment during 1995–2003. In all other EU countries, PPPs make up a small portion of total public investment.

<sup>6</sup> Available information does not allow to distinguish between projects that have been dropped and projects that are still languishing.

<sup>7</sup> Data is available at <http://www.infopieffe.it>



system.<sup>8</sup> Since its transformation into a shareholding company in 2003 (with 70 percent of its capital retained by the government), CDP operations have been divided in two groups:

- Separated management (*gestione separata*), which encompasses the traditional financing operations.
- Standard management (*gestione ordinaria*), where financing is granted to private companies that carry out public service projects.<sup>9</sup>

So far, the CDP has undertaken about 10 operations under the latter, totaling €10 billion, including the highway Reggio Calabria-Salerno, the expansion of the San Raffaele hospital in Milan, the light train in Florence, and a waste disposal system in Sicily. As these operations require different accounting rules, *gestione ordinaria* was activated only in January 2005. Given that the CDP enjoys sizeable liquidity, it is likely that its role in this market will expand. Its activities will need therefore to be transparently reported and monitored.

14. **To date, recording of PPP projects is incomplete, focusing mainly on larger (central government) projects.** PPPs have so far been small and fragmented across local governments, which makes keeping track of them challenging in the absence of standardized reporting requirements. There is no obligation to record them in a consistent format. The UTF, in its advisory role for feasibility studies, has information on most of these operations; however, proper evaluation of the risks connected with PPPs is very complex and is not done in a systematic way. The national statistical agency (ISTAT) has started work in this regard, in cooperation with CIPE and UTF; and a new monitoring project supported by the ministry of health and UTF is being set up to gather information on PPPs in the health sector.

15. **Given Italy's fiscal situation, large projects have attracted (and will continue to attract) attention and are therefore more likely to be properly recorded.** The recent experience with TAV is telling in this regard (Box 3 above). However, as PPPs take hold, there is a need to capture systematically possible fiscal risks in budget reporting. Box 5 highlights some general principles for doing so.

16. **There is also a general need to improve project monitoring.** At the level of local administrations, there is a tendency to start many projects, without prioritization or due

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<sup>8</sup> The CDP accounts for a significant share of local governments' financing: including regions, the share is above 40 percent; including only municipalities and provinces, the share is over 70 percent. For small entities, the CDP is the only source of financing.

<sup>9</sup> These functions were codified in the law that transformed CDP into a shareholding company, although their names seem to have been swapped—unless it was the intent of the legislator to elevate eventually the financing of private sector's operations to the CDP's main area of activity (standard management).

consideration for financing requirements. In this regard, the eventual introduction of unified code for public projects (CUP, *codice unico di progetto di investimento pubblico*) within a computerized and standardized system of recording of all cash transactions (SIOPE) would help administrators keep track of existing projects. By providing a powerful monitoring mechanism for public projects (for example, by signaling when projects are not moving ahead), CUP will also serve as an instrument to enhance accountability.<sup>10</sup> As SIOPE is implemented, the authorities intend to proceed with the introduction of CUP.

### **Box 5. Some General Principles for Proper Accounting of PPPs**

**Should PPP-related assets and liabilities be recorded on or off a government's balance sheet?** According to a 2004 Eurostat decision, PPI projects should be classified as non-government assets and recorded off balance sheet for the government under two conditions: the private partner bears the construction risk; or the private partner bears either availability or demand risk. This simple "on-budget/off-budget" treatment (which was partly dictated by the need to ensure comparability across 25 member countries) may nonetheless create strong incentives to design projects to "pass" the Eurostat test, allowing them to be recorded off-budget, rather than to gear the design of projects toward the most efficient and appropriate allocation of risk. In other countries, decisions are based not just on the legal form but also on economic substance.<sup>1</sup>

**Based on whether or not a PPP is on or off balance sheet, what is its accounting treatment?** Accounting practices and guidelines for PPPs vary, but the basic principle is that the government should ensure that both immediate and longer-term effects of its transactions, and any resulting assets, liabilities, gains or losses, are accurately represented to allow for a proper assessment of the fiscal position. This will affect both stocks and flows:

- ***Adjusting debt stocks for concession-related debt.*** To the extent that concession contracts stipulate a certain risk transfer to the private sector, as set out by Eurostat, the debt that is contracted in the context of a concession will be counted as a private sector obligation that does not add to the public sector debt. If this risk transfer is not achieved, for example because the public sector retains part of the demand and/or availability risk, the debt that is contracted will need to be counted as public sector debt although it is formally an obligation of the private sector. The corresponding investment should also be shown as public investment, and the corresponding financing as government borrowing.
- ***Adjusting revenues and expenditures for concession-related cash flows.*** Both contractual and contingent payments by the government should be counted as primary spending in the annual budget proposals and medium-term fiscal projections.

<sup>1</sup>An example is the UK Accounting Standards Board, 2004, Financial Reporting Standard 5, <http://www.asb.org.uk/images/uploaded/documents/FRS%2051.pdf>.

**17. While PPPs may result in some current savings, they may imply significant future costs.** Renegotiations of PPPs offer a telling example. This aspect should be carefully

<sup>10</sup> A 1999 law established a monitoring system (MIP) and database for public projects; and a 2002 CIPE deliberation regulates procedures for the CUP.

considered when entering PPP contracts. The experience shows that most concession contracts are subject to extensive renegotiations (Guasch, 2004). While these can in principle be a useful instrument for addressing contract shortcomings, their high incidence (and cost for the government) suggests opportunistic behavior of concessionaires.<sup>11</sup> On average, renegotiations tended to favor the private-sector operators, who were able to secure increases in tariffs and increases in the number of cost components with an automatic pass-through of tariffs (some 60 percent of all cases), delays and decreases in investment obligations (some 70 percent), and decreases in the annual fee paid by the operator to the government (some 30 percent).

#### **D. Conclusions and Policy Recommendations**

18. **While financing constraints have put a brake on public investment in Italy, the main challenges lie elsewhere.** In fact, the evidence suggests that too many projects are being started, not too few (as shown by the results of reports from the Court of Auditors, the Services of the Chamber of Deputies, and other observers). The significant delays accumulated in most projects suggest that even when financing is available, projects are set up without due consideration of possible procedural aspects and insufficient coordination among involved entities. The share of projects subject to litigation—leading to delays and costly penalties—is witness to that. Once projects are executed, lack of consistent recording and reporting hampers an assessment of investment plans—this also applies to projects with higher visibility, such as those defined to be of strategic importance under the Strategic Infrastructure Program.

19. **Initiatives promoting the use of PPPs in infrastructure investment may increase the efficiency of public spending in Italy.** However, these should be implemented only when they are reasonably likely to result in a balanced allocation of risks, and not to circumvent budgetary restrictions. A number of steps would facilitate project selection, assessment, and monitoring.

- *Project selection and assessment.* As PPPs may involve significant fiscal risks, government guidelines on risk transfer to the private sector and value for money assessments should be developed. A decision on whether a project should be undertaken as a direct government investment or as a concession would need to involve a cost comparison. This can be done with different techniques, such as developing a public sector comparator (PSC) or shadow bids. A PSC would show the

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<sup>11</sup> About 55 percent of all concession contracts in the transport sector and 74 percent of all contracts in the water and sanitation sector get renegotiated. In the transport sector, these renegotiations occur after an average of 3.1 years, while in the water and sanitation sector they occurred after only 1.6 years. Most renegotiations (85 percent) occurred within 4 years of the original contract award—for concessions that were supposed to run for 15-30 years.

cost of direct public provision, and could be used to benchmark private sector bids for concession contracts.

- *Reporting and disclosure.* Guidelines for the disclosure of concession contracts and reporting on key contract requirements should be implemented.
- *Assessment of fiscal risks.* PPPs (and some public projects, such as TAV) may give way to significant government obligations, some of which may be less evident as they fall due in the future. For contingent obligations (e.g., minimum revenue guarantees provided by the public sector), it will be important to assess the expected value of the obligations. When contingent liabilities associated with PPP projects cannot be reliably quantified, the emphasis should be on scenario analysis corresponding to alternative degrees of risk exposure of the government.
- *Recording of fiscal risks.* PPPs should be transparently recorded, and the associated contingent liabilities should be included in budget documentation.

20. **The government is already moving along some of these lines.** As the Court of Auditors' report rightly acknowledges, the government intends to implement more detailed and coordinated monitoring of public projects. In this regard, the unified code for projects (CUP) seems promising; its implementation should not be unduly delayed. As part of this monitoring, information on costs related to litigation and conflict resolution should also be included. As fiscal decentralization is implemented and more responsibilities are transferred to local governments, this will be all the more important to ensure accountability.

21. **Finally, while it may be tempting to focus on highly-visible projects, smaller projects may sometimes offer higher payoffs—and lower risks.** The steps identified above would help better prioritize across projects, ensuring that scarce resources are allocated in the most efficient manner.

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## VI. ITALY – ASSESSING COMPETITION AND EFFICIENCY IN THE BANKING SYSTEM<sup>1</sup>

### Core Questions, Issues, and Findings

- **What is the *aim* of the chapter?** The chapter assesses the degree of banking competition and efficiency in Italy—over time as well as compared to that in other countries, such as France, Germany, Spain, the United Kingdom, and the United States.
- **What are the main *results* of the analysis?** The paper finds competition in the Italian banking sector has intensified in loan and deposit markets in recent years, but banks still operate in a high-cost, high-income system, particularly with respect to retail/services, and efficiency gains have yet to fully materialize. The paper also finds the degree of competition falls within the range of estimates for a set of comparator countries, albeit on the weak side.
- **What are the *policy implications* of this chapter’s findings?** To secure additional efficiency gains, it will be important to ensure that markets are fully contestable. Greater contestability should act as a powerful force to drive banks to become more competitive and efficient. Competition policy will also continue to be an important consideration, both in enforcing Italy’s anti-trust laws and in ensuring that the procedures for dealing with weak banks and other merger and acquisition reviews focus on stability and competition objectives.

### A. Introduction and Key Findings

1. **The Italian banking system has been subject to deep structural transformation in the last two decades.** Consolidation and privatization have permitted economies of scale in the production and distribution of services and increased risk diversification. These forces have led to lower costs and, undoubtedly, higher efficiency. However, to ensure that lower costs are passed through to households and firms, greater efficiency must be accompanied by a similar strengthening in the competitive environment in the banking sector.
2. **This paper assesses the degree of banking competition and efficiency in Italy—over time as well as compared to that in other countries.** Given the inherent difficulty of assessing competition from a single perspective, it relies on five main approaches: (i) indicators based on market structure, such as various concentration measures

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<sup>1</sup> Prepared by Paulo Drummond (EUR), Andrea M. Maechler (MFD) and Sandra Marcelino (FIN). The material presented in this chapter was originally prepared as background for the Italian Financial Sector Assessment Program (FSAP).

(Section B); (ii) contestability and cost indicators, including foreign bank ownership, bank retail prices and switching costs (Section C); (iii) profitability indicators (Section D); (iv) empirical efficiency estimates based on a panel of individual banks (Section E); and (v) market power indicators, such as Lerner and Panzar-Rosse indices (Section F). Whenever possible, we assess competition on an individual country basis and across time.

3. **The paper finds competition in the Italian banking sector has intensified in loan and deposit markets in recent years, but banks still operate in a high-cost, high-income system, particularly with respect to retail/services, and efficiency gains have yet to fully materialize.** The paper also finds the degree of competition falls within the range of estimates for a set of comparator countries, albeit on the weak side. Cross-country indicators—both based on profit margins as well as on revenue elasticity—suggest the existence of monopolistic competition, as in other comparator banking sectors. However, there also are indications that competition has not been fully reflected in the pricing of services provided. More specifically, Italian banks incur significantly higher expenditures than other European banks and are only marginally more effective in generating higher revenue. These findings suggest a banking system that has undergone significant restructuring in recent years, but where efficiency gains have yet to fully materialize.

4. **To secure efficiency gains, it will be important to ensure that markets are fully contestable.** Greater contestability should act as a powerful force to drive banks to become more competitive and efficient. Competition policy will also continue to be an important consideration, both in enforcing Italy's anti-trust laws in the banking sector and in ensuring that bank merger and acquisition reviews focus on stability and competition objectives, rather than other broader social and economic objectives, such as the "competitiveness" of the financial system. In particular, to ensure the primacy of competition and stability objectives over other objectives, provisions to facilitate the takeover or merger of a weak bank should be specified clearly and implemented in a transparent way.

## **B. Consolidation and Concentration**

5. **In the late 1990s, the banking industry underwent rapid consolidation, but it remains relatively small compared to other EU member countries** (Figures 1 and 2). Between 1995 and 2004, the number of institutions declined by a third (from 854 to 572 banks). The average size of banks (net of mutuals and foreign branches) more than doubled over this period from to € 5.5 billion to € 13.5 billion for all banks. At the end of 2004, net of mutuals, sector included 135 banks (Tables 1a and Figure 2).

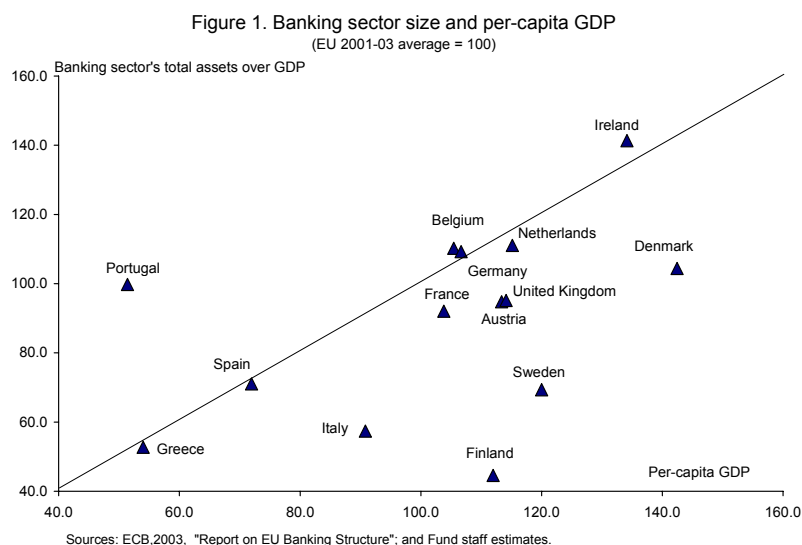


Table 1a. Italy. Evolution in Average Scale of Italian Banks, on a Consolidated Basis 1/  
(in millions of euros)

	1995	1998	2001	2004
Average scale				
All institutions	1.6	2.1	3.0	3.4
<i>of which</i> : Mutuels	0.1	0.1	0.2	0.3
All institutions (net of mutuels)	<b>5.5</b>	<b>8.2</b>	<b>12.0</b>	<b>13.5</b>
Number of banks				
All institutions	854	734	614	572
<i>of which</i> : Mutuels	612	552	469	437
All institutions (net of mutuels )	<b>242</b>	<b>182</b>	<b>145</b>	<b>135</b>
Total assets (end of period)				
All institutions	1,391	1,553	1,828	1,944
<i>of which</i> : Mutuels	52	68	85	116
All institutions (net of mutuels)	<b>1,339</b>	<b>1,485</b>	<b>1,742</b>	<b>1,829</b>

Source: Bank of Italy

1/ Banks in special administration or compulsory administrative liquidation are not included.

Excludes the italian branches of foreign banks.

6. **The consolidation process led to an increase in concentration, but one that was more moderate than experienced elsewhere.** Market structure indicators, such as the Herfindhal-Hirschman Index (HHI)<sup>2</sup> or the share of total bank assets held by the three, five, and ten largest institutions suggests a degree of concentration that is larger in Italy than in

<sup>2</sup> The Herfindhal-Hirschman Index (HHI) is the sum of squares of the markets shares of all firms in a sector ( $HF = \sum_i (\text{share}_i)^2$ ,  $i = 1, \dots, N$ ).



Germany, and the UK, but lower than in France. (Table 1b and Figure 3).<sup>3</sup> Concentration at the national level has increased (the largest five bank groups accounted for 46 percent of total assets at end-2004, compared with 37 percent a decade earlier). But after rising by more than 80 percent since 1990, the ratio of the number of branches to total population is now close to the EU average. According to the Bank of Italy (BI), this development has contributed to greater competition in provincial and regional markets, as evidenced by the rise in the average annual shift in deposit and lending market shares. The average number of banks in provincial markets is estimated to have increased from 27 to 30 in the last decade, and reached 35 at the end of 2004.<sup>4</sup> The HHI for the provincial deposit market declined by around 12 percent from the peak it reached in 1999, falling back to the levels recorded in the mid-1990s. In regional lending markets, the index declined by 20 percent between the end of the 1990s and 2004.

Table 1b. Selected Countries: Market Concentration Indicators

	France		Germany		Spain		Italy		UK		US	
	1998	2004	1998	2004	1998	2004	1998	2004	1998	2004	1998	2004
HHI 1/	398.8	681.7	245.3	282.9	854.4	1188.1	488.7	542.2	339.5	493.3	116.7	157.0
% change		70.9		15.3		39.1		11.0		45.3		34.6
CR3 2/	0.25	0.36	0.17	0.19	0.46	0.51	0.30	0.34	0.21	0.26	0.11	0.12
CR5 3/	0.36	0.51	0.27	0.27	0.57	0.59	0.42	0.46	0.31	0.41	0.16	0.19
CR10 4/	0.59	0.75	0.46	0.46	0.74	0.71	0.64	0.63	0.54	0.65	0.28	0.34

Source: Bankscope.

1/ Herfindahl-Hirschman Index by total assets.

2/ 3-firm concentration ratio is computed as the share of total assets of three largest banks.

3/ 5-firm concentration ratio is computed as the share of total assets of five largest banks.

4/ 10-firm concentration ratio is computed as the share of total assets of ten largest banks.

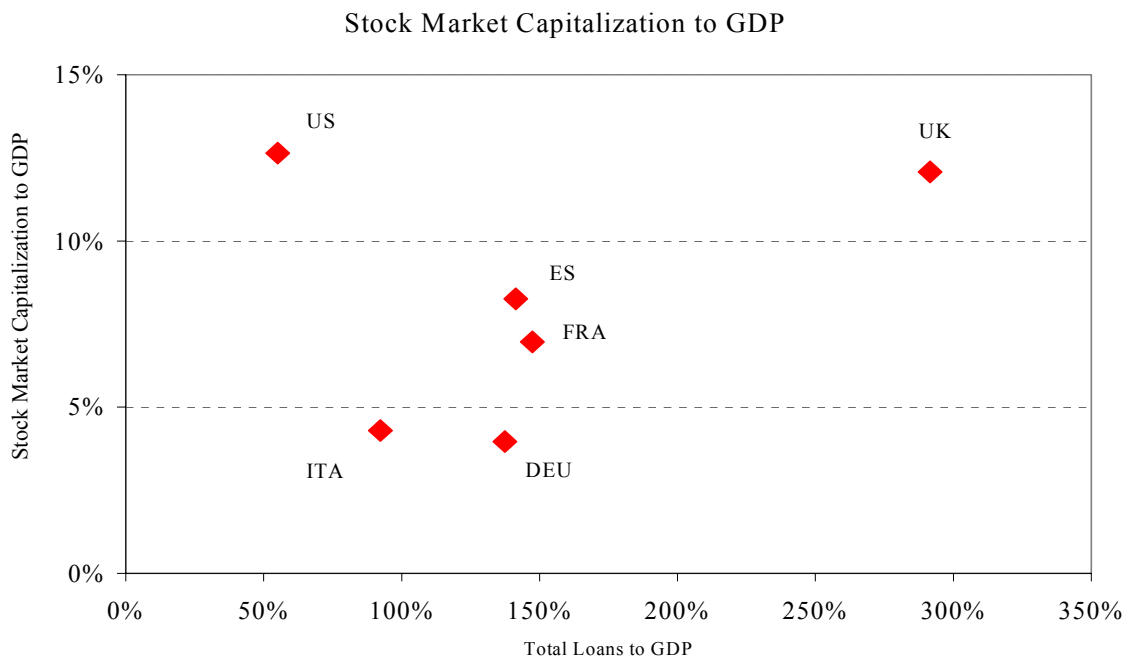
**7. The economic impact of greater concentration depends on many factors.** To shed light on this issue, a number of recent papers have estimated the price effect of mergers and acquisitions in Italy in the 1980s and the 1990s. For example, Focarelli et al. (2005) account for the pricing policies of merged banks, and provide some evidence that bank mergers can

<sup>3</sup> Unless specified otherwise, cross-country bank data is drawn from the BankScope database (see Box 1 for description of sample selection). Although BankScope data presents some significant drawbacks, such as, for example, imperfect cross-country statistical harmonization, it is one of the few datasets that provides individual bank-specific data for a large set of country over time and one of the most commonly used datasets in empirical bank research. Bank-specific data allows us, for example, to focus on the systemically important banks (i.e., top 10 or top 50 banks) of the countries under study.

<sup>4</sup> To monitor competition in small geographical areas, the Banca d'Italia uses, as unit of analysis, 100 provinces for the deposit market and 20 regions for the loan market. This breakdown helps monitor competition even in the narrowest geographical markets.

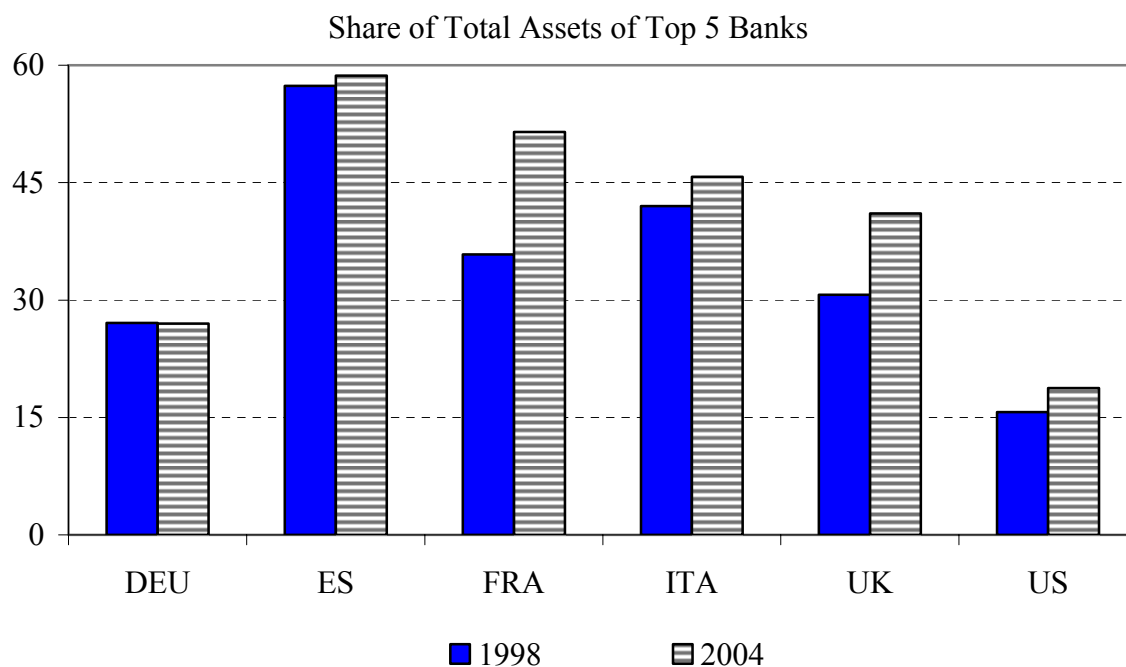
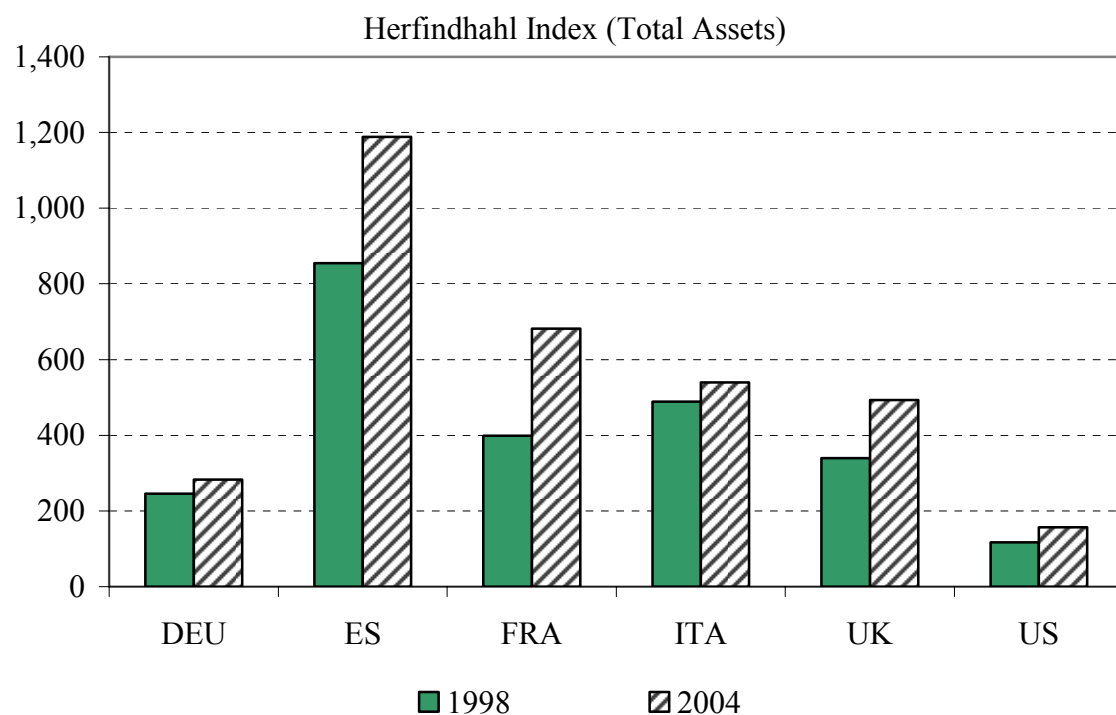
allow for better risk pricing through informational benefits (i.e., closer correspondence between the price of loans and the default risk of each firm). Sapienza (2002) explores the trade-off between efficiency gains and greater market power associated with mergers and finds that in-market mergers generate higher efficiency gains than do out-of-market mergers. Focarelli et al. (2002) find the performance of banks is affected by whether consolidation takes place through mergers or acquisitions. They provide some evidence that mergers tend to increase profitability, including through a more efficient use of capital. Acquisitions also tend to improve profitability, generally by raising the quality of the acquired bank's loan portfolio. While this literature has helped shed light on the price impact of bank mergers, it does not aim at providing an assessment of bank consolidation on the degree of competition in the Italian banking system.

Figure 2. Banking Sector: Total Loans and Stock Market Capitalization, end-2004



Source: Eurostat.

Figure 3. Top 50 Banks: Concentration Indices, 1998 and 2004



Source: Bankscope.

## C. Contestability and Costs Indicators

### Foreign ownership

8. **Italy illustrates how fragmented—along national lines—the EU banking market still is.** In line with some other large countries, the presence of foreign banks is concentrated primarily in investment banking and remains very limited in retail banking. So far, foreign take-overs have proven difficult to carry out, prompting scrutiny by the European competition and single market authorities. At end-2004, 7 percent of total bank assets were owned by foreigners, similar to the share in other large western European countries (Table 2), except that in Italy no major bank is majority foreign-owned.<sup>5</sup> At end-2004, foreigners were majority owners in two medium-size banks (with total assets below € 20 billion) and 13 smaller banks (with total assets below € 7 billion), accounting in total for only 2.5 percent of total bank assets.

Table 2. Italy. Foreign-Ownership in Banking Sector.

	Banks with some foreign-ownership 5/		Banks with majority foreign-ownership		Banks with minority foreign-ownership 6/	
	1999	2004	1999	2004	1999	2004
	(number of banks)					
Italian banks						
Total number of banks	10	12	13	15	3	5
<i>of which</i> : mega 1/	3	4	-	-	-	-
<i>of which</i> : large 2/	1	1	2	-	-	-
<i>of which</i> : medium 3/	2	3	-	2	-	-
Foreign-owned assets to total assets	(in percent of total assets)					
Individual data					-	-
mega 1/	14.9	25.0	0.0	0.0	0.0	0.0
large 2/	1.2	1.8	2.0	0.0	0.0	0.0
medium 3/	1.2	2.0	0.0	1.8	0.0	0.0
small 4/	0.6	0.5	0.6	0.7	0.2	0.5
Total foreign-owned assets/total bank sector assets	17.9	29.2	2.6	2.5	0.2	0.5
Foreign branches						
Total number of foreign branches			57	60		
<i>of which</i> : mega 1/			-	-		
<i>of which</i> : large 2/			-	-		
<i>of which</i> : medium 3/			-	3		
<i>of which</i> : small 4/			57	57		
Assets owned by foreign branches/total bank sector assets			4.0	4.5		

Source: BI.

1/ Bank with total assets above 45 EUR millions.

2/ Bank with total assets between 20 and 45 EUR millions

3/ Bank with total assets between 7 and 20 EUR millions

4/ Bank with total assets below 7 EUR millions.

5/ Includes banks for which shareholding is less than 15 per cent.

6/ Includes non controlled banks for which shareholding is greater than 15 per cent.

<sup>5</sup> Partly, this is due to the high fragmentation in Italian banks' ownership structure. In Italy, banks are controlled by shareholders' agreements, rather than large majority shareholders. Indeed, at present no major Italian bank is majority owned by a single shareholder.

## Costs of Banking Services

9. **The pricing data suggest relatively high costs of banking in Italy.** According to one international survey, the average price of basic banking services (adjusted for local consumption patterns) appears to be among the highest in Europe (Table 3).<sup>6</sup> This survey, however, does not provide a comprehensive cost estimate for basic banking services. Adjusting for joint-ownership of current accounts and the higher implied average balances, as well as the remuneration of accounts, another study found that the average price of holding a current account in Italy is still some 23 percent higher than the average for the EU countries surveyed.<sup>7</sup> The high cost of services does not seem to be associated with delivery of high quality services: a recent survey on the quality of financial services in Europe—measured by consumers’ assessments of aspects such as the quality of information provided by banks, the ease of settling disputes with banks, the extent to which they trust banks’ advice, and use of internet for banking services—suggests dissatisfaction with the quality of services in Italy.<sup>8</sup> These findings suggest a low level of competition in the services provided by Italian banks in the retail sector.

Table 3. Cost of Banking Services

	Italy	United States	Spain	France	Germany	U.K.
Annual Cost of Core Banking Services, in euro <sup>9</sup>	113	93	81	89	98	65

Source: CapGemini et al. World Retail Banking Report (2005).

## Switching Costs

10. **Switching costs can provide additional insight into the degree of banking competition.** In this area, the Italian authorities are concerned that high switching costs hamper competition. The BI, jointly with the Competition Authority, has initiated an investigation regarding banking costs and depositors’ mobility in local markets. The BI surveyed a representative sample of 300 branches on the costs actually incurred by customers who closed their current accounts. Preliminary results suggest an average cost of closing a

<sup>6</sup> CapGemini et al., World Retail Banking Report (2005).

<sup>7</sup> Mercer Oliver & Wyman (2004). The countries included in the survey were Belgium, France, Germany, Italy, the Netherlands, Spain, and the U.K.

<sup>8</sup> European Commission (2004), Public Opinion in Europe: Financial Services Report B.

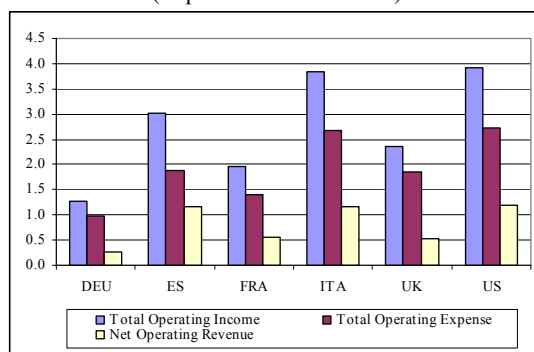
<sup>9</sup> Price of banking services are adjusted for local consumption patterns.

current account of €34, with wide variation among banks (from €0 to €100). This suggests that for some banks, high switching costs can hamper customers' mobility or help keep customers captive, to the detriment of a more competitive environment. Cross-country comparisons on switching costs, however, are not available.

## D. Profitability

11. **Persistently high operating profits, coupled with high revenues and/or high costs, are frequently associated with non-competitive behavior.** Relative to banks in other large industrial countries, Italian banks could fit this profile. For example, focusing on the top 50 banks, Italian banks enjoy relatively high operating income, surpassed only by US banks (Figure 4).<sup>10</sup> However, because of high operating expenses, the net operating profit of Italian banks is only slightly higher than that of UK and Spanish banks (Figures 5 and 6). In this exercise we focus as much as possible our figures on the 10 or 50 largest banks in the countries under examination, as they are most likely to drive (or hamper) competition in their domestic markets. The overall trends, however, may be slightly different when looking at the entire banking sector.<sup>11</sup>

Figure 4. Selected Countries: Top 50 Banks, 2004 Operating Revenue  
(In percent of total assets)

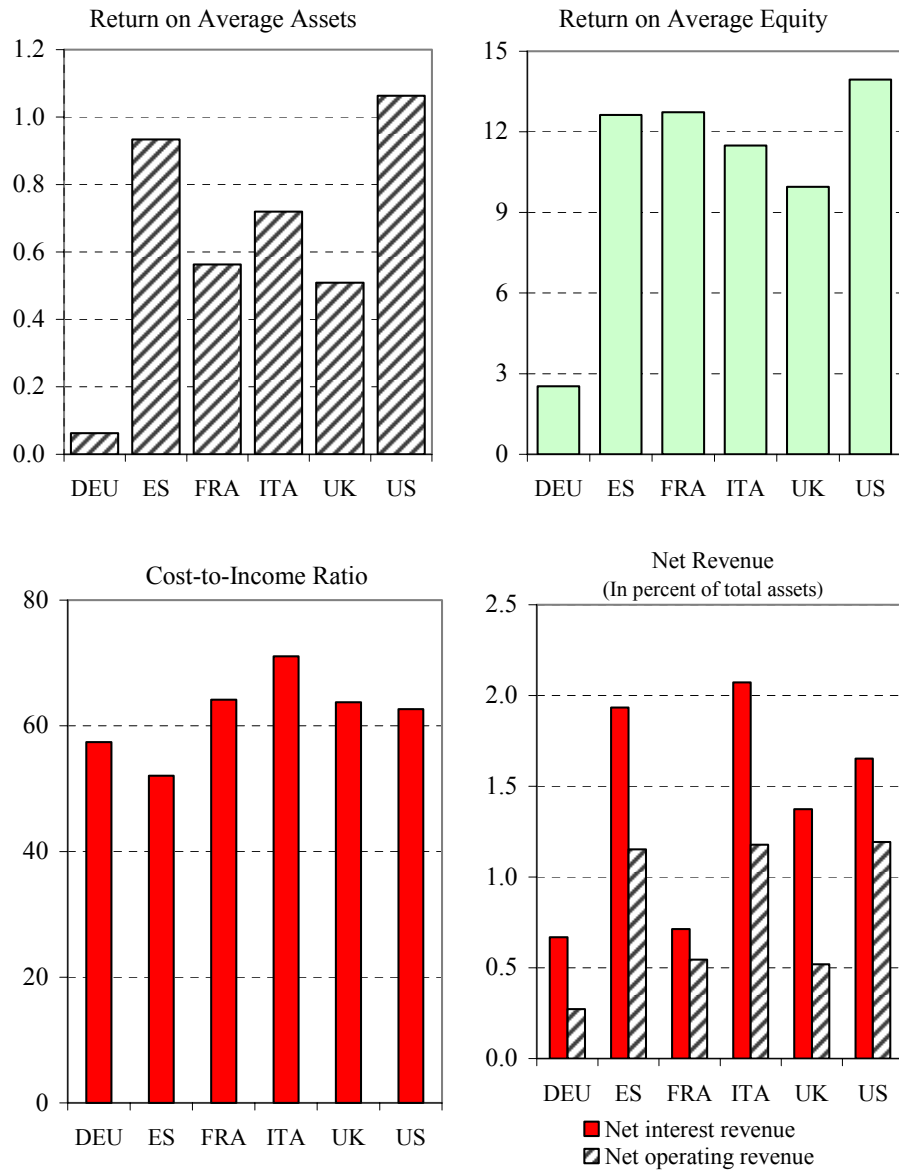


Source: Bankscope

<sup>10</sup> Ideally, we would also want to control for banks' off-balance sheet activities, as an increasing volume of banks' activities is no longer recorded on their balance sheets. One example is derivative transactions or securitizations, which are shifted to third parties in an effort to reduce banks' on-balance sheet risks. Owing to data limitations, this is not possible. This shortcoming needs to be borne in mind when comparing standard cross-country indicators that are computed as a share of banks' total assets. For example, the inability to account for off-balance sheet activities helps explain, at least in part, the relatively poor performance of US banks in some of the profitability indicators, which are measured against on-balance sheet assets, and omit US banks' large off-balance sheet activities.

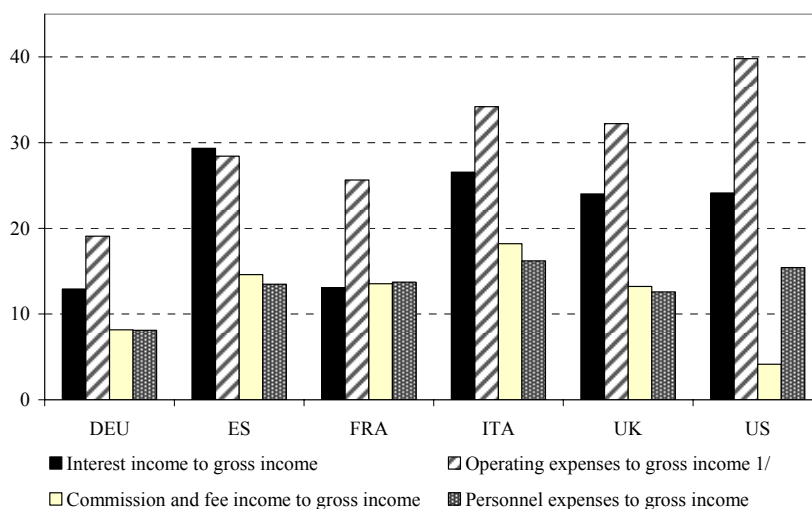
<sup>11</sup> For example, at the aggregate level, 2005 ECB data suggests Italian banks to have a lower cost-to-income ratio than their French and German counterparts, whereas their ROA and ROE were both lower than UK banks.

Figure 5. Top 50 Banks: Profitability Indicators, end-2004



Source: Bankscope.

Figure 6. Top 50 banks. Indicators of Efficiency, 2004.



Source: Bankscope.

12. **The profitability of banks in Italy underwent two very distinct phases in the 1980s and 1990s, which has been interpreted as evidence of intensified competition in the banking industry in recent years (Ciocca, 2005).**

- In the 1980s, the industry was highly inefficient but profitable, suggesting low levels of competition. Despite rising labor costs (in real terms) and low (albeit rising) productivity (assets per employee), profit rates, remained high (double digit) until the end of the decade.
- In the 1990s, the degree of inefficiency was greatly reduced, and productivity increased steadily and rapidly, by just under 4 percent annually. In the meantime, the growth of labor costs moderated sharply. However, the rate of profits declined steadily, to close to zero by the mid-1990s. Only later in the decade, driven by banks' continued efficiency gains, did profit rates recover.

To help shed light on how much of the change in profitability was due to improved efficiency, risk exposure, or other factors, it is possible to decompose the return on equity (ROE) for banks as follows (Table 4):

$$\begin{aligned}
 \text{ROE} &= \frac{\text{Net profit}}{\text{Operating profit}} \times \frac{\text{Operating profit}}{\text{Gross income}} \times \frac{\text{Gross income}}{\text{RWA}} \times \frac{\text{RWA}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Total own funds}} \times \frac{\text{Total own funds}}{\text{Equity}} \\
 &= \frac{\text{Operating profit}}{\text{Gross income}} = 1 - \frac{\text{Administrative costs}}{\text{Gross income}} = 1 - \text{Efficiency ratio}
 \end{aligned}$$



Table 4. Italy: ROE decomposition, 1994-2004 1/

	ROE (a)*(b)*(c)*(d)*(e)*100	Net profit/ operating profit (a)	Operating profit/ gross income (b)=1-(f)	Gross income/ Risk Weighted Assets (c)	Risk Weighted Assets/ Total assets (d)	Total assets/ capital and reserves (e)	Efficiency ratio 2/ (f)
<b>1994</b>							
Limited company banks	0.015	0.001	0.309	0.056	0.606	13.962	0.691
Major	-0.497	-0.035	0.277	0.047	0.705	15.364	0.723
Large	-1.131	-0.079	0.346	0.058	0.517	13.894	0.654
Medium	2.160	0.140	0.322	0.063	0.532	14.231	0.678
Small	-0.038	-0.003	0.336	0.074	0.530	11.265	0.664
Cooperatives	4.264	0.222	0.350	0.080	0.557	12.289	0.650
Mutuals	9.559	0.587	0.335	0.118	0.432	9.526	0.665
All banks 3/	1.121	0.073	0.317	0.060	0.593	13.487	0.683
<b>1999</b>							
Limited company banks	9.057	0.431	0.405	0.056	0.641	14.539	0.595
Major	12.327	0.549	0.434	0.048	0.734	14.775	0.566
Large	11.367	0.439	0.410	0.063	0.584	17.253	0.590
Medium	6.906	0.382	0.376	0.059	0.540	15.181	0.624
Small	3.490	0.192	0.368	0.071	0.571	12.204	0.632
Cooperatives	6.633	0.356	0.377	0.060	0.657	12.525	0.623
Mutuals	5.830	0.509	0.309	0.075	0.574	8.555	0.691
All banks 3/	8.488	0.425	0.396	0.057	0.640	13.811	0.604
<b>2004</b>							
Limited company banks	9.909	0.555	0.403	0.053	0.570	14.812	0.597
Major	9.499	0.563	0.401	0.050	0.587	14.390	0.599
Large	13.122	0.562	0.460	0.058	0.462	18.922	0.540
Medium	11.462	0.563	0.408	0.049	0.563	18.100	0.592
Small	8.432	0.528	0.375	0.059	0.603	11.864	0.625
Cooperatives	7.480	0.564	0.374	0.049	0.670	10.791	0.626
Mutuals	7.505	0.625	0.331	0.058	0.617	10.115	0.669
All banks 3/	9.414	0.560	0.395	0.052	0.582	13.939	0.605

Source: Bank of Italy

1/ "Major" banks are those with total balance-sheet items in excess of 45 billion euros, "large" banks are those with total balance-sheet items between 20 and 45 billion euros, medium banks are those with total balance-sheet items between 7 and 20 billion euros, "small" banks have total balance-sheet items amounting to less than 7 billion euros.

2/ The efficiency ratio is given by overall administrative costs divided by gross income.

3/ Not including branches of Foreign Banks. Data refer only to banks that have submitted income statement reports and provided information about the number of banking staff.

13. **The steady improvements in efficiency in the second half of the 1990s suggest that improved competition was likely at play.** Between 1994 and 2000, the efficiency ratio improved by some 12 percent. The ROE decomposition (Table 4) suggests that in the same period major and large banks had the ability to generate more value added per unit of assets adjusted for the risk assumed. All banks shifted toward more risky activities.

14. **Over the last five years, however, banks' efficiency gains stagnated, and, except for major banks, profitability continued to improve, suggesting that competitive pressures may have receded, at least in some segments of the banking sector.** An important factor behind banks' rising ROE was the improved quality of their loan portfolios, reflected in a higher net profit ratio. This reduction in NPLs, however, was largely driven by temporary tax incentives, and remained short-lived. In the case of major banks, despite higher income ratios, profits declined as a result of higher administrative costs (efficiency losses). This suggests that lower competitive forces among major banks may have allowed these banks to generate higher income without creating corresponding efficiency gains.

15. **However, simple comparisons of profitability, revenue, and cost indicators do not provide sufficient information to assess the operational effectiveness of Italian banks relative to other banks.** For a fair comparison of banks' effectiveness, size, regulatory environments, input costs, and business models need to be held constant. The next section complements the analysis above by controlling for the impact of such exogenous effects on various profitability indicators. A description of the data used for this analysis is provided in Box 1.

### Box 1. Data Sources.

The data used to compute the analysis come from *Bankscope*, a comprehensive database containing harmonized detailed balance sheets and income statements of individual banks across countries. This database allows a reasonably consistent cross-country comparison of banking systems. To avoid double-counting of banks within the country selected, our data is based on consolidated statements, when available.

The data set covers six large countries over a seven-year period from 1998 to 2004. In particular, it includes a total of over 3,500 large banks (i.e., banks with total assets greater than US\$1 billion) in France, Germany, Italy, Spain, the United Kingdom, and the United States. Table 5 lists the number of banks represented each year for each selected country. Sample statistics are presented in Table 6, at the end of the chapter.

Table 5. Selected Countries: Banks Coverage, 1998–2004

	1998	1999	2000	2001	2002	2003	2004
France	691	688	687	679	680	657	456
Germany	103	97	99	105	108	108	100
Italy	251	299	298	301	295	280	217
Spain	200	208	206	209	216	217	160
United Kingdom	218	217	218	221	229	229	183
United States	909	952	928	927	899	854	700
Total banks	2,372	2,461	2,436	2,442	2,427	2,345	1,816

### E. Efficiency Estimates

#### Cross-Country Profitability Differences

16. **We start by examining whether Italian banks earn profits that are statistically different from those of banks in other countries.** As a first approximation, we concentrate on differences between countries rather than variations over time. We estimate a pooled weighted least squares regression using the between-effect estimator, controlling for bank and country specific variables and including country dummies to capture cross-country differences.<sup>1</sup> In particular, we run the following regression:

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<sup>1</sup> In a cross country time series analysis, the between-effect estimator is equivalent to taking the mean of each variable for each country across time and running the regression on the collapsed dataset of means. The regression specification should be considered as a reduced form to account for differences in the sample averages of bank and country specific factors, rather than a structural model of profitability. See Kerasulu (2005) for a similar application to Chilean banks (IMF Country Report No. 05/316).

$$D_{ijt} = \mu_i + \mu_t + \beta_1(\overline{BkS_{ijt}}) + \beta_2(HHI\_TA_{jt}) + \beta_3(\overline{Macro}_{jt}) + \beta_4(\overline{FO}_{jt}) + \beta_5(\overline{CD}_j) + e_{it}$$

where the subscripts represent, respectively, individual bank  $i$ , country  $j$ , and year  $t$ . The dependent variable ( $D_{ijt}$ ) represents profits, which are measured as the net interest margin (interest income minus interest expense over total assets)<sup>2</sup> and as operating profits to total assets (operating income minus operating expenses).  $\mu_i$  captures the individual fixed effects and  $\mu_t$  represents the time fixed effects. The vector of bank-specific variables ( $BkS_{ijt}$ ) is expressed as a share of total assets and includes: gross income, total equity, total loans, loan loss provisions, total banks deposits, customer deposits plus money market funds, and, in some regressions, operating expenses. To control for the level of asset concentration in the banking sector, we include the *Herfindahl-Hirschman Index* ( $HHI\_TA_{jt}$ ), which is computed as the sum of the squares of the shares of total assets (expressed in percentage) held by each bank in the respective countries.<sup>3</sup>  $Macro_{jt}$  is a vector of macroeconomic variables and includes per capita GDP, inflation, Treasury-bill rates, and GDP growth. We also include a dummy equal to one if a bank is majority foreign-owned ( $FO_{ijt}$ ) and zero otherwise and a vector of country dummies ( $CD_j$ ). The results are presented in Tables 7 and 8.

**17. In this simple framework, our results suggest that the net interest margins operating profits of Italian banks do not appear to be, on average, statistically different from those of the other banks included in the sample.** This is shown in Column 1, where the coefficient on the dummy variable for Italian banks (*itad*) is not statistically significant. However, the data suggest some interesting cross-country differences. In particular, we find that Italian banks exhibit significantly higher net interest margins than German banks (Column 3). Italian banks, however, do not seem to be able to maintain this advantage as they generate an overall lower level of operational profits than their German counterparts. Thus, while Italian banks make good returns on their lending business, they lag behind German banks in generating net revenues from non-interest based activities. The picture is reversed in the case of Spanish banks, which earn higher net interest margins than Italian

<sup>2</sup> Determinants for interest margins are analyzed in Demirgüç-Kunt and Huizinga (1999). Girardone, Molyneux and Gardener (2004) examined the cost efficiency of Italian banks over the 1993-1996 period and found evidence of cost efficiency gains with significant differences between banks.

<sup>3</sup> In particular,  $HHI = \sum (s_{ij} \cdot 100)^2$ , where  $s_{ij}$  represents total assets of bank  $i$  in country  $j$  as a share of country  $j$  total bank assets. By construction,  $HHI$  has an upper value of 10,000 in the case of a monopolist bank with a 100 percent share of the market; the index tends to zero in the case of a large number of banks with very small market shares. In practice, markets in which the  $HHI$  is below 1,000 are considered as "loosely concentrated," between 1,000 and 1,800 as "moderately concentrated," and above 1,800 as "highly concentrated."

banks but lower overall operating profits (Column 5). Moreover, our results suggest that the average Italian bank earns a level of profits that is broadly in line with its French counterpart (Column 2).

### Effects of Bank Characteristics on Revenue Generation and Cost Control

18. **Next, we go one step further in our analysis and compare the ability of Italian banks to control costs and generate revenues relative to banks in other large countries.** For this, we use a simple ordinary least squares regression allowing variables to change across banks and across time, controlling for bank characteristics<sup>4</sup>:

$$X_{it} = \mu_i + \mu_t + \beta_1 \ln TA + \beta_2 (\ln TA)^2 + \beta_3 (II/TA) + \beta_4 (NCFTR/TA) + \beta_5 (PE/TA) + \beta_6 (TL/TA) + \beta_7 (LLP/TA) + \beta_8 (TCD/TA) + \beta_9 (TEQ/TA) + \beta_{10} (FO) + \beta_{11} (HHI - TA) + \beta_{12} (\overline{CD}_i) + e_{it} \quad (2)$$

where the dependent variable  $X_{it}$  is, respectively, operating expenses to total assets ( $OpE/TA$ ), operating income to total assets ( $OpI/TA$ ), and net operating profits to total assets ( $Opp/TA$ ).  $\mu_i$  captures the individual fixed effects, while  $\mu_t$  represents the time fixed effects. Explanatory variables include interest income to operating income ( $II/TA$ ), net commission and fee income to total assets ( $NCR/TA$ ), personnel expense to total assets ( $PE/TA$ ), total loans to total assets ( $TLN/TA$ ), total customer deposits to total assets ( $TCD/TA$ ), and total equity to total assets ( $TEQ/TA$ ). We also include a dummy equal to one if the bank is majority foreign-owned and zero otherwise ( $FO$ ), the country-specific HHI (as a share of total assets) as a concentration proxy, and a vector of country dummy variables ( $CD$ ). The results are presented in Tables 9, 10 and 11.

19. **Our results suggest that Italian banks incur significantly higher expenditures than other European banks and generate lower revenues than other banks, except for French banks (whose revenues are not statistically different from the Italian banks).** When we allow for variables to change across banks and across time, and after controlling for characteristics that affect banks' ability to generate revenue and control costs, Italian banks have a statistically higher (lower) level of operating expenses to total assets (operating income to total assets) than the other banks included in the sample (Column 3). Columns 4 to 6 compare the costs and revenues of Italian banks to, respectively, those of German, French, and US banks. Overall, the combination of higher expenses and lower revenues translates into lower net operating profits for Italian banks, after controlling for banks' characteristics. This situation could indicate a low-competition environment, where banks are not pressured to reduce their costs to compensate for low income margins.

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<sup>4</sup> Brunner et al. (2004) implement a similar approach to examine the relative profitability of German banks relative to French, Italian, UK, and Spanish banks for the 1997-2001 period.

20. **In none of the countries included in our sample does foreign-ownership in the banking sector appear to influence banks' ability to generate higher revenue and maintain lower costs.** This suggests that foreign penetration in these countries remains too low to significantly modify the dynamics in the respective banking sectors. This contrasts with findings from emerging countries, where empirical results find a positive correlation between competition indicators and foreign bank ownership.<sup>5</sup> Moreover, while the degree of banks' asset concentration in the sector, as measured by *HHI*, appears to be statistically significant, its impact is negligible for the countries under study.

### Productive Efficiency

21. **It may not be sufficient to control for a bank's profile (i.e., in terms of balance sheet structure and profit and loss accounts) to assess its productive efficiency.** For example, a bank may have relatively higher personnel costs than other banks and yet be more efficient, if these costs help provide high-value-added services that require a highly qualified staff. Alternatively, a bank's profitability may be lower because it faces less pressure to use its inputs efficiently. Thus, it is important to control for endogenous factors that affect banks' ability or motivation to generate higher revenues and/or manage costs more effectively.

22. **A stochastic "best practices" frontier approach is a useful tool to assess banks' efficiency.** This approach estimates indirect levels of revenues and costs for a given level of output and for given input prices, while allowing a number of other factors to affect total factor productivity.<sup>6</sup> One must specify a functional form for the efficiency frontier. A common approach in the literature, and the one adopted here, is to use the translog specification:

$$\begin{aligned}
 X_{it} = & \mu_i + \mu_t + \sum_{j=1}^4 \phi_j Z_{ijt} + \sum_{j=1}^2 \alpha_j \log y_{ijt} + \sum_{j=1}^3 \beta_j \log p_{ijt} \\
 & + \frac{1}{2} \sum_{j=1}^2 \sum_{k=1}^2 \eta_{jk} \log y_{ijt} \log y_{ikt} + \frac{1}{2} \sum_{j=1}^3 \sum_{k=1}^3 \phi_{jk} \log p_{ijt} \log p_{ikt} + \sum_{j=1}^2 \sum_{k=1}^3 \rho_{jk} \log y_{ijt} \log p_{ikt} + e_{it}
 \end{aligned} \tag{3}$$

<sup>5</sup> For example, Claessens, Demirgüç-Kunt, and Huizinga (2001) find that a higher number of foreign banks in a country helps raise profits and reduce overhead expenditures of domestic banks. Gelos and Roldos (2000) find a positive correlation between a more competitive market structure (measured by the *H*-statistic) and foreign bank ownership.

<sup>6</sup> The underlying assumption of this approach is that banks in the sample face a common technology (in terms of factor productivity) and the same degree of competition. Clearly, this is an imperfect assumption, as the capital-labor mix may depend on a wide range of local conditions, such as regulations, taxation, business model, financial market development, etc. Nevertheless, this approach has been used in a number of similar cross-country analyses (Bonaccorsi di Patti and Hardy, 2005; Brunner et al., 2004; and Decressin, 2005).

where  $X_{it}$  is either revenues (operating income to total assets) or costs (operating expenses to total assets) for bank  $i$  in year  $t$ ; the individual fixed effects ( $\mu_i$ ) capture relative measures of management effectiveness across banks groups, while the time fixed effects ( $\mu_t$ ) represent technological progress and aggregate shock.  $Z_{it}$  is a vector of exogenous variables (total customer deposits to total liabilities, total bank deposits to total assets, loan loss provisions to total assets, equity to total assets, total assets to number of employees, a dummy equal to one for majority foreign-owned banks, and the country-specific  $HHI$ ) that affects efficiency but not the estimate frontier. These variables are intended to proxy for bank differences in the business model and in the regulatory environment.  $y_{ijt}$  and  $y_{ikt}$  are bank output as a share of total assets (loan and other earning assets); and  $p_{ijt}$  and  $p_{ikt}$  are a bank input price as a share of total funding (personnel expense, interest expense, and total operating expense net of personnel expense);  $e_{it}$  is an error term. The results are presented in Tables 11 and 12. For clarity, we do not provide the full set of results and focus on country-specific effects captured by the country dummies.

23. **According to our estimates, Italian banks are less effective than the other banks included in our sample in managing costs and are only marginally more effective in generating higher revenue** (Column 1 of Tables 12 and 13). This results holds over a broad range of specifications. Again, our results suggest some cross-country differences. For example, Italian banks generate a level of operating income that is broadly in line with that of German and French banks (Column 2 and 3 in Table 12), but maintain significantly higher operational costs than these banks (Column 2 and 3 in Table 13). These results are consistent with our earlier findings.

24. **Our empirical estimates suggest that overall Italian banks are less efficient than the other banks included in our sample.** While they appear to earn broadly similar (or lower) income than their French and German counterparts, their inability to achieve a comparable cost structure results in an overall lower profit performance. Next, we explore the extent to which this lower efficiency can be related to lower competition in the Italian banking sector.

## F. Market Power

### Lerner Index

25. **One approach to assess the degree of competition is to examine the differential between the prices that banks charge for their services and the marginal costs they incur to provide these services.**<sup>7</sup> This measure is referred to as the *Lerner Index*. A high margin would suggest a high level of market power and hence, a lower degree of competition

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<sup>7</sup> Prices measured as the sum of total interest income and income from services, in proportion to total assets.

in the banking sector. Recent studies based on this approach suggest a degree of deviation from pure competition for the banking market in Italy similar to that for the euro area.

26. **Angelini and Cetorelli (2003) calculate the Lerner index for the Italian banking industry from 1984 to 1997.** They find that starting in 1993, the index shows a significant decline in market power in Italy. Among the main difficulties inherent in the study, though, is the fact that changes in profit margins reflect not only the degree of competition in the market, but general economic conditions. For instance, the profit margin decline starting in 1993 was also associated with the increase in loan riskiness following the recession that year.

27. **Cetorelli and Violi (2003) estimate Lerner Indices for Italy, Germany, France and the euro area, annually, for the period 1995-2000.** They find that the Lerner index for Italy was not statistically different from the estimate for the euro area in 1995, but that since then deviations of prices from marginal costs increased more rapidly in Italy than in the euro area. By 2000, the Lerner index in Italy was about one-third higher than for the euro area. This recent trend, which reflects more than proportional cost reductions in Italy, could be associated with a fall in the price elasticity of the demand for financial products, as banking services, and particularly fee-based services, increased. However, combined with our earlier finding of Italian banks' relatively high costs, it could also suggest the tapering-off of competitive pressures in the domestic banking sector.

### **Panzar-Rosse Index**

28. **Market power can also be measured by the extent to which changes in factor prices are reflected in revenues** (Panzar and Rosse, 1987; hereafter, P-R). With perfect competition, an increase in factor prices (say, deposit interest rates) induces no change in output (assets) but a proportional change in output prices (i.e., under a perfectly elastic demand assumption). Instead, with monopolistic competition, or with potential entry leading to contestable markets, revenues would increase less than proportionally, as the demand for banking products facing individual banks is less than perfectly elastic.

29. **A number of studies in recent years have extended the P-R methodology to banking.** Based on a reduced-form equation of revenue at the individual bank level, market power is inferred from the *H-statistic*, which measures the extent to which changes in factor prices are reflected in banks' revenue. If the market is perfectly competitive an increase in factor prices would raise revenues equiproportionally and the *H-statistic* should assume a value equal to 1. On the other hand, in the "intermediate" case of monopolistic competition, the *H-statistic* assumes a value between 0 and 1, with an increase in input prices leading to a



less than proportional increase in revenues, as the demand for bank products facing individual banks is inelastic (Box 2).<sup>8</sup>

### Box 2. Interpretation of $H$ -statistic

The  $H$ -statistic is computed as follows:

$$H = \sum_{j=1}^J \alpha_j$$

Where

$H \leq 0$  Monopoly equilibrium: each bank operates independently as under monopoly profit maximization conditions ( $H$  is a decreasing function of the perceived demand elasticity) or perfect cartel.

$0 < H < 1$  Monopolistic competition free entry equilibrium ( $H$  is an increasing function of the perceived demand elasticity).

$H \geq 1$  Perfect competition. Free entry equilibrium with full efficient capacity utilization.

### 30. Our initial P-R estimates are based on the following specification:

$$\log R_{it} = \eta_i + \sum_{j=1}^J \alpha_j \log W_{it}^j + \sum_{k=1}^K \beta_k \log X_{it}^k + \delta_{jt}(HHI\_TA) + \rho_{jt}(FO) + e_{it} \quad (4)$$

where  $R_{it}$  is the ratio of gross **interest** revenue to total assets (proxy for output price of loans);  $W_{it}$  is a three-dimensional vector of factor prices: (i) personnel expense to total liabilities plus total deposits (proxy for input price of labor); (ii) interest expense to total deposits and total funding (proxy for input price of deposits); and (iii) other operating and administrative expenses to total assets (proxy for input price of equipment and fixed capital);  $X_{it}$  is a vector of exogenous and bank-specific variables (total equity to total assets, total loans to total assets, nonperforming loans to total customer loans, total deposits to total deposits plus money market funds plus other funding, interbank deposits to total deposit and money market funds, customer deposits to total deposits and money market funds, and total assets to number of employees); the  $HHI$  is a measure of concentration of the banking systems; and  $FO$  represents majority foreign-owned banks.

<sup>8</sup> The P-R method is not an ideal measure of competition as it is based on four strong assumptions: (i) banks are operating at their long-run equilibrium; (ii) the performance of the banks is influenced by the actions of other market participants; (iii) the cost structure is homogeneous; and (iv) the price elasticity of demand is greater than unity. Excellent discussions on underlying assumptions are found in Bikker (2004) and Bikker and Haaf (2002).

31. **Our results suggest the existence of monopolistic competition in all countries and that the degree of competition among banks in Italy is broadly in line with that in other large industrialized countries.** There are, though some interesting cross-country differences. According to Table 13, Italian banks face a degree of competition slightly lower than Spanish and German banks (and, to a lesser extent, French banks) but higher than US banks. These results are robust across a wide range of specifications. The first row in Table 13 lists the cross-country H-statistic based on a simple revenue and cost function, which includes only the vector of factor prices ( $W_{ijt}$ ). The second row includes a limited set of exogenous variables that are intended to capture differences in business models and regulatory environment (loan-to-asset ratios, nonperforming loan-to-asset ratios, equity-to-asset ratios, foreign ownership, and the  $HHI$ ). The third row includes also asset-to-employee ratios, bank deposit-to-total deposits and money market fund ratios, and customer deposit-to-deposit and money market fund ratios.

32. **These results are also robust to alternative specifications of the revenue function.** In particular, non-interest revenue of banks has been increasingly significant in recent years across a number of countries in Europe, including Italy. Our alternative specification of banks' revenue function captures the impact of costs on total revenues, not only interest revenues. The specification also includes the ratio of interest-to-non-interest income among the regressors to account for the different elasticity of demand for the relevant associated financial services. The alternative specification is as follows:

$$\log RT_{it} = \eta_i + \sum_{j=1}^J \alpha_j \log W_{it}^j + \sum_{k=1}^K \beta_k \log X_{it}^k + \delta_{jt} (HHI - TA) + \rho_{jt} (FO) + e_{it} \quad (5)$$

where  $RT_{it}$  is the ratio of gross **total** revenue to total assets (proxy for output price of loans); and the vector  $X_{it}$  includes the ratio of interest-to-non-interest income.

33. **The P-R specification based on total revenues confirms our initial assessment of the degree of competition in the Italian banking system.** As banks have entered an era of low interest rates, their interest income has been declining while "other income" has risen. This has lowered the ratio of interest to non-interest income. Our estimates suggest this has been associated with higher, not lower, revenues. This reflects in part how banks have adapted under the new low interest rate environment. This alternative specification suggests Italian banks face a degree of competition similar to that in Germany or Spain, and somewhat higher than that in France.

34. **Our results are consistent with similar estimates reported in the literature.**<sup>9</sup> De Bandt and Davis (2000) estimate a P-R model for Italy, France and Germany for the

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<sup>9</sup> For similar studies including Italy in their datasets, see Molyneux et al. (1994), Coccoresse (1998), Bikker and Groeneveld (2000), Bikker and Haaf (2002), De Bandt and Davis (2000), Brunner et al. (2004). Other recent applications include Belaish (2003) for Brazilian banks, Claesens and Laeven (2004) for a large set of industrialized and emerging countries, Gelos and Roldos (2002) for emerging (continued...)

period 1992-1996 and find that banking markets in these countries were characterized by monopolistic competition. They found the H statistic significantly above zero but significantly below one in each one of the countries, with differences across countries not statistically significant. Similarly, Brunner et al. (2004) estimate a P-R model for an expanded set of countries (including Spain and the U.K.) for the period 1997-2001. They confirm the existence of monopolistic competition in all countries and find the degree of competition among banks in Italy comparable to that in Germany and Spain. Banks in these countries would appear to face more competition than French or U.K. banks.

35. **Overall, our results suggest that while competition in the Italian banking sector falls within a range of estimates for comparator markets, it tends to be on the weaker side.** A final step in our analysis is to explore possible links of this outcome to Italy's institutional framework and in particular, what implications its competition framework may hold for financial stability.

### G. Competition Policy and Financial Stability

36. **Neither the theoretical nor the empirical literature is conclusive on the relationship between competition and stability, and the claim that competition is inherently dangerous for the stability of the financial system (the “charter-value” hypothesis) is largely dismissed (Box 3).**<sup>10</sup> Rather, the impact of competition on financial stability seems to depend on the specific cases and circumstances and whether a change in competition (merger or concentration) is associated with an increase or decrease in risk in the banking system (Group of Ten, 2001). This helps explain why various G-7 and EU countries have given quite different weights to the relative role of the competition and supervisory authorities in merger review decisions.

37. **The debate over the right institutional framework for competition and financial stability in the banking sector has not been resolved.** While many countries apply a general competition regime to the banking sector, large differences exist in the way

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markets, Hempell (2002) for Germany, Hondroyannis et al. (1999) for Greek banks, and Kerasulu (2005) for Chilean banks.

<sup>10</sup> Excellent literature reviews can be found in Carletti and Hartmann (2002), Canoy et al. (2001), and Northcott (2004).

### **Box 3. Competition and Stability: Key Findings of the Literature**

The literature does not seem conclusive on the relationship between competition and financial stability. The net impact of consolidation on bank risk appears to depend on the specific case and circumstances (Group of Ten, 2001) and many forms of competition do not seem to endanger financial stability (Canoy et al. 2001), suggesting that there is no clear-cut trade-off between competition and stability (Carletti and Hartmann, 2001).

#### **Theoretical literature**

Many papers based on the “charter value” hypothesis find a negative trade-off between competition and stability. While competition is important for efficiency, by reducing the present value of monopoly rents of holding a bank charter, it also lowers the opportunity cost of bankruptcy and promotes bank instability by encouraging banks to behave less prudently (Keeley, 1990; Edwards and Mishkin, 1995; Hellman et al, 2000). Theory suggests, however, that there are policy options that ensure that banks behave prudently, even in a competitive market. For example, regulatory capital requirements and optimal forbearance policies help mitigate risk-taking behavior, regardless of the competitive structure of the market (Repullo, 2003; Nagarajan and Sealey, 1995). Risk-adjusted deposit insurance premiums help mitigate the trade-off between competition and banks’ lower incentives to screen loans (Shaffer, 1998; Cordella and Yeyati, 2002). Similarly, an active rescue merger policy that facilitates the takeover of troubled banks by healthy ones, combined with temporary entry restrictions, could maximize the benefits of lower risk-taking by incumbent banks, while minimizing the long run costs associated with greater market power in a restricted market (Perotti and Suarez, 2002).

A more recent strand of literature suggests that stronger competition does not necessarily worsen stability. Sometimes, increased loan competition can reduce asset risk-taking (Boyd and De Nicoló, 2005; Caminal and Matutes, 2002) or increase the ability of the interbank market to insure against liquidity shocks (Carletti et al., 2004). Matutes and Vives (1996) point out that self-fulfilling expectations of depositors imply multiple equilibriums, regardless of market structure. Based on a wide range of modeling forms, Allen and Gale (2004) conclude that the competition-stability nexus is highly sensitive to the spatial position of branches and other particular details of the models (Allen and Gale, 2004).

#### **Empirical literature**

If mergers allow for greater risk diversification, increases in market power through concentration would be associated with lower risk and higher bank stability. Recent empirical studies support this hypothesis, at least for more recent data (Craig and Santos, 1997). In the same vein, based on a panel data on 79 countries, Beck, Demirgüç-Kunt, and Levine (2003) find that crises are less likely in competitive and concentrated banking systems.

Other studies, however, find that larger U.S. banks are not necessarily associated with lower insolvency risk (De Nicoló, 2000) or a lower probability of failure (Boyd and Runkle, 1993). Boyd and Graham (1996) argue that this may be because large banks’ implicit too-big-to-fail protection leads them to greater leverage. One study finds evidence that systemic risk through interbank linkages in the large and complex US banking organizations has increased in the last decade (De Nicoló and Kwast, 2001), consistent with the theoretical prediction of Allen and Gale (2000). Thus, there appear to be various features of bank mergers, such as the creation of too-big-to-fail institutions, monitoring difficulties, lower money market liquidity, and organizational inefficiencies, that may increase the scope for instability, reversing the traditional charter value hypothesis (Carletti et al., 2004).

they enforce this regime in the banking sector, and in particular, the role given to the bank supervisors. To ensure consistency across all sectors, a general tendency has been to give competition authorities the responsibility to enforce anti-trust laws on an economy-wide basis, including in the banking sector, in consultation with the bank supervision authority. Anti-trust laws aim at providing an open and competitive system, without unjustified restrictions on entry, exit, and ownership changes. In banking, competition authorities typically focus on ensuring that greater concentration through mergers and acquisitions or greater market power through cartel-like agreements, such as agreements in payment system services and tie-in agreements, do not impede competition.

38. **In Italy, until the approval of the newly-enacted Savings Law, the ultimate authority to apply competition law in the banking sector resided within the central bank, which is also the national bank supervisor.** Under this framework, the Italian antitrust authority was entrusted with enforcing the 1990 Competition Act across all sectors of the economy except in the banking sector. However, BI's joint responsibility for enforcing competition laws and maintaining the stability of the financial system had the potential to lead to conflicts. For example, short-term stability concerns might induce the supervisor to facilitate the merger of a weak bank without due consideration to its long-term competition implications. Such conflicts could be addressed in several ways, including by imposing compensatory anti-trust measures on the merging bank, provided the existence of clear and transparent implementation procedures and adequate accountability mechanisms.<sup>11</sup>

39. **In an effort to improve transparency and accountability, the new Savings Law has transferred the responsibility for regulating and enforcing anticompetitive behavior in the banking sector to the antitrust authority.** In the area of merger reviews, the BI and the antitrust authority have been given shared responsibility for authorizing bank mergers and acquisitions (the BI on prudential grounds and the antitrust authority on competition grounds). This new institutional arrangement falls in line with that of other industrial countries (e.g., Canada, France, Germany, and Japan), where the role of supervisory agencies focuses on assessing possible prudential concerns, particularly with respect to the fit and proper rules, as opposed to reviewing bank mergers from a competition perspective (Table 5).

40. **Regardless of the role of bank supervisors in implementing competition policy, bank supervisors remain an important component in merger and acquisition reviews.** All G-7 countries and EU countries give a strong role to supervisory authorities in the review of bank mergers (Carletti and Hartmann, 2002).<sup>12</sup> This is partly because bank supervisors

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<sup>11</sup> A list of compensatory anti-trust measures applied by BI can be found in Table 2 in Trifilidis (2001).

<sup>12</sup> In France, for example, bank supervisors can impose particular conditions to ensure the financial soundness of the merging institutions, whereas in Germany, bank supervisors can block a merger on prudential grounds. In the United States, merger proposals are reviewed independently by the relevant  
(continued...)

have the responsibility to grant (and withdraw) bank licenses and approve changes in banks' ownership structures, which gives them the authority to block a merger or impose compensatory conditions, at least on prudential grounds. Furthermore, their in-depth knowledge of the financial soundness of individual institutions becomes very valuable in crisis management, especially when helping coordinate the merger of a weak bank with a healthy one, which is how most bank instabilities are resolved.

41. **The main risk associated with the close involvement of bank supervisory agencies in merger reviews is that they may consider broader social and economic objectives, possibly at the expense of competition and, ultimately, financial stability.** For example, they may adopt a reluctant attitude toward cross-border bank mergers in order to promote “national champions”, thereby reinforcing the too-big-to-fail problem at the national level and, ultimately, jeopardizing both competition and financial stability.<sup>13</sup> However, allocating the responsibility for enforcing competition law in the banking sector to the national competition authority, does not in itself guarantee that bank merger decisions are free of political influence. In Canada, Germany, and the UK, the Minister of Finance has the ultimate authority to overturn a blocking decision by the competition authority.

42. **The role of supervisors can be further blurred by the relatively common use of “merger rescue” provisions that allow supervisors to co-ordinate a takeover or a merger of a failing bank instead of going through a potentially costly public liquidation.** In a strict sense, such provisions should not harm competition but permit a more cost-effective use of public resources. The idea is that when a bank is liquidated, most of its business may go to one main competitor, generating a similar increase in concentration as with a coordinated merger, while incurring a higher public cost in terms of deposit insurance funds and other safety net provisions.

43. **In particular, a broader notion of the “merger rescue” can allow authorities to consider other social or economic objectives, which may conflict with their primary goal of promoting financial stability and enforcing anti-trust laws.** For example, bank supervisors may facilitate the merger of a weak bank in an attempt to maintain employment or certain services in a specific region, or promote the competitiveness of the banking sector, without considering the long-term competition implications. In some countries, such as Canada, Germany, South Africa, and the United States, the authorities (typically, the Minister of Finance or local state authorities) have the explicit power to block or approve a bank merger if it is in the public interest to do so. Other countries (e.g., Japan) and the EU

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supervisory agency and the competition authority (the U.S. Department of Justice). When the two reach different conclusions, the case is brought to court and the merger cannot be completed until the case is tried and a judgment is reached.

<sup>13</sup> The potential vicious circle between “too-big-to-fail” and “national champions” is discussed in Vives (2001).

Commission have developed a similar rescue merger concept in their case-law (Carletti and Hartmann, 2002).<sup>14</sup>

44. **In Italy, the new Savings Law does not contain explicit merger rescue provisions nor does it specify how such bank merger rescues may be implemented.** To minimize political interference, all bank mergers are required to receive the joint authorization from the BI and the antitrust authority. This is consistent with Barros and Hoernig (2004), who find that decisions are least vulnerable to lobbying when the sectoral regulatory agency and the competition authority act independently of each other. Nevertheless, as suggested by the Governing Council of the ECB in its December 2005 Opinion on the Draft Law on Savings, in cases where the BI may need to recommend a merger for stability purposes, the antitrust authority should be entitled (but not forced) to authorize concentrations on stability grounds, with appropriate compensatory measures if necessary.

45. **To ensure the primacy of competition and stability objectives over other objectives, the procedures for dealing with weak banks, including closure policies and bidding mechanisms, should be specified clearly and implemented in a transparent way.** The mandates of the competition and supervisory authorities should be clearly and well specified, as should be their accountability mechanisms. In Italy, as in other European countries, there are no formal bidding mechanisms and the criteria underlying purchase and assumption decisions are unclear.<sup>15</sup> Thus, for a successful implementation of merger reviews, the supervisory and antitrust authorities must have in place a clear and transparent decision-making process, appropriate resources and expertise to analyze a merger-impact on, respectively, stability and competition, and the utmost independence in forming their opinion.

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<sup>14</sup> Detailed country examples on the implementation of rescue merger provisions can be found in OECD (1996).

<sup>15</sup> In the US, for example, after the large thrift crisis in the 1980s and with the passage of FDICIA in 1991, the resolution process for troubled banks and its bidding mechanisms are well specified. For excellent overviews, see FDIC (2003) and Walter (2004).

Table 6. Selected Countries. Sample Statistics, 2004.

Variables	Description	Number of Observations						Mean					
		France	Germany	Italy	Spain	UK	US	(Standard Deviation)					
								France	Germany	Italy	Spain	UK	US
tln	Total loans-net	81	333	110	94	140	602	30,368 (66,546)	11,492 (29,260)	12,162 (25,838)	13,497 (39,815)	37,014 (96,956)	14,834 (45,146)
tcl	Total customer loans	81	333	110	94	140	602	30,528 (67,518)	11,582 (29,816)	12,162 (25,838)	13,645 (40,227)	37,362 (97,958)	15,047 (45,857)
npl	Total problem loans	32	6	100	54	37	562	1,785 (3,682)	5,849 (4,179)	946 (2,579)	204 (597)	1,493 (2,629)	116 (528)
llr	Loan loss reserves	36	11	136	46	93	589	1,385 (2,613)	2,722 (3,854)	411 (1,336)	533 (1,190)	524 (1,416)	217 (774)
dwb	Deposits with banks	1	331	109	92	90	33	114 (0)	7,066 (22,665)	2,278 (5,034)	1,321 (2,542)	14,463 (33,455)	1,161 (4,717)
oea	Other earning assets	83	333	110	95	142	662	48,940 (108,379)	15,527 (49,253)	5,128 (11,794)	5,586 (20,045)	24,946 (63,548)	15,690 (57,739)
cdb	Cash and due from banks	74	321	98	94	124	661	1,572 (4,831)	183 (648)	134 (324)	437 (1,545)	1,751 (8,086)	1,016 (4,020)
nea	Total non earning assets	83	334	110	96	150	662	9,232 (23,163)	1,691 (10,895)	2,459 (7,387)	1,589 (6,876)	6,382 (18,373)	4,113 (14,892)
ta	Total assets	83	334	110	96	150	662	88,461 (192,076)	28,811 (83,867)	20,013 (44,795)	20,620 (66,866)	65,234 (165,581)	33,570 (102,972)
td	Total deposits	82	333	110	95	137	604	45,886 (104,399)	15,874 (44,578)	11,289 (24,465)	14,186 (44,735)	45,097 (110,673)	13,936 (50,219)
tcd	Total customer deposits	80	330	108	89	118	580	26,600 (68,265)	8,380 (26,069)	7,989 (18,359)	11,502 (34,791)	35,519 (89,396)	14,120 (50,890)
tbd	Total banks deposits	82	331	110	93	113	69	19,934 (41,783)	7,615 (22,913)	3,446 (7,261)	3,126 (10,747)	13,915 (34,766)	2,163 (6,974)
mmf	Total money market funding	70	106	91	20	74	572	12,972 (24,505)	4,578 (15,130)	980 (3,342)	2,398 (5,325)	16,670 (36,261)	5,905 (21,620)
tof	Total other funding	66	306	106	79	106	610	10,235 (19,226)	8,783 (23,398)	4,202 (8,841)	4,007 (11,023)	6,506 (16,994)	10,003 (34,603)
gllr	General loan loss reserves	43	4	58	0	1	0	313 (551)	139 (244)	18 (41)	- (-)	859 (-)	- (-)
tl	Total liabilities	83	334	110	96	150	662	84,837 (184,208)	27,846 (81,491)	18,688 (42,175)	19,195 (62,139)	62,117 (157,020)	30,953 (95,551)
teq	Total equity	83	334	110	96	150	662	3,623 (8,161)	966 (2,803)	1,325 (2,678)	1,426 (4,739)	3,117 (9,295)	2,616 (8,160)
ii	Interest income	215	455	156	100	158	650	1,433 (4,166)	981 (3,136)	653 (1,454)	711 (2,320)	2,005 (5,546)	1,161 (3,889)
ie	Interest expense	213	453	156	100	157	653	1,127 (3,331)	753 (2,367)	308 (703)	323 (1,182)	1,220 (3,259)	451 (1,627)
nir	Net interest revenue	215	456	156	100	169	654	316 (1,008)	228 (929)	345 (783)	388 (1,152)	747 (2,580)	703 (2,522)
ncftr	Net commission, fee, and trade revenue	206	443	154	97	147	416	395 (1,390)	118 (858)	204 (586)	189 (700)	650 (1,888)	272 (1,048)
ooi	Other operating income	193	453	1	86	130	651	106 (427)	52 (295)	1 (-)	38 (106)	239 (628)	628 (2,666)
gi	Gross income 1/	216	456	156	100	173	654	2,015 (6,098)	1,174 (3,949)	944 (2,213)	967 (3,232)	2,560 (7,221)	1,952 (6,434)
opi	Total operating income	216	456	156	100	174	654	786 (2,660)	395 (1,737)	549 (1,350)	604 (1,921)	1,453 (4,619)	1,501 (5,037)
pe	Personnel expenses	80	331	110	89	119	605	698 (1,591)	145 (663)	255 (581)	199 (570)	602 (1,718)	414 (1,436)
ae	Other admin expenses	80	334	110	96	124	243	526 (1,176)	124 (466)	170 (367)	103 (325)	563 (1,626)	118 (462)
oe	Other operating expenses	1	320	107	94	113	617	1 (-)	29 (140)	22 (71)	38 (128)	181 (491)	493 (1,938)
llp	Loan loss provisions	74	323	107	93	89	567	86 (213)	51 (151)	80 (184)	69 (203)	239 (662)	97 (439)
ope	Total operating expense	82	334	110	96	141	617	1,272 (2,926)	344 (1,275)	542 (1,179)	391 (1,197)	1,302 (3,896)	1,035 (3,639)
ptp	Pre-tax profit	82	327	110	96	150	617	564 (1,279)	44 (318)	202 (470)	213 (636)	616 (1,896)	493 (1,660)
ne	Number of employees	56	288	106	35	113	562	5,464 (12,822)	1,948 (6,277)	4,276 (10,490)	9,586 (24,953)	10,449 (31,025)	7,358 (25,924)

Source: Bankscope

1/ Interest, commission, fee and trade income.



Table 7. Selected Countries. Panel Regression Results on Net Interest Margin.  
Between Estimator with Weighted Least Squares.

	nim	nim	nim	nim	nim
ope_ta	0.247**	0.250**	0.250**	0.250**	0.250**
	-17.87	-17.97	-17.97	-17.97	-17.97
tcdmmf_ta	0.016**	0.015**	0.015**	0.015**	0.015**
	-10.12	-9.38	-9.38	-9.38	-9.38
tbd_ta	0.011**	0.010**	0.010**	0.010**	0.010**
	-5.85	-5.38	-5.38	-5.38	-5.38
llp_ta	1.044**	1.032**	1.032**	1.032**	1.032**
	-14.4	-14.21	-14.21	-14.21	-14.21
tlm_ta	0.018**	0.017**	0.017**	0.017**	0.017**
	-14.9	-14.74	-14.74	-14.74	-14.74
teq_ta	0.033**	0.034**	0.034**	0.034**	0.034**
	-7.32	-7.36	-7.36	-7.36	-7.36
hhi_ta	-0.002*	-0.003+	-0.003+	-0.003+	-0.003+
	-2.33	-1.72	-1.72	-1.72	-1.72
fo	0.06	0.102	0.102	0.102	0.102
	-0.34	-0.58	-0.58	-0.58	-0.58
tbill	-0.054	0.123	0.123	0.123	0.123
	-0.78	-1.1	-1.1	-1.1	-1.1
cpi	0.406**	-0.173	-0.173	-0.173	-0.173
	-2.77	-0.77	-0.77	-0.77	-0.77
rgdp	0.205**	0.024	0.024	0.024	0.024
	-3.17	-0.17	-0.17	-0.17	-0.17
rgdppc	0	0	0	0	0
	-1.64	-0.93	-0.93	-0.93	-0.93
itad	-0.146	0.862	1.521*	1.577	-1.913*
	-0.48	-1.64	-2.29	-1.13	-1.96
gerd		-0.659*		0.056	-3.434*
		-2.16		-0.07	-2.41
spad		2.775*	3.434*	3.490+	
		-2.43	-2.41	-1.71	
ukd		-0.771**	-0.112	-0.056	-3.546**
		-3.37	-0.39	-0.06	-2.78
usd		-0.715	-0.056		-3.490+
		-0.72	-0.07		-1.71
frad			0.659*	0.715	-2.775*
			-2.16	-0.72	-2.43
Constant	0.018	-1.501	-2.16	-2.216	1.274
	-0.02	-0.91	-1.33	-0.97	-0.68
Observations	8699	8699	8699	8699	8699
Number of obs	1658	1658	1658	1658	1658
R-squared	0.52	0.52	0.52	0.52	0.52

Absolute value of t statistics in parentheses

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Source. Bankscope.

Table 8. Selected Countries. Panel Regression Results on Operating Profits to Total Assets  
Between Estimator with Weighted Least Squares.

	opp ta	opp ta	opp ta	opp ta	opp ta
gi_ta	0.060**	0.061**	0.061**	0.061**	0.061**
	-8.37	-8.32	-8.32	-8.32	-8.32
tcdmmf_ta	0.003+	0.002	0.002	0.002	0.002
	-1.66	-1.36	-1.36	-1.36	-1.36
tbd_ta	-0.003+	-0.003	-0.003	-0.003	-0.003
	-1.69	-1.59	-1.59	-1.59	-1.59
llp_ta	0.034	0.018	0.018	0.018	0.018
	-0.5	-0.27	-0.27	-0.27	-0.27
tln_ta	0.004**	0.004**	0.004**	0.004**	0.004**
	-3.51	-3.57	-3.57	-3.57	-3.57
teq_ta	0.051**	0.053**	0.053**	0.053**	0.053**
	-11.31	-11.59	-11.59	-11.59	-11.59
hhi_ta	0.001	0.006**	0.006**	0.006**	0.006**
	-0.92	-3.34	-3.34	-3.34	-3.34
fo	0.265	0.293+	0.293+	0.293+	0.293+
	-1.49	-1.65	-1.65	-1.65	-1.65
tbill	-0.081	0.212+	0.212+	0.212+	0.212+
	-1.18	-1.88	-1.88	-1.88	-1.88
cpi	0.003	-0.529*	-0.529*	-0.529*	-0.529*
	-0.02	-2.32	-2.32	-2.32	-2.32
rgdp	0.199**	-0.16	-0.16	-0.16	-0.16
	-3.06	-1.1	-1.1	-1.1	-1.1
rgdppc	0.000+	0	0	0	0
	-1.71	-1.01	-1.01	-1.01	-1.01
itad	0.089	-0.696	-1.286+	-4.301**	2.207*
	-0.3	-1.32	-1.94	-3.06	-2.24
gerd		0.590+		-3.016**	3.492*
		-1.92		-3.46	-2.43
spad		-2.902*	-3.492*	-6.508**	
		-2.52	-2.43	-3.16	
ukd		0.104	-0.486+	-3.502**	3.006*
		-0.45	-1.66	-3.77	-2.33
usd		3.605**	3.016**		6.508**
		-3.56	-3.46		-3.16
frad			-0.590+	-3.605**	2.902*
			-1.92	-3.56	-2.52
Constant	-2.203**	-0.697	-0.107	2.909	-3.599+
	-2.66	-0.42	-0.07	-1.27	-1.91
Observations	8702	8702	8702	8702	8702
Number of obs	1658	1658	1658	1658	1658
R-squared	0.21	0.22	0.22	0.22	0.22

Absolute value of t statistics in parentheses

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Source: Bankscope.

Table 9. Selected Countries. Panel Regression Results on Operating Income to Total Assets  
Random Effects Estimator.

Sample	Italy	Non-Italy	All	All	All	All
	opi ta	opi ta	opi ta	opi ta	opi ta	opi ta
logta	0.811	0.336*	0.509**	0.511**	0.511**	0.511**
	-1.36	-2.23	-3.35	-3.38	-3.38	-3.38
logta_sq	-0.043	-0.012	-0.020*	-0.020*	-0.020*	-0.020*
	-1.25	-1.46	-2.32	-2.42	-2.42	-2.42
ii_ta	0.468**	0.228**	0.290**	0.292**	0.292**	0.292**
	-24.19	-28.5	-38.98	-39.3	-39.3	-39.3
ncftr_ta	0.899**	0.614**	0.621**	0.637**	0.637**	0.637**
	-13.99	-43.66	-43.05	-44.19	-44.19	-44.19
pe_ta	0.491**	1.613**	1.581**	1.576**	1.576**	1.576**
	-2.84	-73.77	-68.16	-68.2	-68.2	-68.2
tln_ta	0.021**	0.007**	0.011**	0.010**	0.010**	0.010**
	-5.43	-5.13	-8.32	-7.42	-7.42	-7.42
llp_ta	-0.08	0.186**	0.156**	0.161**	0.161**	0.161**
	-0.64	-8.7	-6.96	-7.18	-7.18	-7.18
tcd_ta	0.017**	0	0	-0.004**	-0.004**	-0.004**
	-3.13	-0.06	-0.03	-2.9	-2.9	-2.9
teq_ta	0.049**	0.120**	0.114**	0.109**	0.109**	0.109**
	-3.31	-27.86	-26.24	-24.54	-24.54	-24.54
fo	0.093	0.022	0.025	0.021	0.021	0.021
	-0.61	-0.73	-0.81	-0.69	-0.69	-0.69
hhi_ta	-0.001+	-0.001**	-0.001**	0	0	0
	-1.76	-3.84	-3.75	-0.46	-0.46	-0.46
itad			-0.452**	-0.583**	0.235	-1.296**
			-3.54	-4.19	-1.52	-8.36
spad				-0.107	0.711**	-0.820**
				-0.47	-3.16	-3.33
ukd				-0.748**	0.07	-1.461**
				-4.36	-0.37	-8.11
gerd					0.818**	-0.713**
					-6.26	-6.53
frad				-0.818**		-1.531**
				-6.26		-10.37
Constant	-5.938*	-3.164**	-4.572**	-4.415**	-5.233**	-3.702**
	-2.18	-4.59	-6.61	-6.42	-7.44	-5.29
usd				0.713**	1.531**	
				-6.53	-10.37	
Observations	1249	9805	11054	11054	11054	11054
Number of obs	248	1839	2087	2087	2087	2087

Absolute value of z statistics in parentheses

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Source: Bankscope.

Table 10. Selected Countries. Panel Regression Results on Operating Expense to Total Assets  
Random Effects Estimator.

Sample	Italy ope ta	Non-Italy ope ta	All ope ta	All ope ta	All ope ta	All ope ta
logta	-0.33	0.075	0.06	0.067	0.067	0.067
	-0.54	-0.72	-0.53	-0.59	-0.59	-0.59
logta_sq	0.006	-0.005	-0.004	-0.005	-0.005	-0.005
	-0.18	-0.82	-0.69	-0.79	-0.79	-0.79
ii_ta	0.123**	0.017**	0.034**	0.034**	0.034**	0.034**
	-6.58	-3.11	-6.26	-6.33	-6.33	-6.33
ncftr_ta	0.098	0.014	0.015	0.018+	0.018+	0.018+
	-1.62	-1.49	-1.42	-1.69	-1.69	-1.69
pe_ta	1.072**	1.883**	1.867**	1.866**	1.866**	1.866**
	-6.36	-127.8	-112.31	-112.13	-112.13	-112.13
tln_ta	-0.004	-0.004**	-0.003**	-0.003**	-0.003**	-0.003**
	-0.91	-4.38	-3.17	-3.38	-3.38	-3.38
llp_ta	0.993**	0.935**	0.933**	0.934**	0.934**	0.934**
	-8.89	-65.68	-59.08	-59.03	-59.03	-59.03
tcd_ta	0	-0.002**	-0.003**	-0.004**	-0.004**	-0.004**
	-0.08	-2.63	-3.29	-3.91	-3.91	-3.91
teq_ta	-0.012	0.036**	0.032**	0.031**	0.031**	0.031**
	-0.78	-12.23	-9.99	-9.46	-9.46	-9.46
fo	-0.057	0.023	0.015	0.014	0.014	0.014
	-0.42	-1.14	-0.69	-0.63	-0.63	-0.63
hhi_ta	-0.001	-0.000*	-0.000+	0	0	0
	-1.14	-2.13	-1.89	-0.29	-0.29	-0.29
itad			0.228*	0.199+	0.411**	0.03
			-2.11	-1.68	-3.06	-0.23
spad				-0.156	0.055	-0.326+
				-0.86	-0.29	-1.66
ukd				-0.006	0.205	-0.176
				-0.04	-1.27	-1.14
gerd					0.211+	-0.170+
					-1.89	-1.82
frad				-0.211+		-0.381**
				-1.89		-3.08
Constant	3.658	-0.1	-0.067	-0.073	-0.284	0.097
	-1.33	-0.21	-0.13	-0.14	-0.54	-0.19
usd				0.170+	0.381**	
				-1.82	-3.08	
Observations	1253	9805	11058	11058	11058	11058
Number of obs	250	1839	2089	2089	2089	2089

Absolute value of z statistics in parentheses

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Source: Bankscope.

Table 11. Selected Countries. Panel Regression Results on Operating Profits to Total Assets  
Random Effects Estimator

Sample	Italy opp_ta	Non-Italy opp_ta	All opp_ta	All opp_ta	All opp_ta	All opp_ta
logta	1.568**	0.259*	0.358**	0.334**	0.334**	0.334**
	-2.73	-2.49	-3.19	-3.00	-3.00	-3.00
logta_sq	-0.070*	-0.008	-0.012+	-0.011+	-0.011+	-0.011+
	-2.11	-1.35	-1.86	-1.78	-1.78	-1.78
ii_ta	0.377**	0.215**	0.238**	0.238**	0.238**	0.238**
	-21.49	-35.28	-40.9	-41.06	-41.06	-41.06
ncftr_ta	0.801**	0.504**	0.544**	0.558**	0.558**	0.558**
	-14.12	-47.93	-48.46	-49.84	-49.84	-49.84
pe_ta	-0.688**	-0.247**	-0.262**	-0.267**	-0.267**	-0.267**
	-4.32	-14.52	-14.24	-14.64	-14.64	-14.64
tln_ta	0.032**	0.012**	0.014**	0.013**	0.013**	0.013**
	-8.58	-12.38	-14.7	-13.69	-13.69	-13.69
llp_ta	-1.093**	-0.742**	-0.774**	-0.768**	-0.768**	-0.768**
	-10.4	-42.19	-41.87	-41.67	-41.67	-41.67
tcd_ta	0.018**	0.006**	0.007**	0.003**	0.003**	0.003**
	-3.3	-7.51	-7.1	-3.47	-3.47	-3.47
teq_ta	0.066**	0.084**	0.080**	0.074**	0.074**	0.074**
	-4.44	-26.71	-24.11	-21.72	-21.72	-21.72
fo	0.161	0	0.011	0.009	0.009	0.009
	-1.26	-0.01	-0.43	-0.33	-0.33	-0.33
hhi_ta	0	-0.000**	-0.000**	0	0	0
	-0.43	-4.45	-3.47	-0.93	-0.93	-0.93
itad			-0.581**	-0.651**	-0.192*	-1.200**
			-7.32	-7.39	-2.02	-11.79
spad				0.05	0.509**	-0.499**
				-0.31	-3.34	-2.79
ukd				-0.614**	-0.154	-1.162**
				-5.75	-1.33	-10.16
gerd					0.459**	-0.549**
					-5.54	-7.87
frad				-0.459**		-1.008**
				-5.54		-10.34
usd				0.549**	1.008**	
				-7.87	-10.34	
Constant	-12.273**	-3.217**	-4.057**	-3.804**	-4.263**	-3.255**
	-4.71	-6.73	-7.92	-7.48	-8.19	-6.29
Observations	1249	9805	11054	11054	11054	11054
Number of obs	248	1839	2087	2087	2087	2087

Absolute value of z statistics in parentheses

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Source: Bankscope.

Table 12. Selected Countries. Panel Regression Results on Operating Income to Total Assets  
Frontier Approach with Translog Functional Form.

	opi ta	opi ta	opi ta	opi ta
tcd_tl	0.004**	0.003*	0.003*	0.003*
	-2.6	-2.17	-2.17	-2.17
tbd_ta	0.001	0.001	0.001	0.001
	-0.38	-0.6	-0.6	-0.6
llp_ta	-0.049*	-0.041+	-0.041+	-0.041+
	-2.01	-1.66	-1.66	-1.66
teq_ta	0.021**	0.018**	0.018**	0.018**
	-4.51	-3.87	-3.87	-3.87
ta_ne	0	0	0	0
	-0.72	-0.68	-0.68	-0.68
hhi_ta	-0.000*	-0.001**	-0.001**	-0.001**
	-2.04	-2.65	-2.65	-2.65
fo	-0.043	-0.041	-0.041	-0.041
	-1.17	-1.1	-1.1	-1.1
itad	-0.156+	-0.036	-0.013	-0.782**
	-1.81	-0.36	-0.12	-3.99
spad		0.611**	0.634**	-0.135
		-2.74	-3.09	-0.46
frad		-0.023		-0.769**
		-0.25		-3.94
ukd		0.269*	0.293*	-0.477*
		-2.43	-2.42	-2.36
usd		0.746**	0.769**	
		-4.24	-3.94	
gerd			0.023	-0.746**
			-0.25	-4.24
Constant	-4.088**	-3.702**	-3.725**	-2.956**
	-3.69	-3.36	-3.36	-2.64
Observations	6994	6994	6994	6994
Number of obs	1468	1468	1468	1468

Absolute value of z statistics in parentheses

+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Source: Bankscope.

Table 13. Selected Countries. Panel Regression Results on Operating Expense to Total Assets  
Frontier Approach with Translog Functional Form.

	ope ta	ope ta	ope ta	ope ta
tcd_tl	0.006**	0.006**	0.006**	0.006**
	-10.56	-10.23	-10.23	-10.23
tbd_ta	0.004**	0.004**	0.004**	0.004**
	-5.4	-5.77	-5.77	-5.77
llp_ta	0.983**	0.985**	0.985**	0.985**
	-114.54	-114.59	-114.59	-114.59
teq_ta	-0.037**	-0.039**	-0.039**	-0.039**
	-21.24	-21.78	-21.78	-21.78
ta_ne	0	0	0	0
	-1.53	-1.52	-1.52	-1.52
hhi_ta	-0.000+	-0.000+	-0.000+	-0.000+
	-1.79	-1.81	-1.81	-1.81
fo	-0.016	-0.016	-0.016	-0.016
	-1.24	-1.25	-1.25	-1.25
itad	0.160**	0.200**	0.203**	0.015
	-4.84	-5.25	-5.1	-0.21
spad		0.102	0.105	-0.083
		-1.24	-1.36	-0.76
frad		-0.003		-0.187*
		-0.07		-2.49
ukd		0.187**	0.190**	0.003
		-4.36	-4.02	-0.03
usd		0.185**	0.187*	
		-2.7	-2.49	
gerd			0.003	-0.185**
			-0.07	-2.7
Constant	10.570**	10.539**	10.536**	10.724**
	-25.63	-25.56	-25.43	-25.61
Observations	6994	6994	6994	6994
Number of obs	1468	1468	1468	1468
Absolute value of z statistics in parentheses				
+ significant at 10%; * significant at 5%; ** significant at 1%				

Source: Bankscope.

Table 14. Selected Countries. Panzar-Rosse *H*-Statistics, 1998-2004.

Specification	H-statistic	Italy	Spain	Germany	UK	France	US	Max	Min.
(1)	H-statistic	0.60	0.74	0.78	0.84	0.64	0.53	0.84	0.53
	Ranking	5	3	2	1	4	6		
(2)	H-statistic	0.62	0.83	0.88	0.63	0.77	0.60	0.88	0.60
	Ranking	5	2	1	4	3	6		
(3)	H-statistic	0.67	0.78	0.85	0.78	0.71	0.53	0.85	0.53
	Ranking	5	2	1	3	4	6		

Source: Bankscope.



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