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Italy: Selected Issues

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ITALY

Selected Issues

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Approved by the European I Department

October 23, 2003

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I. INTRODUCTION

1. The 2003 Article IV discussions with Italy focused on policies to secure strong growth and to safeguard fiscal sustainability, and the following three chapters provide background analysis on these issues. The discussions took place against the background of lackluster growth in Italy over the past decade and stagnation during the first half of 2003, accompanied by sizable losses in export market shares. The latter may to some extent be linked to losses in price competitiveness, with inflation consistently exceeding the euro-area average since the beginning of monetary union in 1999. Accordingly, Chapter II takes a closer look at the reasons behind Italy's persistent inflation differential vis-à-vis the euro area. Strong, durable growth will also require a narrowing of Italy's large regional imbalances through a catch-up in income levels of the South—and the historical experience in this regard and recent policy initiatives are reviewed in Chapter III. Finally, Chapter IV focuses on a key issue for securing fiscal sustainability—that is, the outlook, and possible reform steps, for pension expenditure.

2. The determinants of Italy's inflation differential vis-à-vis the euro area, and possible implications for competitiveness, are reviewed in Chapter II. Italy's consumer price inflation differential vis-à-vis the euro area has averaged about ½ percentage point since the beginning of monetary union, and reached 1 percentage point in mid-2003. This is to some extent surprising, given Italy's relatively weak growth performance. The empirical results presented in Chapter II suggest that price level convergence was an important determinant of the inflation differential, with Italy's price level estimated to be considerably below the euro-area average. In addition, estimates that account for the tight employment conditions in the North also provide some explanatory power for Italy's inflation differential. As suggested by other studies, this is likely to reflect the particular wage setting behavior in Italy, with wages determined primarily by labor market conditions in the North. The empirical results do not indicate a role of Balassa-Samuelson-type productivity catch-up and inflation differentials. In any case, these effects are unlikely to have played a large role in the Italian case, where productivity growth has been low in recent years. Looking ahead, the chapter's results suggest that further price level convergence could lead to additional real exchange rate appreciation in coming years. This adds urgency to adopting policies that will avoid potentially adverse repercussions for exports and growth.

3. Regional convergence over the past four decades is reviewed in Chapter III, with a particular focus on recent policy initiatives. In terms of regional disparities, Italy stands out relative to most euro-area countries, for example, in terms of per capita output as well as labor market performance. In broad terms, the disparities are concentrated between the relatively developed Center-North and the lagging South. An array of policy initiatives during past decades has failed to deliver sustained regional convergence, particularly during the quarter century from 1970 to 1995. However, more hopeful signs have become visible since the mid-1990s, indicating a resumption of a gradual convergence process. Moreover, the results reported in Chapter III suggest that this process has been driven by faster growth in total factor productivity. The results also indicate that growth benefits from public investment in infrastructure increased considerably in the South since the mid-1990s,

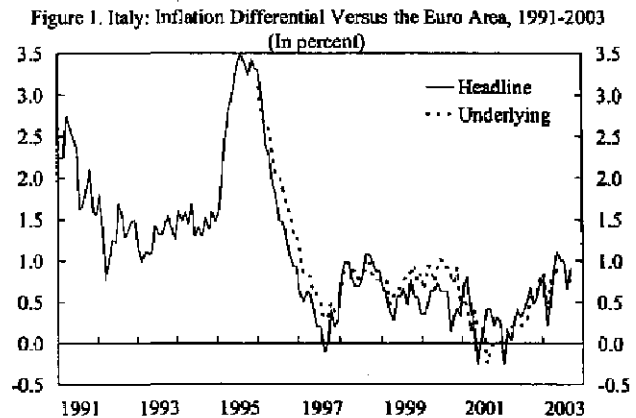
although the level of this investment declined during this period. Also striking are regional differences in the growth benefits of public infrastructure investment in earlier years, with the benefits considerably lower in the South than in the Center-North up until the 1990s. This points to large inefficiencies in the South and provided one of the reasons for the more recent policy shift toward greater transparency and accountability. While the apparent improvement in investment efficiency in the South suggests that the recent policy shifts are beginning to bear fruit, it is still too early for firmly establishing this link. Furthermore, the improved relative economic performance of the South came partly about by relatively low output growth in the North in recent years (rather than very strong growth in the South).

4. The possible case for additional pension reform is reviewed in **Chapter IV**, focusing on three key concerns. First, fiscal sustainability: notwithstanding far-reaching reforms during the 1990s, aging-related spending is likely to rise (in relation to GDP) until about 2030. This threatens fiscal sustainability, particularly in view of Italy's high public debt-to-GDP ratio. Second, creating room for other reform priorities: recent (and ongoing) labor market reforms have strengthened the argument for a broader reform of the social protection system, as the current system is heavily tilted toward pension spending, which is among the highest (in relation to GDP) for industrial countries. Third, intergenerational equity: the long transition period to the defined contribution system, introduced with the 1990s reforms, generates significant pension benefit gaps between workers with very similar contribution periods. With these three concerns in mind, the chapter provides simulations for future spending trends under alternative macroeconomic assumptions, and illustrates the quantitative implications of several pension reform scenarios. The results suggest significant savings from increases in the effective retirement age, and the government's current reform proposals—which still remain to be finalized—could present an important step in this direction.

II. INFLATION AND COMPETITIVENESS¹

A. Introduction

1. The steady rise in the Italian inflation differential versus the euro area over the past two years has raised concerns regarding the persistence of inflation in Italy, and its possible implications for competitiveness. After falling to zero in 1997, the (headline) inflation differential has since averaged about ½ percentage point (and was as close to 1 percentage point in the summer of 2003, also in underlying terms; Figure 1). Over the same period, Italy's competitiveness—as measured, for example, by export market share—has been in decline.



2. With various data sources suggesting that Italy has a price level somewhat below that of the euro-area average, gradual convergence toward the area average could explain a persistent inflation differential. It might also be explained by only gradual adjustment from the relatively high inflation prior to monetary union. This chapter uses panel data for the euro area from monetary union in 1999 to 2002, to investigate these and other factors driving the inflation differential, examine its likely persistence, and consider the implications for Italian competitiveness.

3. In the context of monetary union, this inflation differential could present a loss of competitiveness vis-à-vis Italy's euro-area partners—at least to the extent that the inflation differential is not driven by relative gains in productivity in the traded sector. Indeed, Italy's real exchange rate (vis-à-vis the euro area) has appreciated and its export market shares relative to other euro-area countries have declined in recent years (see Figures 2 and 3 below).² These losses in competitiveness may have contributed to a slower pace of economic activity.

4. The rest of the chapter is structured as follows. Section B reviews possible explanations for the inflation differential—highlighting a number of both persistent and temporary factors—and summarizes some of the existing empirical evidence for Italy and the euro area more generally. Two hypotheses are introduced, first that Italy's high inflation represents the effects of convergence starting from an initially low level of prices; and, second, that it reflects the slow adjustment of expectations to the high inflation of the past.

¹ Prepared by Christopher Kent.

² As measured by real growth of exports of goods and nonfactor services less growth of import demand in partner countries; Fund staff estimates for 2003.

Figure 2. Italy: Export Market Share, 1989-2003
(1989=100)

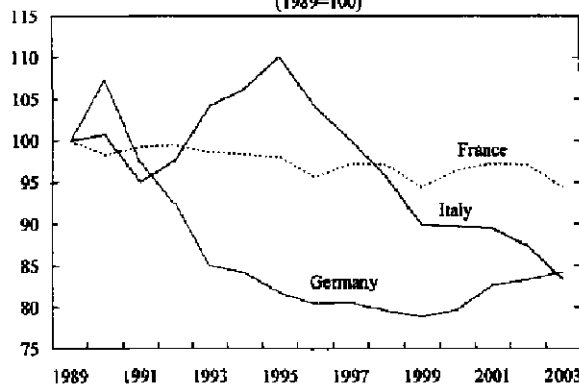
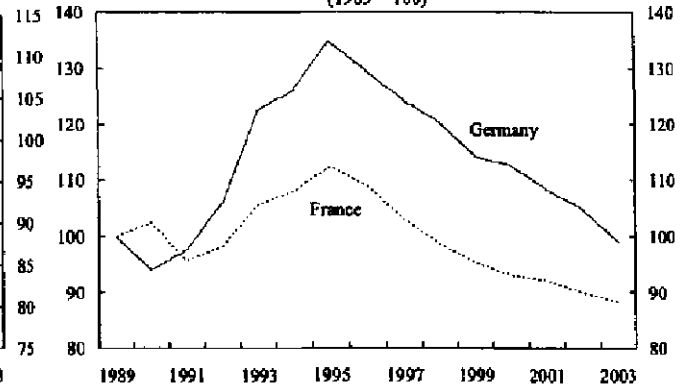


Figure 3. Italy: Export Market Share Relative to Germany and France, 1989-2003
(1989 = 100)



Section C analyses these hypotheses empirically using a panel data model for the euro area. Section D considers the explanatory role played by measures of productivity or income, and considers a range of alternative estimates of the output gap as explanators of the inflation differential. Conclusions are drawn in Section E.

B. Determinants of Inflation Differentials: Persistent and Temporary Factors

5. This section provides an overview of the range of factors that could account for the inflation differential, with a brief discussion of the existing evidence.

6. To start with, Italy has recorded relatively higher inflation than the euro-area average, not just in the aggregate, but also across most broad categories of goods and services. The table below shows the Italian inflation rates and the differential versus the euro area for the 12 broad categories of the harmonized indexed consumer prices (HICP). Italy experienced higher inflation in 10 of these categories, with only alcoholic beverages and education recording lower inflation. The inflation differential was especially high for the communications category. However, even if the inflation differential in this category had been zero (from 1998 to 2002), the aggregate differential would still have been 0.34 percentage point (versus 0.4 percentage point observed for the overall HICP).

7. Italy has not suffered higher inflation than the euro area because of higher shares for those categories of the consumption basket that had higher inflation than other categories. Relative to the euro area, Italy has somewhat higher shares in the HICP basket for the categories of restaurants, hotels, clothing, and furnishings, and lower weights on housing and transport. However, taking the Italian inflation rates for the 12 broad HICP categories, but applying euro-area average weights, produces an inflation rate that is just above the actual one experienced by Italy (by 0.02 percentage point from 1998 to 2003).

8. A possible longer-run determinant of inflation differentials is price level convergence within the euro area. For traded goods and services, this would follow from arbitrage within a tightly integrated trading community; although, differences here may be quite persistent due to variation in prices of nontraded goods and services that form an important part of the final

Italy: Inflation, Inflation Differential Versus the Euro Area, and Item Weights
(1998-2002, annual average, in percent)

Category	Italy Inflation	Differential vs. Euro Area	Weights	
			Italy	Euro Area
All items	2.2	0.4	100.0	100.0
Food and nonalcoholic beverages	2.2	0.1	17.7	16.8
Alcoholic beverages	2.5	-0.4	2.9	4.1
Clothing and footwear	2.1	1.1	11.1	8.0
Housing	2.7	0.6	10.2	15.9
Furnishings	1.8	0.5	10.7	8.2
Health	3.0	0.7	3.0	2.8
Transport	2.2	0.1	14.3	15.6
Communications	-1.7	1.8	2.7	2.5
Recreation and culture	1.4	0.6	7.8	10.0
Education	2.5	-0.5	1.0	0.7
Restaurants and hotels	3.4	0.4	10.7	8.7
Miscellaneous goods and services	2.8	0.7	7.8	6.9

Source: Eurostat.

price facing consumers for traded goods and services.³ For nontraded prices, convergence would follow from gradual convergence in income and productivity over time. This may be aided by similar institutional structures, as arguably provided by the monetary union of the euro area, and the framework for trading and competition provided by the European Union.

9. There is evidence of price convergence within Europe, though it appears to be quite gradual. Rogers (2002) examines a set of disaggregated price data for euro-area cities from 1990 to 2001 and finds evidence of a large decline in dispersion of traded prices across Europe (to a level close to that between cities within the United States). He also finds a decline in the dispersion of nontraded prices, albeit to a lesser extent.⁴ Estimates from Honohan and Lane (2002) imply that if a country's price level is 10 percent lower than the euro-area average, this would contribute between 0.3 and 0.4 percentage point to the annual inflation differential (Rogers, 2002; and Honohan and Lane, 2003). This is somewhat slower than within the United States, which has much stronger linkages across regions in several important respects, including for fiscal policy and labor mobility. Cecchetti, Mark, and Sonora (2001) estimate that across U.S. cities, the half life of convergence is about nine years—that is, a 10 percent price-level differential would contribute just over 0.5 percentage point to the annual inflation differential.

³ See for example, Engel (1993), Lapham (1995), Engel and Rogers (1996), Knetter (1997), and the seminal work in this area of Lipsey and Kravis (1978).

⁴ Looking at post EMU period, and a number of different macro and micro price level measures, Lutz (2003) finds no evidence of a decline in price dispersion, though this period may be too short if convergence is as gradual as implied by other studies over longer periods.

10. The various measures of the aggregate price level all suggest that Italy is currently somewhere below the European average. Data from the Economic Intelligence Unit survey of prices of comparable baskets of goods and services in different cities (used in Rogers, 2002) suggests that the price level in Italy is currently 15 percent below the European average. Aggregate Eurostat data suggest it is only 5 percent lower, while the consumption price level from the Penn World Tables (PWT) implies an intermediate figure of 10 percent.

11. One mechanism that could underlie price level convergence is the Balassa-Samuelson effect, whereby countries with lower productivity in the traded sector experience more rapid productivity growth on the path of convergence. The adjustment process leads to a higher rate of wage inflation in the economy as a whole, and hence a positive inflation differential. For Italy, however, this seems unlikely given its relatively high level of productivity.⁵

12. An alternative possibility is that Italy is only gradually adjusting to the large nominal depreciation of the early 1990s, which had driven the price level below the euro-area average.⁶ This could explain the relatively low price level, but suggests that the temporary boost to competitiveness (in spite of a possible structural trend decline in market share, discussed in the accompanying 2003 staff report on Italy) has helped to raise demand above what it otherwise would have been.

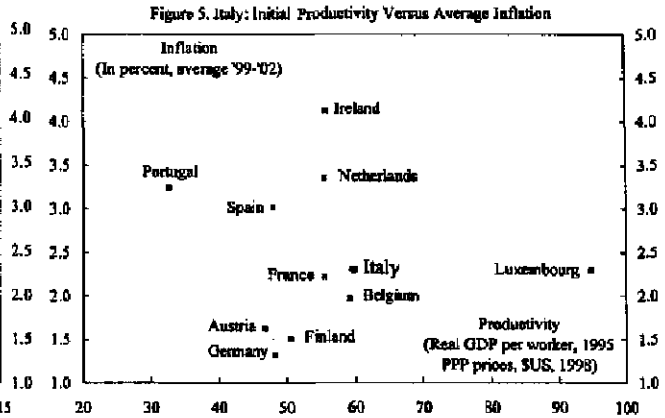
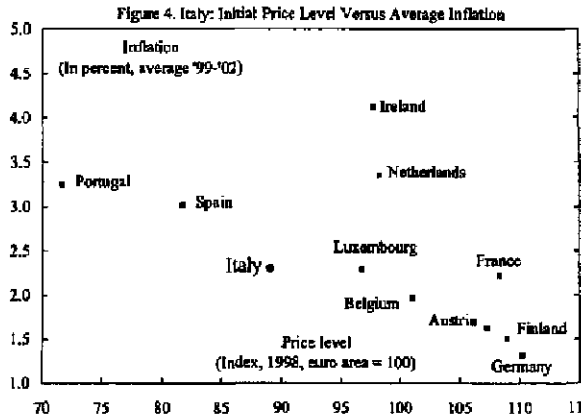
13. Convergence in income levels could also explain convergence in price levels if demand influences relative prices. For example, higher income countries might spend relatively more on nontraded or service sectors (for example, if demand is not homothetic), leading to relatively higher prices in these sectors if production here relies on a fixed factor of production. However, an examination of trends in consumption shares and inflation (relative to the euro area) across different categories of goods and services suggests that a shift in the pattern of demand has not been a factor influencing the relative prices of goods and services in a way that could affect the inflation differential.

14. A cross-country comparison of the price level in 1998 (from the PWT) and the average inflation rate from 1999 to 2002 is consistent with the price convergence effect—that is, a low price level initially is associated with a higher average inflation rate (Figures 4 and 5; and Table 1). The relationship between initial productivity levels and average inflation

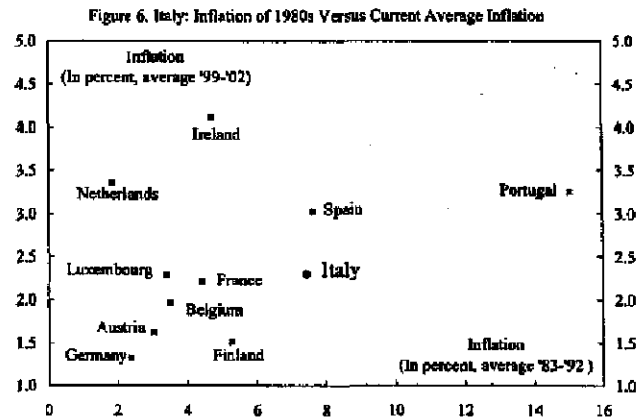
⁵ What matters for the Balassa-Samuelson effect is the productivity growth in the traded sector (relative to the nontraded sector) compared with other countries. Canzoneri and others (2001) suggest that this is not small in Italy. However, staff estimates from OECD national accounts data (see the appendix for a description of the data), show that relative productivity in the traded and nontraded sectors rose by slightly less than in the euro area overall, which implies a small negative contribution to Italy's inflation differential.

⁶ In 1991, Italy's price level was only 1 percent below the euro-area average according to the measure from the Penn World Tables.

over this period is less clear cut—with a wide range of average inflation experienced by countries within the mid range of productivity levels in 1998 (Figures 4 and 5).



15. Another possible explanation for relatively high inflation could be a slow convergence of expectations regarding inflation of wage and price setters within a country following the fixing of nominal exchange rates within the monetary union. Such an effect might, a priori, explain most of the inflation differentials, or it could operate in conjunction with other persistent factors. This effect would make sense for countries like Italy, Portugal, and Spain, which had relatively high average inflation for the ten years prior to meeting the convergence criteria in 1997, and have also had large (though not the highest) average inflation differentials subsequently (Figure 6). These inflation differentials could persist for some time before eventually leading to a loss in competitiveness, slowing economic activity sufficiently until people's expectations for inflation are brought into line with the rest of the euro area.



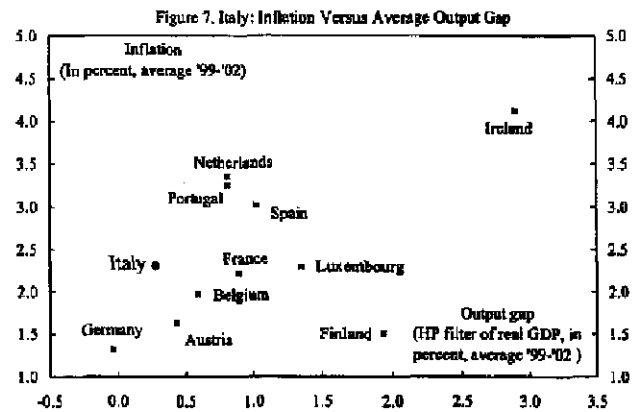
16. While the types of factors described above imply a gradual path of adjustment—along which inflation differentials would be expected to persist—there are a host of other factors that can contribute to inflation differentials in the short run. Countries may respond differently to common shocks. This may partly reflect variation in consumption patterns,⁷ or in production—for example, some countries might be more dependent on oil—or both, for example through different foreign trading partner dependencies. It may also reflect variation in the persistence of inflation due to differences in nominal rigidities in product and labor

⁷ Though this is not the case for Italy, as explained above.

markets. The OECD (2002) summarizes this evidence, suggesting greater rigidities in Italy on both counts.⁸

17. Another possibility is that countries are subject to country-specific shocks. There are a number of shocks that can be incorporated into empirical analysis, including:

- *Demand and supply shocks*, leading to a temporary output gap. Figure 7 shows the positive relationship between the average output gap and the average inflation rate from 1999 to 2002, with Ireland and Germany at opposite extremes;



- *Changes in indirect taxes* have been large in some EU countries.

Across euro-area countries, there is a small positive correlation (of 0.24) between the average change in indirect tax rates and the inflation rate over the period from 1999 to 2002. The sharp rise in indirect taxes in Italy from 1997 to 1998 (relative to the euro area) appears to have had a significant impact on inflation in 1998. Thereafter, the level of indirect taxes has remained close to that of the euro area, and is unlikely to be a factor driving the inflation differential in the future.

- *Liberalization of product markets.* The OECD provides detailed comparisons regarding the extent of product market liberalization, showing Italy lagging behind many euro-area countries (OECD 2003). This study suggests that despite a low price level overall, Italy suffers from relatively high prices in key nontraded sectors including: electricity and gas—inflation has been similar, but prices remain high; postal and telecommunications—despite liberalization, prices remain high and have not declined as rapidly as elsewhere in the euro area; wholesale and retail distribution—the lowest productivity in the EU, and high markups; professional services—with above average regulation. However, the OECD indices of product market regulation are not available consistently for all these countries over time. Instead, the business regulation subindex of the Economic Freedom Index is used (see appendix for details), which is available across time and countries.
- *Three other factors* were examined but were found to be insignificant in the empirical specifications examined below; and so they are not reported in detail. First, a measure

⁸ With only a few years in the sample (see below), it is difficult to test for differences in the dynamic response of inflation to common shocks.

of fiscal pressures—the difference of the current cyclically-adjusted fiscal surplus (in percent of potential GDP) from the average of the previous six years. This captures the possibility that government spending may fall disproportionately on nontraded goods and services, and could influence the inflation differential for these sectors, at least in the short run. Second, the nominal effective exchange rate—the lagged (log) change in the nominal effective exchange rate (the lag captures delayed pass-through). This can vary across countries because of the variation in trading partner shares, and could influence consumer prices both directly. Third, a cubic measure of the price level—to capture the possibility that convergence may be much more gradual for countries close to the average.⁹

C. Model Estimates—Price Level Convergence Versus Inflationary Expectations

18. Having laid out some of the factors that could explain the inflation differentials within the euro area, this section quantifies their relative importance by estimating a panel regression for the inflation differential. The approach follows that of studies by the ECB (1999), Rogers (2002), and Honohan and Lane (2003) (hereafter HL).

19. The goal of this section is two-fold. First, to investigate the validity of the competing hypotheses of price level convergence versus persistence following from lagged inflationary expectations. And, second, to examine the significance of some of the other short-term variables discussed above. Price level convergence could partly capture the impact of productivity and income convergence (Balassa-Samuelson effects), and an examination of the additional explanatory power of direct measures of the level of productivity and income is left until Section D.

Panel regression model

20. The methodology follows most closely that of HL, who use multivariate panel regressions to explain inflation differentials within the euro area. Data is annual, starting from the adoption of the euro in 1999 up to 2002, and covers the original 11 members of the euro area.¹⁰ The general specification is expressed in terms of the inflation differential with respect to a reference euro-area country (see below).¹¹

⁹ The result on fiscal pressure is consistent with that of Honohan and Lane (2003) and Rogers (2002), while that for the nominal effective exchange rate was in contrast to the finding of statistical significance by Honohan and Lane.

¹⁰ There are at least two reasons to restrict the period of investigation to post EMU. The first is to avoid the earlier period of flexible exchange rates. The second is to avoid 1997 since this was the year in which the social partners were actively working to meet the Maastricht criteria for convergence of inflation rates—in spite of forces (such as price level convergence) that may have been working to maintain considerable inflation differentials.

(continued)

$$\pi_{it} - \pi_t^R = \beta(z_{it} - z_t^R) - \delta([P_{it-1} - P_{it-1}^*] - [P_{t-1}^R - P_{t-1}^{R*}]) + \varepsilon_{it} - \varepsilon_t^R \quad (1)$$

where: π_{it} and π_t^R are the annual national and reference-country inflation rates; P_{it} and P_t^R are the national and reference-country price levels, and the same variables with stars are the national and reference-country long-run equilibrium price levels; z_{it} and z_t^R are other national and reference-country variables that influence inflation; and ε_{it} and ε_t^R are national and reference-country shocks to inflation.

21. The key assumption is that all countries within the euro area will converge to the same price level in the long run, that is, $P_{it}^* = P_t^{R*}$. This allows equation (1) to be rewritten as:

$$\pi_{it} - \pi_t^R = \beta * (z_{it} - z_t^R) - \delta(P_{it-1} - P_{t-1}^R) + \varepsilon_{it} - \varepsilon_t^R. \quad (2)$$

22. Country fixed effects are ignored because long-run price level convergence is assumed, absent persistent productivity differentials.¹² For convenience, the reference-country variables (including the reference-country shock) can be grouped into a time dummy:

$$\pi_{it} - \pi_t^R = \phi_t + \beta * z_{it} - \delta P_{it-1} + \varepsilon_{it}. \quad (3)$$

23. The regression analysis is conducted by excluding the reference country from the sample (replacing its influence by time dummies). The reference country could in theory be any one of the euro-area countries, but in practice it makes sense to choose a country which

When the regressions are extended back to 1998, it did not alter the main findings of this chapter.

¹¹ Even if the inflation differential was calculated relative to the euro area, one country would need to be dropped from the panel regression, since the euro area itself is constructed as the (weighted) average of each of its member countries.

¹² This representation is like an error correction model with the lagged price level terms acting as the long-run cointegrating relationship. But given the short time period for estimation, this cannot be tested. The significance of the coefficient on the price level differential—which measures the speed of convergence—would indicate the existence of a cointegrating relationship between the (nonstationary) price level variables. Estimates below show that the coefficient on this is negative and significant. It is insignificant, however, when the model is estimated instead with fixed effects (results not reported). Given the very gradual rate of convergence and the short sample period, this is perhaps not surprising, and implies that most of the variation in the inflation differential appears to come from cross-sectional variation in the price level, rather than variation in the price level over time.

behaves most like the euro-area average—since countries further from the average potentially provide more valuable information about the relationship between inflation and the various explanatory variables. This happens to be Belgium, which in terms of the key variables of inflation, the price level, and the output gap, is the country closest to the respective euro-area averages. To aid interpretation of the results, contributions of the various explanatory variables to the inflation differential are expressed later in the chapter relative to euro-area averages.

24. Using this simple framework, a number of specifications are estimated, including comparing results for headline and underlying inflation (the latter excluding energy and seasonal foods); both are based on harmonized indices of consumer prices.

25. The price level variable is the consumption price level in the Penn World Tables (see the appendix for details). The equivalent Eurostat measure does not appear to be as reliable in the sense that the variation in the price level over time is very erratic, and in many cases, poorly correlated with the cumulative inflation differentials over time.

26. It is difficult to determine the significance, if any, of the effect of lagged inflationary expectations. This is because if price convergence explains the inflation differential, the price level itself will be highly correlated with the average inflation differential over recent years. To gauge the significance of the expectations effect, a ten-year moving average of inflation is used that ends six years prior to each period. In other words, for the first observation used in the regression, 1999, the inflation expectation is measured by the average of inflation from 1984 to 1993. This measure clearly identifies countries with high inflation in the 1990s prior to monetary union—namely, Italy, Portugal, and Spain (Table 1).

27. The other variables considered here are as follows:

- GAP_t is the percentage difference between actual and potential real GDP. Potential is estimated by applying the Hodrick-Prescott filter to actual output (starting with data in 1980).¹³ This seems more appropriate than the use of say the OECD or WEO estimates of the output gap, since these are by construction correlated with the inflation rate (through estimates of the NAIRU). However, the results are later in this chapter compared with those using other estimates of the output gap;
- ΔTAX_t is the growth rate (in percent) of indirect taxes, measured as one plus the estimated tax rate, which is approximated by indirect tax revenues as a share of private consumption;
- The contemporaneous change in a country's relative ranking regarding the extent of regulations affecting business sector competition—where a positive value indicates

¹³ Extending the sample period to 2008 using WEO projections did not alter the results.

an improvement in the relative ranking. This variable is intended to capture the impact of cross-country variation in the extent of product market liberalization on the inflation differential. It is based on the raw business regulations subindex of the Economic Freedom Index (see appendix). A lack of data means that regressions containing this variable end in 2001; and

- Lags of all these variables were also examined, but they were not significant.

The appendix contains a more detailed discussion of, and a list of sources for, the data.

Results

28. Selected results of the panel estimates are presented in Table 2, with various model specifications numbered in the columns. The major results are robust to various checks—including: the exclusion of countries one at a time from the main regressions, variation in lags for some variables (see above), extending the sample back to 1998, and truncating it at 2001. These are discussed where relevant.

29. The findings can be summarized as follows:

- The coefficient on **indirect taxes** is positive, but insignificant in model (1), and so is not included in the remaining models.¹⁴
- The coefficient on the **output gap** is positive, significant and stable under most specifications. The range of estimates are tightly clustered around 0.3, implying that an output gap of 1 percent above that of the euro-area average contributes to a positive inflation differential of 0.3 percentage point. Section D will also examine the effect of using alternative measures of the output gap. Robustness tests (not shown) imply that a significant contribution to the significance of this coefficient comes from Ireland (for which the largest positive inflation differential has been associated with the largest positive output gap, but with a relative price level close to the average).
- The coefficient on the **lagged price level** is negative and significant under all specifications, indicating the impact of convergence. The speed of convergence is comparable with that found by HL (other than for model (1), which includes the inflation expectations term; see below). For Italy, for example, with a price level around 10 percent below that of the euro-area average, price level convergence implies a positive inflation differential of between 0.3 and 0.4 percentage point per

¹⁴ Its value increases (to 0.006; and is significant at the 10 percent level) if Luxembourg is excluded from the regression (results not shown), but it does not improve the fit of the regression, and is not robust to the inclusion or exclusion of other explanatory variables. Luxembourg experienced a large rise in indirect tax rates in 1999 and 2000 without an especially high inflation differential in those years.

year (and of up to 0.6 percentage point for some models presented in Section D; see also Tables 3 and 5).

- The role of inflation expectations (proxied by the **lagged inflation term**) can be seen by comparing the results of models (1), (2), and (3). In model (1) its coefficient was negative and significant, while that for the price level is larger in absolute terms than for model (2), and the fit of the regression is greater than for models (2) and (3). This negative coefficient on lagged inflation is odd and probably reflects the high correlation between the two variables (of -0.83, between 1998 and 2002). The negative coefficient implies that other things equal, higher inflation in the past implies lower inflation currently. However, excluding the price level from the regression (model 3) leads the coefficient on lagged inflation to become positive (and significant), but at the expense of a much poorer fit (than model 2)—this fit can be improved, however, only by shortening the moving average period and reducing the lag of this expectations measure (not shown). In short, the measure of lagged inflation used (as a proxy for backward-looking inflation expectations) is a significant explainer of the inflation differential by itself, but adds to the regression in a way that suggests possible over fitting of the data.
- The coefficient on the change in the (contemporaneous) **business regulation** ranking of a country is positive but not significant—with a probability value, however, only just above the cut-off value for the 10 percent significant level—in model (4) (it is examined only in the context of the more parsimonious specifications due to a lack of data for this variable, and hence, a degrees of freedom problem). Using the OECD measure of the output gap in place of the HP filtered version (model 6), does lead to a positive and significant coefficient (at the 10 percent level) for the business regulation rank variable. The magnitude of the coefficient implies that an improvement in a country's ranking by one is associated with a decline in the inflation differential of about 0.1 percentage point in that same year (a one year lag of the business regulation ranking was insignificant).
- Coefficient estimates (on the price level and the output gap) and the fit of the model are of the same order of magnitude when the all items HICP inflation is replaced on the left-hand-side of the regression by the **underlying HICP inflation**.
- Finally, an examination of the residuals from these regressions points to the Netherlands in 2001 and 2002 as being the only major outlier, with an inflation differential well above that predicted by the models. The prediction errors for Italy are in line with those of other countries, and the inflation differential for Italy was not over or under predicted over the sample as a whole.

D. Productivity and the Output Gap

30. The previous section demonstrated the significance of the initial price level as an explanatory variable of the inflation differential, and suggested no significant role for a

country's earlier history of inflation. This section considers the significance of measures of productivity along side that of the price level. Measures of productivity might capture more directly the Balassa-Samuelson effect than the price level itself.¹⁵ Even if this is true, the price level may still maintain a significant role given that it should also capture the situation in Italy, which has relatively high productivity, but a low price level following the only gradual adjustment to the earlier nominal depreciation.

Productivity

31. Two measures of productivity are considered: the lagged level of labor productivity (measured by the ratio of GDP, in PPP-constant 1995 dollars, to total employment),¹⁶ and the contemporaneous change in the (log of the) ratio of traded to nontraded productivity. Two points are worth noting before discussing the results of this analysis. First, Luxembourg is an extreme outlier with respect to output per worker (at almost double the euro-area average level), and so it is important to ensure that results are robust to the exclusion of Luxembourg. Second, the coefficient on productivity is dependent on the presence of the price level in the regression, so results are compared with each measure included separately, with those where both are included. Results are shown in Table 3 for the sample excluding Luxembourg (including results from the parsimonious model (2a) from Section C for comparison).¹⁷

32. The coefficient on the change in the ratio of traded to nontraded productivity is insignificant (model 8). The coefficient on the lagged productivity level is positive but insignificant in the presence of the price level term (models 8 and 9)—and leads to a slight improvement in fit (model 9 versus model 2a). The improved fit from including the productivity level comes mostly from Ireland—which has had much higher inflation than predicted by the models, and relatively high productivity—while the fit for Italy worsens. This can be seen by comparing the predicted and actual inflation differentials for models 2a and 9 shown in Table 4. Without the price level (model 10), the coefficient on the productivity level is negative (as implied by Balassa-Samuelson), but insignificant.

¹⁵ Also, the price level used may be an imprecise measure of the true price level. The true price level may be better captured by a measure of the level of real productivity per worker (working also as a proxy for real income, and, therefore, capturing possible demand and supply-side effects).

¹⁶ Honohan and Lane (2003) justify including a measure of the level and change in aggregate productivity since these should affect the long-run equilibrium price level. However, this makes little sense since they assume convergence of prices in the long run to justify the estimation methodology in the first place.

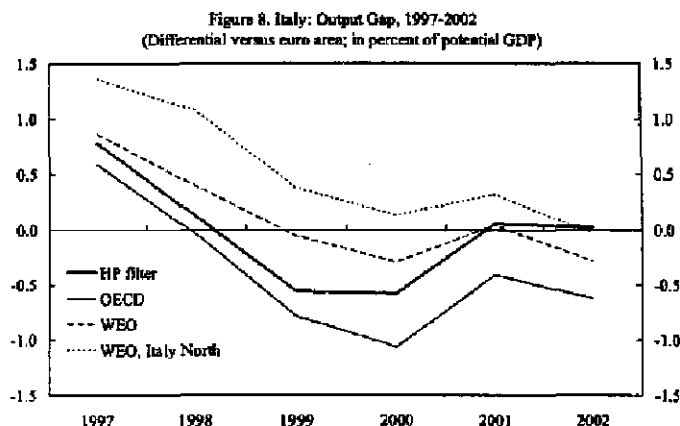
¹⁷ Estimates including Luxembourg show that the coefficient on the change in the ratio of traded to nontraded productivity is insignificant, as is the coefficient on the lagged level of productivity.

33. In short, the lagged level of productivity per worker does not appear to be a robust explanator of the inflation differential. Its coefficient is positive and significant when the price level term is also included—implying that countries with higher productivity have relatively higher inflation (other things equal). However, it is negative and insignificant without the price level included.

The role of the output gap

34. The fact that Italy has a relatively low price level appears at odds with the fact that it has also suffered from declining export market shares and market shares below its historical average (versus trading partners overall, though not to the same extent for euro-area trading partners). These observations can be reconciled, however, by assuming that structural shocks have reduced Italy's export capacity, so that in spite of poor performance of late, Italy is still above its long-run equilibrium market share. (Some of these issues are discussed in more detail in the staff report for the 2003 Article IV consultation.) The key issue here is that along the path of adjustment, with the current export market share above the long-run equilibrium, there should be excess demand pressures (relative to the euro area) working to keep inflation above the euro-area average. In other words, we should expect the output gap (that is, actual output less potential output) in Italy to be higher than that of the euro area during this transition, other things equal.

35. The HP filtered estimate of the Italian output gap is, however, below that of the euro area in 1999 and 2000, and only marginally above it in 2001 and 2002 (Figure 8), implying a negative contribution initially and then only a negligible positive contribution thereafter to the inflation differential (Table 6, models 2a and 9). The OECD estimates imply a large negative contribution of the output gap to the inflation differential for Italy from 1999 to 2002 (Table 6, models 6, 2b, and 9b). These models provide a better fit of the data, but it is important to note that this is in part by construction, since the OECD gap estimates are based on estimates of the NAIRU in the first place. Models using WEO output gap estimates (2c and 9c)—also based on NAIRU estimates—provide a still better fit, with somewhat higher coefficients on the output gap (though not statistically different from models using the HP filter for the output gap). The WEO output gap estimates still imply a negative contribution to the inflation differential for 1999, 2000, and 2002.



36. It is possible, however, that Italy's large regional differences have important implications for aggregate supply constraints that are not well captured in the above estimates (which are based on nationwide aggregates). In particular, tight employment conditions in the North of Italy could, combined with price setting power of the North (at

least in the labor market), have contributed to higher inflation than one would have expected otherwise for the country as a whole. The wage-setting power of the northern regions is confirmed by Brunello, Lupi, and Ordine (2000), who show that wage setting in Italy depends only on the rate of unemployment in the North and Center of the country.¹⁸ Hence, it makes sense to re-estimate the output gap so as to take this into account. A simple way to do this is to use the HP filter on GDP of the North (and Center) to re-estimate the output gap for Italy. The results (not shown) are, however, very close to that for Italy overall and make little difference to the model estimates and contributions to the inflation differential.

37. An alternative is to re-estimate the output gap—following the WEO methodology (for Italy, see IMF Country Report 02/232, Chapter II)—with a new NAIRU estimated by assuming that wages depend only on unemployment in the North (defined below as all regions other than the South). That is, the $NAIRU^N$ for the North is defined as the level of unemployment above (below) which inflation is falling (rising):

$$D^2 \log W = -\alpha(U^N - NAIRU^N), \quad (4)$$

where: W is the nominal wage level for Italy as a whole, U^N is the actual unemployment level in the North of Italy, and D is the first difference operator. Since unemployment in the South is assumed to have no influence on wages, the NAIRU for Italy overall is simply the sum of $NAIRU^N$ and the unemployment level in the South:

$$NAIRU = NAIRU^N + U^S, \quad (5)$$

38. The procedure used to estimate $NAIRU^N$ follows that used in IMF Country Report 02/232, Chapter II. The resulting NAIRU estimate for the country as a whole is used to re-estimate potential output for Italy, which is displayed in Figure 8 as *WEO, Italy North*. In contrast to the other potential output series, it leads to an output gap above the euro-area average from 1999 to 2002—by an average of 0.2 percentage point. The regression results (models 2d and 9d, Table 5) are similar to those based on the WEO output gap data. And while the contribution of the output gap to the Italian inflation differential in 2002 is similar to that of the HP filtered series (Table 6), the average contribution from the output gap (*WEO, Italy North*) from 1999 to 2002 was almost 0.1 percentage point.

E. Conclusions

39. Italy has recorded higher inflation than the euro area for much of the period since the beginning of monetary union in 1999. This has been accompanied by losses in competitiveness and export market shares during this period, and by generally weak output growth. To gain some insights into possible linkages behind these developments, this chapter focused on the driving forces behind the persistent inflation differential.

¹⁸ See also, IMF Country Report 02/232, Chapter III.

40. Panel regression analysis for the euro-area countries suggests that price level convergence is an important determinant of inflation differentials. And while the historical difference in inflation has some explanatory power by itself, this is much lower than it is for the price level convergence effect; moreover, the former adds at best little to the fit of a regression that already includes the price level. With Italy's price level currently estimated around 10 percent below that of the euro-area average, the range of estimates presented in this chapter imply that the inflation differential for Italy is likely to persist at between 0.4 and 0.6 percentage point per year due to price convergence effects.

41. The empirical evidence presented in this chapter provides no firm evidence for a Balassa-Samuelson effect in Italy, consistent with the fact that its productivity level is around the euro-area average. The panel regression results showed that the level of productivity added little to a model already incorporating the price level.

42. The output gap was found to be a significant explanatory variable for the inflation differential. For Italy, the standard estimates of the output gap suggest a small negative contribution to the inflation differential on average from 1999 to 2002—which is puzzling given that the relatively low price level in Italy would suggest excess demand in Italy relative to the euro area during the path to convergence. A revised NAIRU estimate, taking into account the apparent labor-market segmentation between the North and South of Italy, seems to go some way to addressing this apparent puzzle: the revised estimates imply that Italy had probably a positive output gap on average from 1999 to 2002. Based on the panel regression results, this would have contributed around 0.1 percentage point per year to the inflation differential.

43. The results of this chapter suggest possible further real appreciation in coming years due to continued price level convergence—and this raises the ante to adopt policies to avoid potentially adverse repercussions for exports and growth. This includes addressing remaining structural weaknesses in some sectors where, indeed, price levels remain relatively high (for example in energy). The results in this chapter provide some evidence that reducing regulatory restrictions and strengthening competition could also have beneficial effects in terms of strengthening price competitiveness.

44. Finally, the results in the chapter suggest that an output gap estimate that accounts for the tight employment conditions in the North of Italy, combined with price setting power of the North (at least in labor markets), is more consistent with the relatively higher inflation in Italy than are alternative estimates of the output gap. As discussed in the staff report, increased regional wage differentiation—taking into account the higher unemployment (and lower cost of living) in the South—could thus contribute importantly to strengthening competitiveness of the South, and of Italy more generally.

Table 1. Summary Statistics for Euro-Area Countries
(In percent, unless otherwise noted; differentials are relative to the euro area)

	Year	Euro area 1/	AT	BE	DE	ES	FR	FI	IE	IT	LU	NL	PT
Inflation differential (annual average, HICP)	1999-2002	0.0	-0.3	0.0	-0.6	1.1	-0.4	0.3	2.2	0.4	0.4	1.4	1.3
Price level (index)	1998	100.0	106.7	101.1	109.9	82.1	108.3	108.3	95.4	89.4	97.0	98.6	71.5
	2001	100.0	106.2	101.6	108.0	83.9	107.5	109.6	101.3	90.4	98.4	104.1	73.6
Productivity (GDP/employment, '000s of 1995 PPP US\$)	1998	51.9	46.8	59.2	48.4	48.0	55.4	50.6	55.7	49.7	94.7	55.4	32.5
	2001	52.9	49.1	61.0	49.3	46.3	57.1	52.8	63.7	60.4	102.1	56.4	33.8
Inflation (annual average)	1983-92	4.8	3.0	3.5	2.4	7.7	4.4	5.3	4.7	7.5	3.4	1.8	15.0
Output gap differential (annual average) (based on HP filter, in percent of potential GDP)	1999-2002	0.0	-0.1	0.1	-0.6	0.5	0.4	1.4	2.4	-0.3	0.8	0.3	0.3

1/ Excluding Greece.

Table 2. Panel Regressions: Determinants of Euro-Area Inflation Differentials 1/
(OLS estimates, 1999-2002; 10 euro-area countries, i.e., excludes Belgium and Greece)

Model number:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All Items HICP						Underlying HICP
	Gap - HP filter			Gap - OECD			Gap - HP filter
P (t-1)	-0.00084 (-4.53)	-0.00040 (-4.29)		-0.00039 (-3.77)	-0.00040 (-4.70)	-0.00038 (-3.91)	-0.00046 (-5.10)
Gap (t)	0.30 (2.13)	0.33 (2.20)	0.33 (1.97)	0.27 (1.56)	0.30 (6.96)	0.28 (5.27)	0.32 (1.82)
Inflation expectation 2/			0.10 (1.95)				
Δ tax (t)	0.001 (0.21)						
Δ business regulation rank (t)				0.001 (1.61)		0.001 (1.71)	
Degrees of freedom	32	34	34	24 3/	34	24 3/	34
Standard error of regression	0.0078	0.0083	0.0094	0.0081	0.0072	0.0069	0.0082
Rbar squared	0.55	0.48	0.34	0.52	0.61	0.66	0.55

1/ Dependent variable: harmonized index of consumer prices (HICP). All models contain time dummies. T-statistics in brackets. Newey-West estimates of the covariance matrix are used to correct standard errors for heteroskedasticity and serial correlation.

2/ Average inflation from t-16 to t-6.

3/ Degrees of freedom reflect missing observations for the business regulation rank variable in 2002.

Table 3. Panel Regressions: Determinants of Euro-Area HICP Inflation Differentials 1/
 (OLS estimates, 1999-2002; 9 euro-area countries, i.e., excludes Belgium, Greece, and Luxembourg)

Model number:	(2a)	(8)	(9)	(10)
P (t-1)	-0.00040 (-4.08)	-0.00048 (-4.27)	-0.00058 (-3.63)	
Gap (t)	0.33 (1.60)	-0.03 (-0.23)	0.26 (1.43)	0.33 (1.41)
Productivity (t-1), PPP GDP/employment		0.015 (1.41)	0.022 (1.62)	-0.004 (-0.37)
Δ Productivity (t), ratio of traded to non-traded		0.084 (1.47)		
Degrees of freedom	30	18 3/	29	30
Standard error of regression	0.0087	0.0070	0.0082	0.0102
Rbar squared	0.45	0.44	0.51	0.24

1/ Dependent variable: harmonized index of consumer prices (HICP). All models contain time dummies. T-statistics in brackets. Newey-West estimates of the covariance matrix are used to correct standard errors for heteroskedasticity and serial correlation.

2/ Average inflation from t-16 to t-6.

3/ Degrees of freedom reflect missing observations for some countries for the traded versus nontraded measure of productivity.

Table 4. Italy: Estimated Contributions to the Consumer Price Inflation Differential, Euro-Area Countries, 2002
(In percentage points; differential is relative to the euro area)

Model:	(2a)										(9)												
	Country:	AT	BE	DE	ES	FR	FI	IE	IT	LU	NL	PT	AT	BE	DE	ES	FR	FI	IE	IT	LU	NL	PT
P	-0.25	-0.32	0.64	-0.30	-0.39	-0.05	-0.05	-0.05	-0.16	1.06		-0.36	-0.47	0.94	-0.44	-0.56	-0.08	-0.36		-0.24	1.54		
Gap	-0.15	-0.25	0.27	0.29	0.13	1.19	0.01	0.01	-0.41	-0.30		-0.12	-0.19	0.21	0.23	0.10	0.94	0.01		-0.32	-0.23		
Productivity, PPP GDP/employment												-0.14	-0.14	-0.30	0.19	0.03	0.46	0.25		0.13	-1.00		
Total predicted differential	-0.40	-0.56	0.91	-0.01	-0.26	1.14	0.33	0.33	-0.57	0.76		-0.62	-0.80	0.85	-0.02	-0.43	1.32	0.32		-0.43	0.30		
Memorandum: actual differential	-0.43	-0.89	1.33	-0.33	-0.21	2.53	0.44	0.44	1.74	1.47		-0.43	-0.89	1.33	-0.33	-0.21	2.53	0.44		1.74	1.47		

Table 5. Panel Regressions: Determinants of Euro-Area HICP Inflation Differentials 1/
(OLS estimates, 1999-2002; 9 euro-area countries, i.e., excludes Belgium, Greece, and Luxembourg)

Model number:	(2a)	(9)	(6) 2/	(2b)	(9b)	(2c)	(9c)	(2d)	(9d)
Output gap measure:	HP filter		OECD		WEO		WEO - Italy North		
P (t-1)	-0.00040 (-4.08)	-0.00058 (-3.63)	-0.00038 (-3.91)	-0.00040 (-4.52)	-0.00054 (-5.43)	-0.00038 (-4.56)	-0.00049 (-4.35)	-0.00037 (-4.51)	-0.00046 (-3.60)
Gap (t)	0.33 (1.60)	0.26 (1.43)	0.28 (5.27)	0.31 (8.58)	0.27 (6.46)	0.41 (6.35)	0.36 (5.01)	0.41 (6.02)	0.37 (4.41)
Productivity (t-1), PPP GDP/employment		0.022 (1.62)			0.017 (2.02)		0.013 (1.43)		0.010 (1.01)
Δ business regulation rank (t)			0.001 (1.71)						
Degrees of freedom	30	29	24 3/	30	29	30	29	30	29
Standard error of regression	0.0087	0.0082	0.0069	0.0071	0.0068	0.0068	0.0066	0.0068	0.0068
Rbar squared	0.45	0.51	0.66	0.63	0.66	0.67	0.68	0.66	0.66

1/ Dependent variable: harmonized index of consumer prices (HICP). All models contain time dummies. T-statistics in brackets. Newey-West estimates of the covariance matrix are used to correct standard errors for heteroskedasticity and serial correlation.

2/ Includes Luxembourg.

3/ Degrees of freedom reflect missing observations for the business regulation rank variable in 2002.

Table 6. Italy: Estimated Contributions to the Consumer Price Inflation Differential, 2002
(In percentage points; differential is relative to the euro area)

Model number:	(2a)	(9)	(6) 1/	(2b)	(9b)	(2c)	(9c)	(2d)	(9d)
Output gap measure:	HP filter			OECD		WEO		WEO - Italy North	
P	0.39	0.56	0.37	0.38	0.52	0.37	0.47	0.36	0.45
Gap	0.01	0.01	-0.17	-0.19	-0.17	-0.11	-0.10	-0.01	-0.01
Productivity, PPP GDP/employment		0.25			0.19		0.15		0.12
Business regulation rank			-0.09						
Total predicted differential	0.39	0.82	0.10	0.19	0.54	0.26	0.52	0.35	0.55
Memorandum:	Actual differential was 0.40								

1/ Contributions are for 2001, since data on the rank of business regulation is not available for 2002.

DATA

Data is annual, covering the euro area, excluding Greece, from 1997 to 2002.

Inflation: Harmonized CPI from Eurostat (calculated from the annual index). Underlying inflation is based on the all items index excluding energy and seasonal food.

Price level: the price level of consumption from Alan Heston, Robert Summers and Bettina Aten, Penn World Table Version 6.1, Center for International Comparisons at the University of Pennsylvania (CICUP), October 2002. This is the PPP of private consumption divided by the exchange rate (national currency units per U.S. dollar); the PPP of private consumption is the ratio of the national currency value to the real value in PPP dollars. (An apparent typographical error for Spain in 2000 was corrected, (converted raw data from 63.20 to 73.20, bringing the relative price level in line with its historical past and making the change in the price level (relative to the United States) similar to that of other euro-area countries). The data have been transformed initially, so as the euro area is equal to 100 in each year. The sample is extended one year (to 2001), thereby adding 11 degrees of freedom, by assuming that the relative price level adjusts according to the inflation differential.¹⁹ This seems reasonable since innovations in this price level series are highly correlated with the inflation differential—which is not so for the alternative relative price series provided by Eurostat. As a check I also run regressions from 1999 to 2001 only (with no significant differences for the main results).

Real GDP: WEO data base. **Output gap:** HP filter applied to real GDP, as well as the OECD and WEO data bases.

Business regulation ranking: From the Heritage Foundation/Wall Street Journal 2003 Index of Economic Freedom (<http://www.heritage.org/research/features/index/2003/index.html>). This assigns countries an index value ranging from 0 (the least conducive to competition) to 10 (the most conducive to competition), according to a number of objective criteria (that is, it is not survey based). The business regulations index is itself based on five component indices for: price controls; administrative conditions; time spent with government bureaucracy; the ease of starting a new business; and the extent of irregular government payments. This index requires some transformations before including it in the regression analysis. Data for the business regulations index is available only for 1995, 1999, 2000, and 2001. Linear interpolations of the indices were used to construct data for the years between 1995 and 1999. Also, the level of the index declines for all countries in the sample in 2001, yet it seems unlikely that there

¹⁹ The model itself has an error correction form, where the long-run equilibrium is the difference between each country's price level and that of the euro-area average (with a coefficient of one due to the assumption of price level convergence). Hence, updating the price level in this way with the inflation differential is akin to updating the long-run equilibrium.

was an absolute decline in competitive conditions in the euro area at this time. To deal with this, I replace the level of the index, with the rank for each country (within the euro area) implied by the index.

Indirect tax rates: estimated as the ratio of indirect taxes and private final consumption expenditure, both from the OECD.

Productivity: labor productivity is the ratio of GDP in PPP constant 1995 dollars to total employment, from OECD data. Traded and nontraded labor productivity are based on the ratio of real value added to total employment in the respective sectors, from the OECD National Accounts database. The traded sector includes: agriculture; hunting; forestry; fishing; and industry (including energy, but excluding construction). The nontraded sector includes: wholesale and retail trade; repairs; hotels and restaurants; transport; financial intermediation; real estate; renting; and business activities.

Nominal effective exchange rates: WEO database.

Fiscal impulse: based on the cyclically-adjusted government primary balance, as a percent of potential GDP, from the OECD.

Real GDP and unemployment by region in Italy: SVIMEZ. Wages in Italy are based on the compensation rate for the business sector from the OECD.

Where necessary, **aggregations for the euro area** were done in one of three ways depending on the series. First, for indirect tax rates and labor productivity, the euro area aggregate is the sum of the numerators divided by the sum of the denominators across. Second, for the ratio of traded to nontraded productivity, and the nominal effective exchange rate, the aggregate was the sum of percentage changes of the given series for each country, weighted by the euro value of nominal GDP in 2001. Third, for the output gap measures and the fiscal impulse, the aggregate was the sum of each series across countries, weighted by the euro value of nominal GDP in 2001.

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III. REGIONAL CONVERGENCE IN ITALY: 1960–2002¹

A. Introduction

1. Italy is characterized by large regional economic disparities in terms of per capita production as well as labor market performance, in particular between the developed Center-North and the lagging South. Although a large literature has attempted to explain these disparities, the debate on what determines income levels and their growth at the regional level in Italy is still very much open.²

2. A considerable number of policy initiatives during recent decades to support development in the Southern regions of Italy have not delivered the expected results. The literature on convergence, or the lack of it, in Italian regions has found that some convergence took place during the 1960s, but this process largely stopped thereafter, with some studies finding divergence.³ Policies for the development of the South before the 1990s focused on industrialization through large public enterprises and investment incentive schemes, increasing considerably the role of the public sector in the South. By and large, these policies proved to be inefficient and were not well targeted.⁴ Policies shifted in the late 1990s from sectoral to regional projects and toward decentralization, transparency, and better monitoring and evaluation of spending. Although these policies are still in the process of being introduced, the relative growth performance in the South in recent years seems to justify some optimism.

3. This chapter discusses convergence in Italian regions for the period 1960–2002. Extending the period used in the literature to recent years could address the question of whether the lack of convergence after the 1960s and up to the early 1990s continued in the more recent years. The chapter also estimates production functions for the Italian regions to determine if convergence, or the lack of it, was driven by factor accumulation—that is, the growth in inputs of labor and capital—or total factor productivity (TFP) growth. Furthermore, the chapter estimates a growth model using panel data for Italian regions to determine the impact of a number of factors in addition to convergence forces, such as the role of public investment in infrastructure.

¹ Prepared by Athanasios Vamvakidis.

² See, for example Faini (1983), Di Liberto and Symons (1998) and Lodde (2000) for the role of human capital, and Forni and Paba (2000) for the role of social, structural, and political factors.

³ See Paci and Saba (1998) and Paci and Pigliaru (1999a) for evidence and references to earlier literature.

⁴ See Di Liberto and Symons (1998) for empirical evidence and a discussion of the literature.

4. The results suggest that the relative performance of the South has improved since the mid-1990s. Although the evidence is encouraging, it is still premature to determine if this is a structural break and to what extent it is driven by the policy shift in recent years. Furthermore, the improved relative economic performance of the South came at a time when overall output growth in Italy was very weak. Italy's real per capita GDP grew by an annual average of 1.5 percent in the period 1991–2002, compared with 3.3 percent in the period 1960–90. Growth in per capita terms since the mid-1990s has also been an annual average of 1.5 percent—1.4 percent in the Center-North and 1.8 percent in the South. The speed of convergence of the South is still very slow and it remains to be seen if the South continues converging when the Italian economy recovers.

5. The main findings of the chapter can be summarized as follows:

- Italian regions started converging again since the mid-1990s, although the convergence speed has been relatively low—and lower than the speed of convergence during the 1960s. The lack of convergence in Italian regions during 1970–95, also found in the literature, is explained by slow growth in the South—convergence did take place between regions in the rest of Italy.
- Convergence of Italian regions in recent years has been driven by TFP growth rather than factor accumulation.
- The estimates imply the presence of large inefficiencies in public investment in infrastructure in the South up until the 1990s, resulting in considerably lower growth benefits compared with the Center-North.
- However, the growth contribution of public investment in infrastructure in the South increased substantially in the 1990s, particularly in the second half, despite a considerable fall in their level.
- Noninfrastructure investment has not contributed to faster growth in the South, implying the presence of large inefficiencies in the investment incentives schemes in the past. However, the estimates also suggest that some improvement may have taken place since the mid-1990s.

6. The chapter proceeds as follows: Section B presents some stylized facts on regional disparities in Italy; Section C reviews briefly policies adopted to support the development of the South from the 1950s up to 2003; Section D estimates regional convergence in Italy in the period 1960–2002; Section E presents TFP estimates based on estimates of production functions for the Italian regions; Section F estimates a growth model for the Italian regions; and Section G concludes summarizing the main results.

B. Regional Economic Disparities in Italy

7. Italy stands out among EU countries in terms of large regional economic disparities. Italy's coefficient of variation for regional real GDP per capita is one of the highest in the EU. Furthermore, its coefficient of variation for the regional unemployment rate is the highest in the EU, while its coefficients of variation for the regional long-term unemployment rate and for the regional labor force participation rate are also relatively high (Table 1). Although part of the regional economic gaps in Italy are driven by productivity differences—about 40 percent of the variation in regional GDP per capita, with the rest explained by the regional variation in employment rates—Italy's coefficient of variation for regional labor productivity (real GDP per employee) is not high compared with the coefficients of other EU countries. This may, to an important extent, reflect the low regional wage differentiation in Italy, resulting from a very centralized and coordinated wage bargaining system.⁵ Wages higher than justified by local labor market conditions in relatively poor regions imply that only the most productive workers are employed in these regions, leading to relatively low regional labor productivity gaps. Therefore, the centralized wage bargaining system in Italy may partly explain both the high regional disparities in unemployment rates and the relatively lower regional productivity differences.

8. The large regional economic disparities in Italy are primarily between the Center-North and the South.⁶ In 2002, the South's real GDP per capita was 56.5 percent of that in the Center-North, while its real GDP per employee was 79.5 percent (Table 2). The South's unemployment rate was 18.3 percent in 2002, compared with only 4.9 percent in the Center-North (the South's long-term unemployment share was 61.5 percent in 2001 compared with 38.3 percent in the Center North). The South's labor force participation rate was 53.6 percent in 2000 compared with 63.9 in the Center-North. The economic gap between the two regions exists despite a consistently higher investment to GDP ratio in the South in recent decades—although the gap has been declining and the Center-North spends considerably more on R&D activities—and considerably higher public spending.

9. Progress in reducing regional economic disparities in Italy, in particular between the South and the Center-North, has been disappointing. Regional disparities in terms of real GDP per capita fell considerably in the 1960s, but remained stable in the more recent decades (Figure 1). The trend of the regional labor productivity disparities was similar (Figure 2). The gaps between the South and the Center-North in terms of real GDP per capita and labor productivity fell considerably in the 1960s (Figure 3). After the 1960s, the labor productivity gap remained almost constant, while the real GDP per capita gap increased somewhat up

⁵ See Chapter III in IMF Country Report No.02/232 (2002).

⁶ The Center-North includes the regions of: Piemonte, Valle D'Aosta, Liguria, Lombardia, Trentino Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia, Romagna, Toscana, Umbria, Marche, and Lazio. The South includes the regions of: Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, and Sardegna.

until the mid-1990s. Since the mid-1990s, the relative GDP per capita of the South recovered back to its level at the beginning of the decade.

10. As noted above, the South had a higher investment to GDP ratio in recent decades, with the difference declining considerably over time (Figure 4).⁷ A sharp decline in transfers and public investment took place in the South during the 1990s. A number of investigations on cases of bribery and corruption in the use of public funds for development schemes reduced political support for policy intervention during this time, hurting in particular the South, which needed investment the most. Furthermore, the need for fiscal consolidation resulted in the fall of public investment in the South during the 1990s.

11. Labor market performance disparities between the Center-North and the South deteriorated considerably during the 1980s (Figures 5, 6, and 7). However, the South's labor market performance started improving after the end of the 1990s—but so did the labor market performance in the Center-North, so that the South's gap with the Center-North has remained broadly constant.

12. In contrast to the regions in the South, some of the other regions in Italy have achieved complete convergence in recent decades. Such successful cases of convergence include the region of Friuli-Venezia Giulia, from a GDP per capita of 90 percent of the Italian average in 1960 to 113 percent in 2001, and the region of Marche, from a GDP per capita 86 percent of the Italian average in 1960 to 100 percent in 2001. Veneto is another region with fast growth during this period, although already at 103 percent of the Italian average GDP per capita in 1960, it reached 117 percent in 2001. Other regions which closed a substantial part of their income gap with the rest of Italy during the last four decades include: Abruzzo, from a GDP per capita 64 percent of the Italian average to 83 percent; and Molise, from a GDP per capita 60 percent of the Italian average to 78 percent. Basilicata also experienced periods of convergence, from 1960 to the mid-1970s and in the 1990s, but diverged in the second half of the 1970s and in the 1980s—Basilicata's GDP per capita increased from 51 percent of the Italian average in 1960 to 70 percent in 2001.

C. Policy Initiatives to Reduce Regional Economic Disparities in Italy

Early policy initiatives⁸

13. Policy initiatives to reduce regional economic disparities in Italy in the early decades following World War II focused on public investment in infrastructure and on industrialization schemes. The first significant policy initiative to support the development of

⁷ The level of investment in Figure 4 differs from the level in Table 2 because of a break in the data in 1995 and adjustments to make the series consistent through time (see note in the data appendix).

⁸ For more details, see OECD (2001).

the South was the establishment of the Mezzogiorno Fund (Cassa per il Mezzogiorno) in 1950, which included a large program of public investment in the South. The Mezzogiorno Fund focused initially on modernizing agriculture and strengthening basic infrastructure (health, education, transportation), but in the late 1950s it shifted toward industrialization.

14. From the late 1950s to the end of the 1970s, regional development policies targeted the industrialization of the South, primarily supported by state-owned enterprises. Efforts included incentives to large Italian companies and channeling industrial investment of public enterprises to the South. The result was the creation of new industrial plants, the so-called industrial poles, primarily in heavy industries such as steel and petrochemicals.

15. However, the industrial poles did not result in significant spillover effects for the rest of the economy in the South and were gradually abandoned in the 1980s. At that time, policies shifted toward welfare support and employment incentive measures, such as labor subsidies and tax incentives for companies in the South.

16. In the early 1990s, the regional policy framework changed considerably. Italy's fiscal policy changed course in 1992 with a sharp decline in transfers and public investment in the South. This was driven by the failure of high public investment in the South to deliver the expected "big push", a number of corruption cases in investment schemes, the poor performance of public enterprises leading to their privatization, and a policy shift toward fiscal consolidation and product market liberalization, in part due to the need to comply with EU policy rules and directives, as well as to prepare for monetary union.

Recent policies⁹

17. The emphasis of recent policies for the development of the South has shifted from sectoral to regional projects, and from central planning to devolution of further powers to the regions, while focusing on improving monitoring and evaluation of spending. The failure to achieve economic convergence of the South, in contrast with other regions in Italy that did not enjoy the same level of state support, weakened the consensus for the need of policy intervention to reduce regional disparities through industrialization. The new policy framework moved away from subsidies and sectoral interventions toward public investment in infrastructure and building better institutions at the local level, improving local administration, the provision of public services and the coordination among local authorities and between local and central administrations, based on knowledge intensive projects, education and training, building business networks, enhancing communication infrastructure, and strengthening law enforcement.

18. In the late 1990s, regional authorities took over many functions from the central government, through reforms in public administration, redistribution of resources, and the strengthening of the revenue-raising capacity of local governments. Centralized planning of

⁹ For more details, see Barca (2003) and OECD (2001).

public investment gave way to a system in which local and central governments coordinated decisions and planning, based on a framework that envisioned to increase transparency and improve evaluation and monitoring procedures. The power and role of local authorities was strengthened, while administrative procedures were simplified and streamlined. The central administration remained responsible for co-ordination, supervision and monitoring, aimed at setting guidelines and promoting technical assistance to regions while most regional development policies were transferred to local authorities. Local authorities had to submit specific project proposals, with priority given to projects that included feasibility studies. Furthermore, funding became conditional on meeting quantitative targets set to measure project effectiveness.

19. The new emphasis toward transparency and accountability was formalized with the so-called Mezzogiorno Development Plan in 2000. The Plan established guidelines and rules for spending EU and domestic funds. The new policy aimed at promoting cooperation between the regional and central governments, as well as the private sector in building infrastructure and planning regional development. Its emphasis included public investments and institution building to reduce infrastructure gaps, improvements in law enforcement and local administration, simplification of administrative procedures to reduce the cost of business transactions and attract investment, and reduction of the underground economy. The plan also envisioned a performance-based scheme for the allocation of funds to improve the quality of project implementation, while results were to be monitored and evaluated by a technical group composed of members of central and regional technical units, with performance evaluated based on a set of indicators designed for each policy area (see text box). Administrative reforms were also planned to help local public institutions perform a large number of new responsibilities. The Department for Development Policies of the Ministry of Economy and Finance became the only general supervisor of the new policy framework.

20. In October 2001, a reform of the Constitution allocated new powers to the regions. Regions were granted legislative powers in a number of areas in collaboration with the central administration: international and EU relations at regional level, protection and safety of labor, education, research and development, health care, and supplementary pension schemes. The regions were granted total legislative powers in areas such as regional industrial policy, tourism, commerce, and vocational training.

21. The most recent policy initiative was introduced in 2002, with the signing of the "Pact for Italy" in July. The pact was an agreement of the Italian government with the employers' organization and the main trade unions—with the exception of the Cgil—and covered incomes policy and social cohesion, welfare to work, which includes labor market policies, and investment and employment in the South. It determined guidelines for proxy laws to reform the labor market and the tax system, and to introduce measures to develop the regions of the South. The pact targets the achievement of the Lisbon employment targets—which for Italy imply an increase of the employment rate to 58.5 percent by 2005 and to 61.3 percent by 2010, from 55.5 percent in 2002.

22. The economic development of the South is an important element of the "Pact for Italy." The main objectives agreed include: increase economic growth in the South to rates significantly and steadily higher than in the rest of Italy; substantially reduce the existing infrastructure gap; and increase the competitiveness of the South by improving security, providing sites suitable to host new businesses, and streamlining bureaucratic procedures. The 2003 budget law set up a fund for the development of the regions in the South, unifying the main economic policies and funds to support the southern regions.

Performance Indicators of the New Regional Development Policy in Italy¹

Regional administration:

- Delegate more managerial responsibilities to local officials
- Set up internal control management units
- Set up regional and central administration evaluation units
- Develop information society in public administration
- Establish and operate one stop shops
- Provide public employment services
- Prepare and approve territorial programming documents
- Manage integrated water services
- Manage urban solid waste within optimal service areas
- Set up and operate regional environmental agencies
- Implement territorially integrated projects
- Concentrate financial resources

Central administration (for the areas of research and development, education, law enforcement, economic competitiveness, transportation, and fishing, for which the central administration remains primarily responsible):

- Adopt an evaluation system of results
- Set up internal control management units
- Set up regional and central administration evaluation units
- Develop information society in public administration
- Integrate national operational programs with regional planning

¹ Source: Department for Development Policies of the Ministry of Economy and Finance

23. It is too early to know the effectiveness of the policies adopted since the end of the 1990s. Furthermore, the reforms are strongly resisted by vested interests in some regions.¹⁰ However, as the empirical evidence below indicates, the improvement in the economic performance of the South in recent years offers some ground for optimism, but more is clearly needed to accelerate economic convergence.

¹⁰ See Barca (2003).

D. Convergence in Italian Regions

24. Conclusions on the presence of economic convergence in Italian regions during recent decades are very sensitive to the period considered. Figure 8 shows a very strong negative correlation between real per capita GDP in 1960 and average annual real per capita GDP growth in the period 1961–2002. However, convergence took primarily place in the 1960s (Figure 9). No convergence took place in the 1970s (Figure 10), while, if anything, Italian regions diverged in the 1980s (Figure 11). Convergence reappeared during the 1990s (Figure 12), primarily during the second half (Figures 13 and 14)—the relative income of the South actually fell during the first half. Similar trends can be seen for labor productivity, with the only difference that convergence also took place in the 1970s and in the first half of the 1990s (Figures 15–21). The data for the 1960s and for the years after the mid-1990s suggest that convergence took place both because of fast growth in relatively low income regions and slow growth in relatively high income regions.

25. Regression analysis confirms the above. Following Barro and Sala-I-Martin (1995), convergence is tested by estimating the following model for 20 Italian regions:

$$\frac{1}{T}(\ln y_T - \ln y_0) = \alpha + \beta \ln y_0 \quad (1)$$

where y_t is real GDP per capita or per employee. A negative estimate for β implies convergence—regions with lower initial GDP per capita grow faster, converging to the relatively more developed regions. Table 3 presents the results for convergence in terms of GDP per capita, and Table 4 those for labor productivity, for 20 Italian regions, for the period 1960–2002. According to the results in Table 3, the whole period 1960–2002 shows convergence in GDP per capita. However, looking separately at decades instead of the whole period, convergence can be seen only in the 1960s and in the period 1995–2002. The estimates of the “convergence coefficient” β are not statistically significant for any other period.¹¹ In terms of labor productivity, results in Table 4 suggest that convergence also took place during the 1970s and in the first half of the 1990s. No convergence took place during the 1980s.

26. Although the reappearance of convergence in Italian regions in the late 1990s is a positive development, its estimated speed is relatively small. The estimates imply that the poorest region in Italy, Calabria, should be growing faster than the richest region, Trentino Alto Adige, by 0.8 percentage points. If this growth performance continues, it will take

¹¹ Estimates by sector of GDP—industry, agriculture, and services—suggest that convergence of the Italian regions has not been driven or prevented by any particular sector. Convergence took place for all sectors during the 1960s and during the second half of the 1990s—although to a much smaller extent—the two periods in which the empirical results imply the presence of GDP per capita convergence.

97 years for Calabria to reach Trentino Alto Adige's income level in 2002—the estimate for the 1960s would have implied convergence in 30 years.

27. The lack of convergence among Italian regions during much of the past decades stands in marked contrast to many EU regions.¹² Table 5 estimates equation (1) for 199 EU regions for the period 1977–2000, updating estimates in the literature for more recent years—there were no data for earlier years. The definition of regions follows Eurostat and is consistent with the one for the Italian regions above—all 20 Italian regions are included in the sample. Convergence coefficients for Italian regions for different subperiods are also included in the table. EU regions converged during this period, in terms of both GDP per capita and labor productivity. Moreover, this result is robust for different subperiods—1977–95, 1990–95, and 1995–2000. The estimates suggest that up until the mid-1990s, EU regions converged considerably faster than Italian regions, both in terms of GDP per capita and per employee, while in the second half of the 1990s Italian regions converged faster than EU regions in terms of both measures, and also in terms of PPP adjusted GDP per capita and per employee.

E. What is Driving Convergence in Italian Regions: TPF Growth Versus Factor Accumulation

28. A growth accounting exercise for the Italian regions—breaking down the growth of aggregate output into contributions from the growth of inputs (capital and labor) and the growth of technology—can provide insights on the driving forces of regional growth. This exercise could indicate if convergence, or the lack of it, during recent decades has been due to TFP (total factor productivity) growth or factor accumulation. For this purpose, estimates are provided using a Cobb-Douglas production function with constant returns to scale:

$$\frac{\dot{Y}}{Y} = \frac{\dot{TFP}}{TFP} + \alpha \frac{\dot{K}}{K} + (1 - \alpha) \frac{\dot{L}}{L} \quad (2)$$

where, Y is real GDP, TFP is total factor productivity, K is capital stock, L is employment, α is the share of capital income in total income, and $(1 - \alpha)$ is the share of labor income in total income.¹³ According to equation (2), the growth rate of output is equal to the sum of the growth rates of capital and employment, weighted by their income shares in total income, and the growth rate of TFP, which is the residual. The period is restricted to 1970–2000 due to data limitations for regional stocks of capital.

¹² There is a relatively large literature on regional convergence in Europe. Sala-I-Martin (1996) provides a review of the evidence. For more recent evidence, see Paci and Pigiaru (1999b and 2001) and Boldrin and Canova (2001).

¹³ α is taken to be equal to 0.38, based on estimates provided for Italy by Dougherty (1991).

29. Table 6 provides estimates of equation (2) for the Center-North and for the South, for the whole period 1970–2000 and for different subperiods. GDP grew almost the same in the Center-North and in the South during this period, although it grew slightly faster in the South in the second half of the 1990s (as noted above, convergence during the second half of the 1990s was stronger in per capita terms, with growth in the South faster than in the Center-North by an annual average of 0.3 percent). However, the components of the production function followed different trends. TFP grew faster in the South in the period 1970–2000—1.02 percent compared with 0.82 percent annually in the Center-North. In particular, although TFP grew faster in the Center-North during the 1970s, during the 1980s and the 1990s, especially in the second half of the 1990s, it grew faster in the South. The growth contributions of capital and employment were both higher in the Center-North than in the South during the period 1970–2000. Therefore, in terms of the production function estimates for recent decades, TFP growth was a convergence force, while factor accumulation, of both labor and capital, was a divergence force.

30. Similar conclusions can be reached by estimating TFP separately for the 20 Italian regions. Figures 22–24 show that TFP grew faster in low income regions in Italy than in high income regions during the 1990s and in particular in the second half, while there was no correlation between TFP growth and GDP per capita in the period 1970–90.

F. The Determinants of Growth in Italian Regions

31. This section estimates a growth model for Italian regions. The estimated model follows the cross-country growth literature (see Barro and Sala-I-Martin, 1995). Since the model is estimated for regions within Italy, many variables that are included in cross-country regressions, such as institutions and macroeconomic policies, do not need to be included in the estimated model, since they are the same for all regions—although the same institutions and policies could have a different impact on different regions.¹⁴ The results of this exercise can be used to test conditional convergence in Italian regions over time and to infer the effectiveness of regional economic policies.

32. The estimated model is as follows:

$$(\text{Real GDP per capita growth})_i = c + \beta X_i + u, \quad \text{for regions } i = 1, \dots, 20 \quad (3)$$

The dependent variable is the average per capita real GDP growth rate in region i ; c is the constant term (region-specific fixed effects were not found to be statistically significant); β is

¹⁴ For example, strict employment protection hampers labor market performance more in the South (see Box 4 in last year's staff report for Italy, IMF Country Report No.02/230). Also, Carmeci and Mauro (2002) found that higher than equilibrium wages in the South due to the centralized wage bargaining system in Italy slow down the convergence process.

the matrix of parameters to be estimated and u is the error term. X_i is the matrix of independent variables that includes:

- convergence (the logarithm of per capita real GDP in the initial year of the period considered);
- a dummy variable for regions in the South;
- the shares of public infrastructure and noninfrastructure investment to GDP;
- the share of public consumption to GDP;
- interaction terms.

33. The model is estimated for the period 1960–2000, but the sample is being reduced to the period 1970–2000 when public investment in infrastructure and public consumption are included due to the lack of data for earlier years for these variables. The model is first estimated using panel data for five-year averages to remove short-term volatility, and then for different subperiods. In the first case, the model includes time dummies to capture common economic shocks.

34. The results suggest that although regional convergence did take place in Italy during the period in consideration—the initial GDP per capita has a negative and statistically significant estimate—the regions in the South grew less than the rest of Italy—the dummy for the South has a negative and statistically significant estimate (Table 7). This implies that although the southern regions experienced some convergence during this period, they grew less than what the convergence coefficients for the rest of Italy would imply. The last regression includes an interaction term of the time dummy for the second half of the 1990s with the initial GDP per capita. Its negative and statistically significant estimate implies that conditional convergence was faster during this period. Noninfrastructure investment has a positive estimate in all regressions, but it is not statistically significant. The coefficient for public investment in infrastructure is also positive, but statistically significant only at the 10 percent level in the third specification (its lagged value does not turn out to be statistically significant). Public consumption has a negative and statistically significant estimate, which may suggest that public consumption slows down growth. However, reversed causality may be driving this result—the state consumes more in depressed regions. Indeed, the lagged value for the share of public consumption has a positive and statistically significant estimated coefficient (last regression of Table 7). This does not necessarily suggest that public consumption benefits growth, since the sum of the two coefficients is slightly negative. Furthermore, using the lagged value of the public consumption share as an instrument or including only the lagged value of the public consumption share in the regression gives insignificant estimates.

35. The large differences in the convergence estimates found above when different subperiods were considered imply that results from the panel for the whole period should be treated with caution. Indeed, estimating the empirical growth model for different subperiods provides interesting insides (Table 8). The empirical growth model is estimated for the subperiods 1960–70, 1970–80, 1980–90, 1990–2000, and 1995–2000, using five-year averages. The model's explanatory power is comparable with what found by cross-regional

studies for other countries. The only exception is the 1980s, and, therefore, the following discussion excludes findings for this period.

36. The results confirm that convergence took place only in the 1960s and in the second half of the 1990s. Convergence during the 1960s seems to be explained by faster growth in the South. When the South dummy is included in the regression—which has a positive estimate, but is statistically significant only at the 10 percent level—the estimate of the initial GDP per capita, although negative, is not statistically significant. After the 1960s, unconditional and conditional convergence starts again in the second half of the 1990s—although the South dummy has a negative estimate, which, however, is not always statistically significant during this period. The reason that no convergence took place in the 1970s was less growth in the South. When the South dummy is included in the regression, the negative estimate of the initial GDP per capita becomes statistically significant. This implies that convergence during the 1970s took primarily place within the Center-North. Convergence in the South did take place during this time, but was very slow—the coefficients imply that, keeping everything else constant, the South grew faster by an annual average of 0.3 percent due to its relatively low GDP per capita.

37. The results suggest the presence of large inefficiencies in public investment in infrastructure in the South up until the 1990s. The estimates of the interaction term of the public investment in infrastructure share to GDP with the South dummy suggest that before the 1990s the positive impact of public investment in infrastructure on growth was considerably smaller in the South than in the rest of Italy—during the 1970s, an increase of the infrastructure investment to GDP share by 1 percentage point was correlated with faster growth by 0.7 percentage points in the Center-North, but by only 0.2 percentage points in the South. However, the interaction term became positive in the 1990s, and was particularly high during the second half of the 1990s.¹⁵ This result remains when the lagged value of public investment in infrastructure is used as an instrument (in the last regression of Table 8). During this period, an increase of the infrastructure investment to GDP share by 1 percentage point was correlated with faster growth by more than 1 percentage point in the South, while it had no impact in the Center-North. This is despite the considerable fall in the infrastructure investment ratio in the South during the 1990s—to an average of 1.2 percent from 2.2 percent in the 1980s. Public investment in infrastructure fell considerably less in the Center-North during this period—to 0.8 percent of GDP from 1.1 percent.

38. The other estimates are not robust. The share of public consumption has a negative and statistically significant estimate only for the 1970s, and in the late 1990s when the interaction terms are not included. Its estimate is also insignificant when its lagged value is used as an instrument (in the last regression of Table 8). The share of noninfrastructure investment has a positive coefficient but is statistically significant only in some

¹⁵ La Ferrara and Marcellino (2000) also found the impact of public investment on regional growth in Italy to have increased in recent years.

specifications. Its interaction with the South dummy has a negative and statistically significant estimate up until the mid-1990s, which suggests, as in the panel regressions, that noninfrastructure investment in the South did not lead to faster growth in the past.¹⁶

G. Conclusions

39. This chapter reviewed the convergence experience of Italian regions during the period 1960–2002. The results imply that after fast convergence of the relatively poor Southern regions to the rest of Italy during the 1960s, convergence stopped up until the mid-1990s. The lack of regional convergence in Italy in the period 1970–95 reflects slow growth in the South—convergence did take place in the rest of Italy. Since the mid-1990s, the South started converging again. Moreover, this process has been driven by TFP growth rather than factor accumulation. Growth regressions using regional data for Italy confirm that a regional convergence process has started again since the mid-1990s. The results also suggest that the growth benefits from public investment in infrastructure increased considerably in the South since the mid-1990s—public investment in infrastructure resulted in considerably lower growth benefits in the South than in the Center-North before the mid-1990s. This evidence justifies the recent shift of policies in the South toward transparency and accountability, although it is still early to determine any links.

40. However, the improved relative economic performance of the South came at a time when overall output growth in Italy was very weak, and it remains to be seen if the South continues converging when the Italian economy recovers. The speed of convergence of the South is still very slow, and it has only reversed the deterioration in relative economic performance during the first half of the 1990s. Therefore, it is still too early to determine if recent convergence is attributed to new policies or to temporary factors. The gaps between the South and the rest of Italy in terms of development and labor market performance remain large by EU standards. Furthermore, the South experienced in the past a considerable number of policy initiatives that started well, but lost their focus in the process, wasting in the meantime large amounts of public resources. While a good dose of skepticism seems therefore warranted, further developing the new policy framework, drawing on the lessons from past failures, holds out the promise of sustained stronger growth performance in the South.

¹⁶ Adding population growth in the regressions do not change the results and its estimate is not statistically significant. Adding the secondary school enrollment ratio in the regressions also do not change the results. Its estimate is positive, but statistically significant only in some of the specifications. These results are available from the author.

Table 1. EU: Regional Coefficients of Variation of Selected Indicators of Economic Performance, 1995-2001

	<u>Real GDP Per Capita</u>		<u>Real GDP Per Employee</u>		<u>Unemployment Rate</u>		<u>Long-Term Unemployment Rate</u>		<u>Participation Rate</u>	
	1995	2000	1995	2000	1995	2001	1995	2001	1995	2000
European Union	28.3	28.1	23.9	23.5	57.2	68.4	30.4	38.8	11.4	10.9
Belgium	39.1	39.7	41.9	42.5	37.1	52.7	10.7	33.4	3.7	4.4
Germany	25.0	26.0	19.8	23.5	39.5	50.3	17.4	13.1	5.6	3.6
Greece	17.8	15.8	26.0	23.8	34.7	29.3	19.1	32.1	13.3	15.7
Spain	20.4	20.6	13.2	13.7	27.3	39.8	12.7	36.6	4.8	4.2
France	23.2	23.0	12.5	15.8	18.5	65.3	11.2	17.7	8.8	10.0
Italy	27.1	25.5	12.6	11.2	54.8	76.1	26.8	34.8	8.9	8.8
Netherlands	15.5	17.6	14.4	16.5	13.7	34.0	10.1	...	3.3	3.3
Austria	23.2	21.9	21.3	19.5	26.2	26.3	69.1	25.9	3.1	3.0
Portugal	20.1	22.5	18.7	22.8	36.9	37.9	21.3	32.9	6.4	9.0
Finland	22.1	27.8	11.0	16.1	44.2	52.5	44.4	50.3	4.1	5.6
Sweden	10.1	18.2	7.9	12.2	15.9	28.9	17.7	28.7	2.8	2.9
United Kingdom	17.4	19.9	5.3	16.9	20.4	33.8	19.3	26.5	5.3	5.3

Source: Eurostat.

Table 2. Italy: Selected Regional Economic Indicators, 1997-2002

	1997	1998	1999	2000	2001	2002
Real GDP per capita in South relative to Center-North	55.4	55.4	55.6	55.6	55.9	56.5
Real GDP per employee in South relative to Center-North	80.2	78.7	80.1	79.6	79.5	79.5
Real GDP per capita growth, annual average						
Center-North	1.5	1.6	1.5	2.7	1.5	-0.2
South	2.6	1.5	1.9	2.8	2.0	0.9
Center-North	2.3	5.9	4.7	4.9	...	...
South	3.4	5.8	5.1	4.9	...	...
Real GDP per employee growth, annual average						
Center-North	1.4	1.1	0.0	1.6	-0.1	-0.7
South	0.9	-0.8	1.8	1.0	-0.2	-0.7
Nominal, PPP adjusted						
Center-North	2.1	5.4	3.2	3.7	...	...
South	1.7	3.4	4.9	3.1	...	...
Agriculture value added/GDP						
Center-North	2.8	2.7	2.6	2.5	2.5	...
South	5.9	5.7	5.6	5.1	5.0	...
Industry value added/GDP						
Center-North	31.5	31.3	30.6	30.4	30.3	...
South	20.5	20.0	19.9	19.8	19.7	...
Services value added/GDP						
Center-North	50.2	49.9	50.2	50.5	51.1	...
South	49.4	49.4	49.2	49.7	50.1	...
Employment growth						
Center-North	0.4	0.8	1.7	1.4	1.8	1.3
South	1.9	2.4	-0.1	1.6	2.2	1.9
Unemployment rate						
Center-North	7.4	7.0	6.7	5.9	5.2	4.9
South	21.0	21.7	21.4	20.5	18.9	18.3
Long-term unemployment rate						
Center-North	58.5	43.9	47.0	41.1	38.3	...
South	80.0	71.2	69.4	70.5	61.5	...
Labor force participation rate						
Center-North	62.5	62.0	62.9	63.6	64.3	64.8
South	51.5	52.8	53.0	53.3	53.6	54.0
Employment rate						
Center-North	57.0	57.6	58.7	60.0	61.0	61.8
South	40.4	41.1	41.2	42.0	43.1	44.0
Investment /GDP						
Center-North	17.8	18.0	18.8	19.5	19.5	...
South	19.6	20.0	19.6	20.6	20.6	...
Public consumption/GDP						
Center-North	15.2	15.0	15.2	15.3	15.8	...
South	23.4	23.0	23.0	23.3	24.0	...
R&D spending business/gdp						
Center-North	0.6	0.6	0.6	...	...	...
South	0.2	0.2	0.2	...	...	...
R&D spending pub/gdp						
Center-North	0.2	0.2	0.2	...	...	...
South	0.1	0.1	0.1	...	...	...

Source: Eurostat, ISTAT, and Central Bank of Italy

Table 3. Convergence of Regional GDP per Capita in Italy, 1960–2001

Dependent variables	Real GDP per capita growth, 1960–2002	Real GDP per capita growth, 1960–70	Real GDP per capita growth, 1970–80	Real GDP per capita growth, 1980–90	Real GDP per capita growth, 1990–2002	Real GDP per capita growth, 1990–95	Real GDP per capita growth, 1995–2002	PPP GDP per capita growth, 1995–2001
Independent variables								
Real GDP per capita, 1960	-1.02 (-5.07)							
Real GDP per capita, 1960		-3.41 (-10.57)						
Real GDP per capita, 1970			-0.08 (-0.11)					
Real GDP per capita, 1980				0.23 (0.75)				
Real GDP per capita, 1990					-0.72 (-2.11)			
Real GDP per capita, 1990						-0.04 (-0.07)		
Real GDP per capita, 1995							-1.14 (-3.22)	
PPP GDP per capita, 1995								-1.33 (-2.60)

Note: t-statistics in parenthesis.

Table 4. Convergence of Regional GDP per Employee in Italy, 1960–2001

Dependent variables Independent variables	Real GDP per employee growth, 1960–2002	Real GDP per employee growth, 1960–70	Real GDP per employee growth, 1970–80	Real GDP per employee growth, 1980–90	Real GDP per employee growth, 1990–2002	Real GDP per employee growth, 1990–95	Real GDP per employee growth, 1995–2002	PPP GDP per employee growth, 1995–2001
Real GDP per employee, 1960	-1.81 (-13.46)							
Real GDP per employee, 1960		-5.18 (-11.40)						
Real GDP per employee, 1970			-1.77 (-3.96)					
Real GDP per employee, 1980				-0.06 (-0.09)				
Real GDP per employee, 1990					-2.35 (-3.90)			
Real GDP per employee, 1990						-3.21 (-3.74)		
Real GDP per employee, 1995							-1.80 (-2.24)	
PPP GDP per employee, 1995								-3.26 (-2.29)

Note: t-statistics in parenthesis.

Table 5. Convergence of GDP per Capita and GDP per Employee in EU Regions Compared with Convergence in Italian Regions, 1977–2000

Dependent variables	Real GDP per capita growth, 1977–95	Real GDP per employee growth, 1977–95	Real GDP per capita growth, 1990–95	Real GDP per employee growth, 1990–95	Real GDP per capita growth, 1995–2000	Real GDP per employee growth, 1995–2000	PPP GDP per capita growth, 1995–2000	PPP GDP per employee growth, 1995–2000
Independent variables								
Real GDP per capita, 1977	-1.02 (-4.56) [-0.06]							
Real GDP per employee, 1977		-2.28 (-9.52) [-1.46]						
Real GDP per capita, 1990			-1.91 (-4.41) [-0.04]					
Real GDP per employee, 1990				-4.61 (-5.81) [-3.21]				
Real GDP per capita, 1995					-0.84 (-4.32) [-1.22]			
Real GDP per employee growth, 1995						-0.99 (-2.34) [-3.36]		
PPP GDP per capita, 1977							-0.73 (-2.78) -1.38	
PPP GDP per employee, 1977								-1.35 (-2.11) [-3.46]

Note: t-statistics in parenthesis, convergence coefficients for Italy in brackets.

Table 6. Production Function Estimates for Italian Regions
(Growth Contributions), 1970–2000

	Real GDP Growth		TFP		Capital Stock		Employment	
	Center-North	South	Center-North	South	Center-North	South	Center-North	South
1970–2000	2.48	2.50	0.82	1.02	1.30	1.21	0.38	0.30
1970–80	3.84	3.72	1.53	1.37	1.65	1.83	0.66	0.52
1980–90	1.99	2.40	0.50	0.78	1.20	1.15	0.29	0.47
1990–2000	1.62	1.37	0.45	0.91	1.05	0.66	0.21	-0.06
1990–95	1.35	0.82	0.77	1.16	1.03	0.63	-0.45	-0.97
1995–2000	1.85	1.93	0.13	0.66	1.07	0.69	0.68	0.57

Table 7. The Determinants of GDP per Capita Growth in Italian Regions,
Pooled Panel with Time Effects

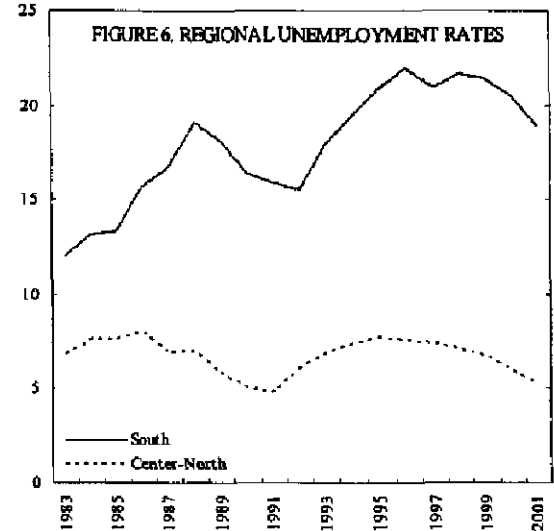
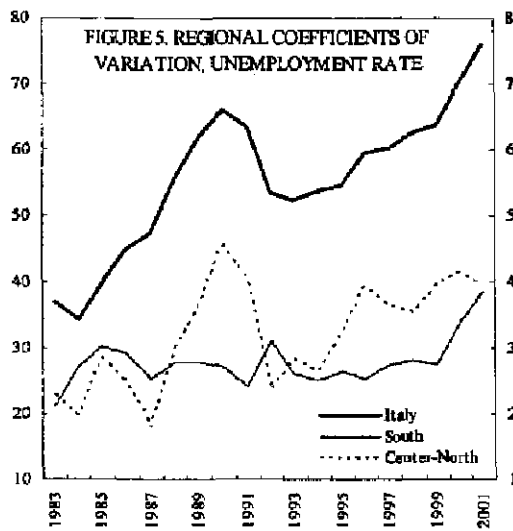
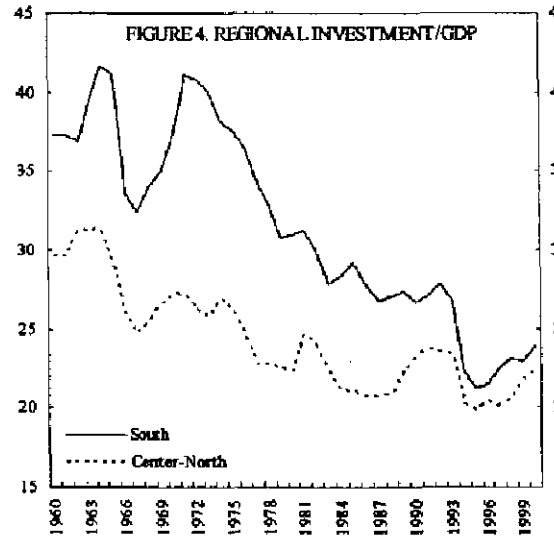
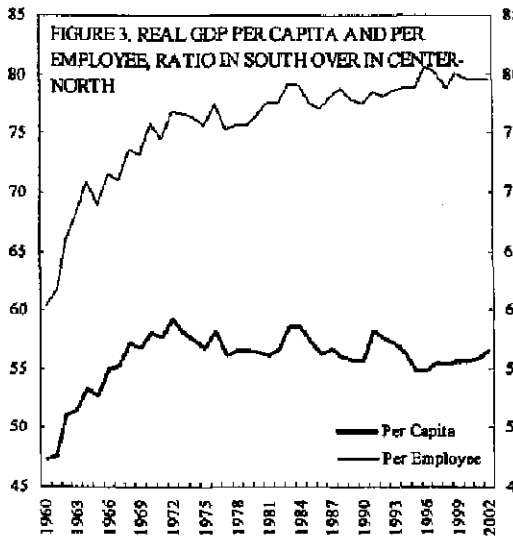
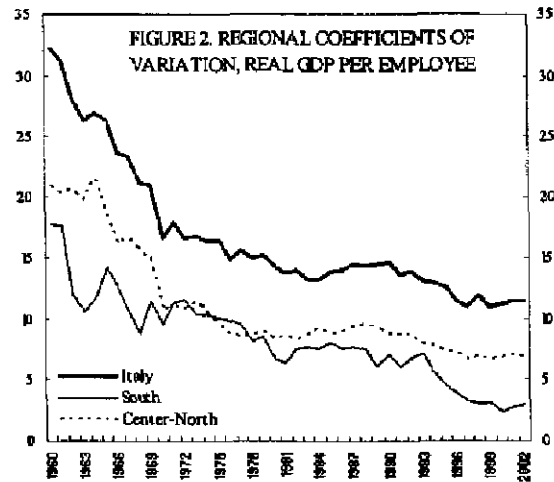
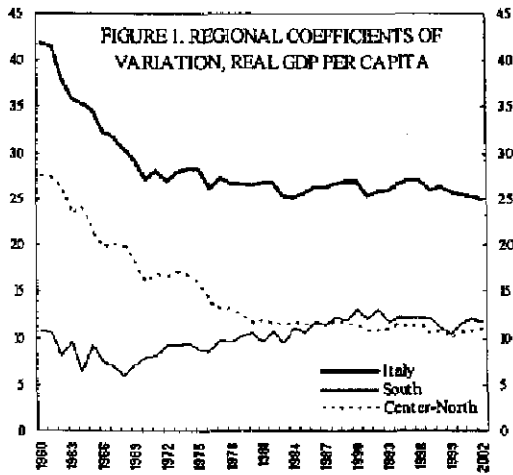
	1960–2000	1960–2000	1970–2000	1970–2000	1970–2000
Convergence indicator (initial real GDP per capita)	-1.47 (-4.44)	-3.79 (-6.75)	-4.09 (-3.00)	-4.13 (-3.13)	-3.36 (-2.90)
Dummy variable for regions in the South		-1.58 (-5.47)	-1.17 (-2.78)	-1.30 (-3.10)	-0.95 (-2.67)
Infrastructure investment/GDP			0.15 (1.67)	0.20 (2.19)	0.26 (2.56)
Public consumption/GDP			-0.14 (-2.55)	-0.16 (-3.05)	-0.56 (-7.92)
Lagged public consumption/GDP					0.46 (5.84)
Noninfrastructure investment/GDP			0.02 (1.17)	0.04 (1.71)	0.00 (0.25)
Interaction of Real GDP per capita with time dummy for 1995–2000				-1.87 (-3.69)	-0.90 (-1.93)
Adjusted R ²	0.70	0.74	0.62	0.65	0.66

Note: t-statistics in parenthesis.

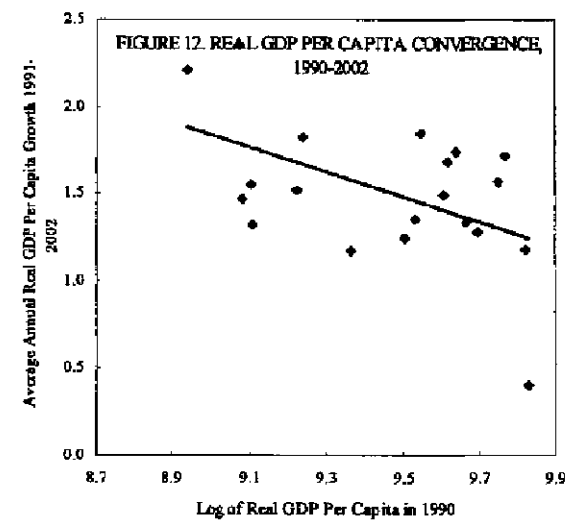
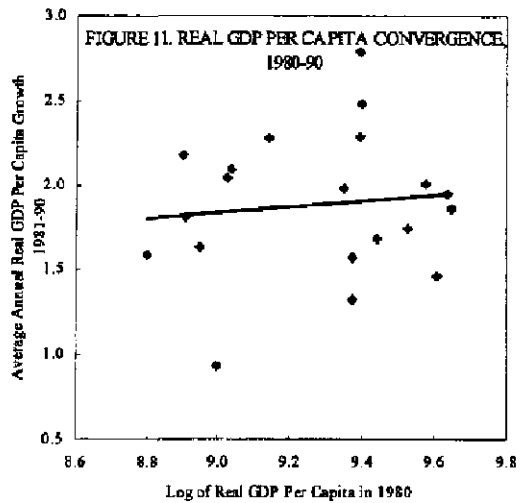
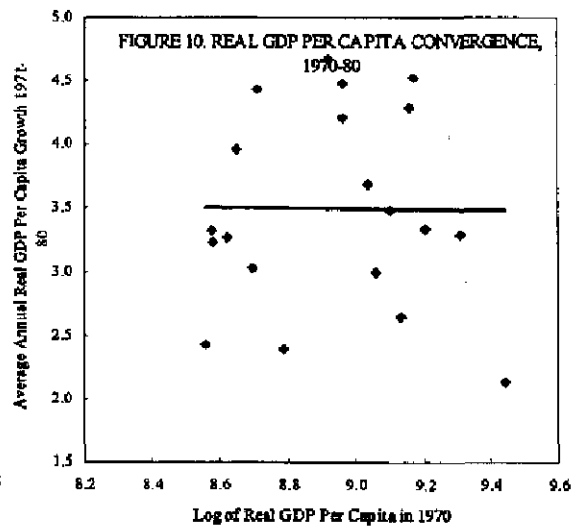
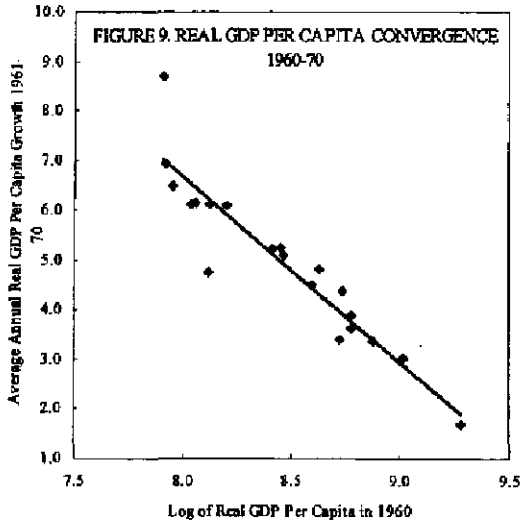
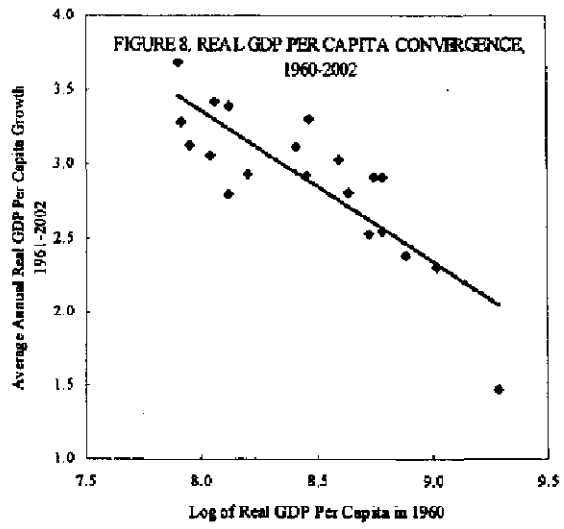
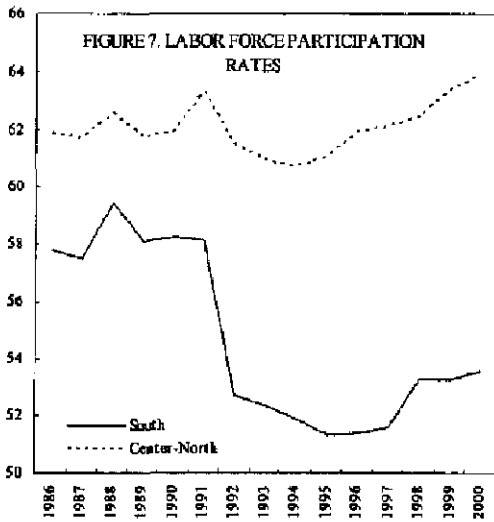
Table 8. The Determinants of GDP per Capita Growth in Italian Regions, Pooled and Cross-Region Estimates
Using 5-year Averages, 1960–2000

	1960–70		1970–80				1980–90				1990–2000				1995–2000					
	OLS		OLS				OLS				OLS				OLS			IV		
Real GDP per capita	-2.75 (-4.04)	-1.21 (-1.09)	-0.57 (-0.71)	-3.64 (-2.74)	-4.40 (-2.53)	-4.67 (-2.95)	0.43 (0.85)	1.26 (1.07)	1.92 (1.03)	1.85 (0.95)	-0.56 (-1.35)	-1.66 (-1.85)	-2.36 (-1.41)	-0.93 (-0.61)	-1.19 (-2.26)	-3.02 (-2.16)	-7.16 (-3.25)	-3.80 (-1.76)	-3.45 (-1.78)	
Dummy variable for regions in the South		1.40 (1.65)		-2.14 (-3.34)	-1.82 (-3.28)	5.14 (2.09)		0.49 (0.79)	1.40 (2.11)	0.12 (0.06)			-0.69 (-1.57)	-0.71 (-1.56)	1.20 (0.91)		-1.13 (-1.76)	-1.60 (-2.07)	-0.62 (0.23)	-1.31 (0.46)
Infrastructure investment /GDP					0.27 (2.80)	0.71 (2.81)			-0.19 (-1.44)	-0.13 (-0.98)			0.05 (0.42)	-0.25 (-1.34)			0.30 (1.07)	-0.25 (-0.74)	-0.003 (-1.05)	
Public consumption /GDP					-0.20 (-2.37)	-0.33 (-2.81)			-0.01 (-0.11)	0.00 (0.00)			-0.04 (-0.58)	0.00 (0.15)			-0.21 (-2.81)	-0.08 (-0.89)	-0.001 (-0.86)	
Non-infrastructure investment /GDP					0.06 (1.80)	0.12 (2.83)			-0.06 (-1.48)	-0.09 (-1.41)			0.02 (0.35)	0.07 (1.32)			0.10 (1.69)	0.09 (1.14)	0.001 (1.15)	
(South dummy)* (non-infrastructure investment/ GDP)						-0.17 (-2.75)				0.07 (0.89)				-0.15 (-1.61)				-0.14 (-1.08)	-0.002 (-1.31)	
(South dummy)* (infrastructure investment/ GDP)						-0.53 (-2.11)				-0.20 (-1.34)				0.67 (2.54)				1.23 (2.91)	1.45 (3.64)	
Adjusted R ²	0.28	0.30	-0.00	0.27	0.38	0.50	-0.01	-0.02	0.02	0.00	0.04	0.06	0.004	0.18	0.21	0.28	0.57	0.67	0.66	

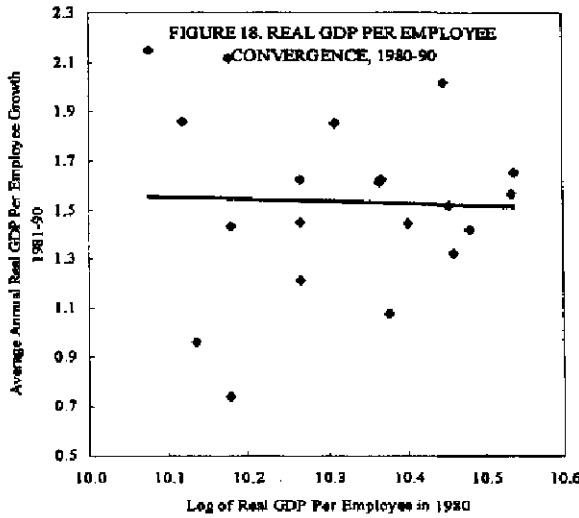
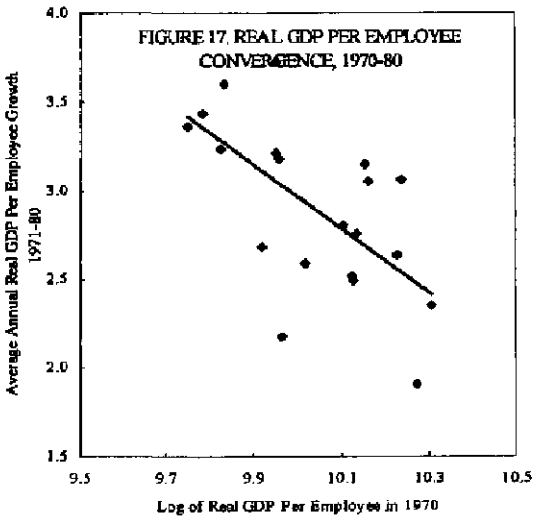
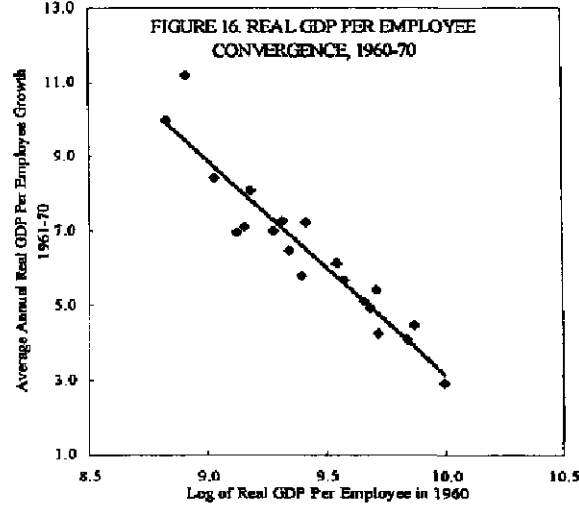
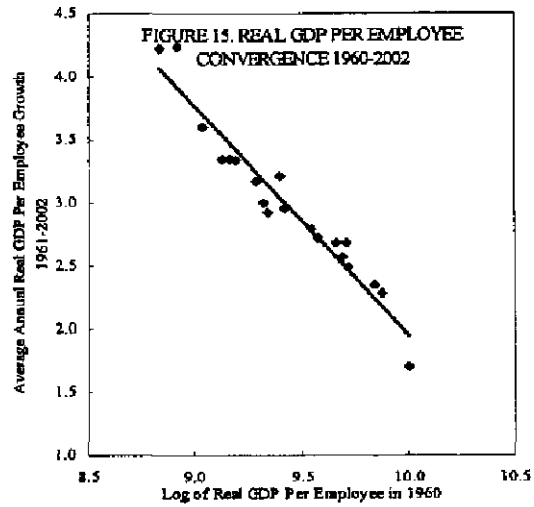
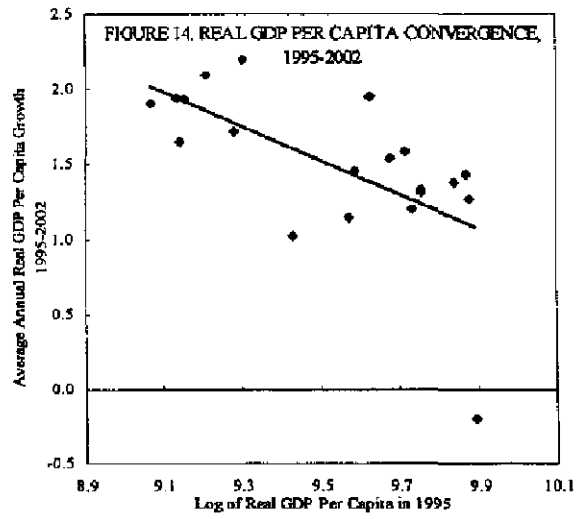
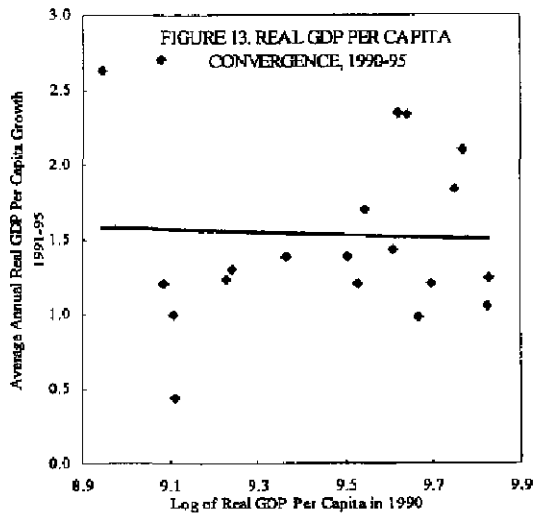
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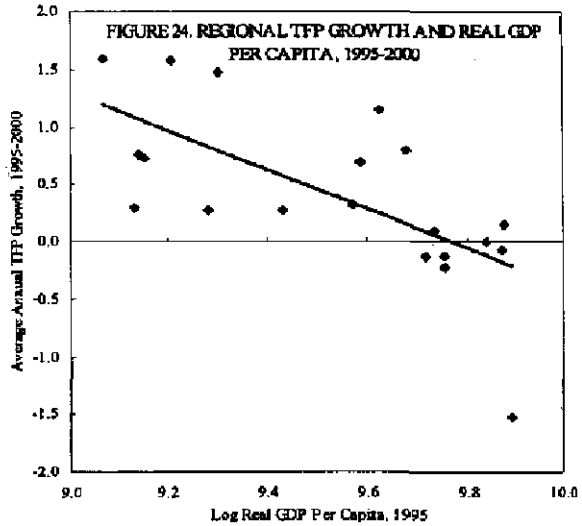
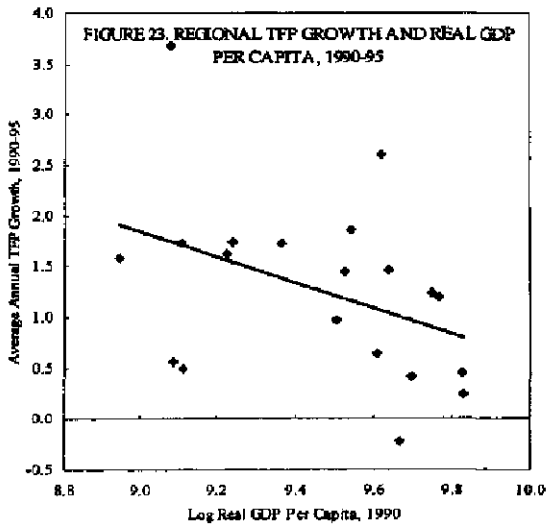
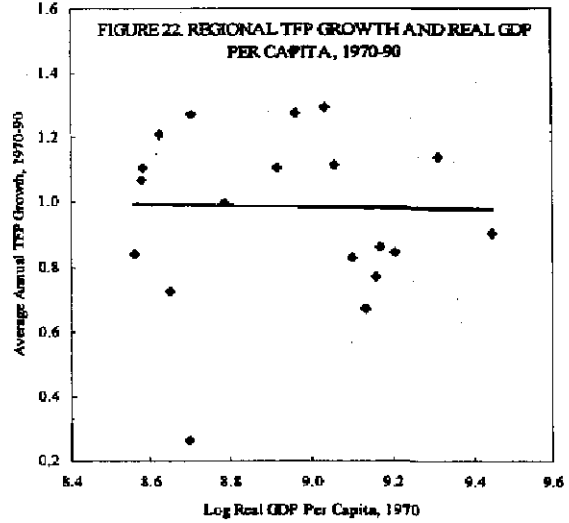
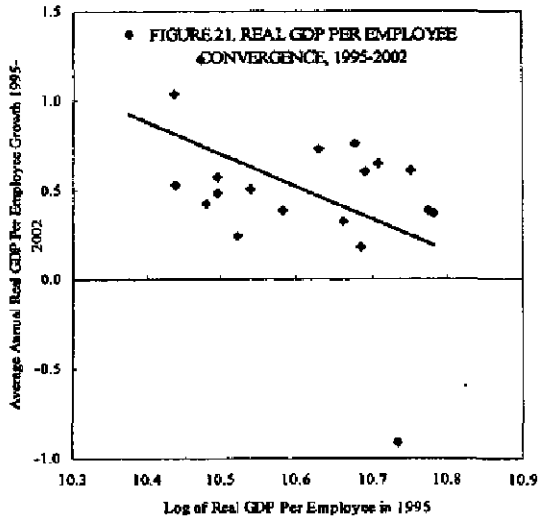
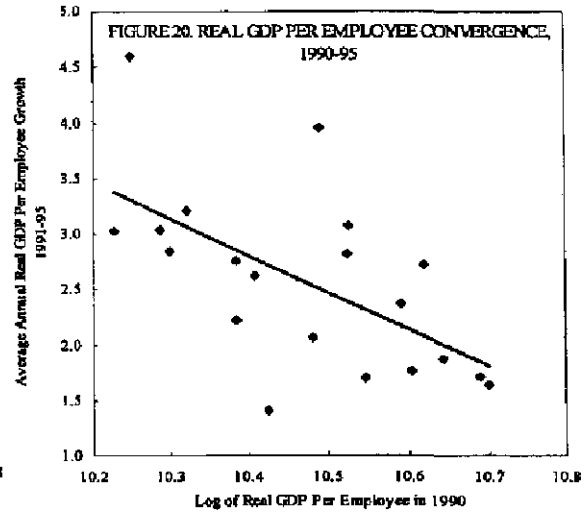
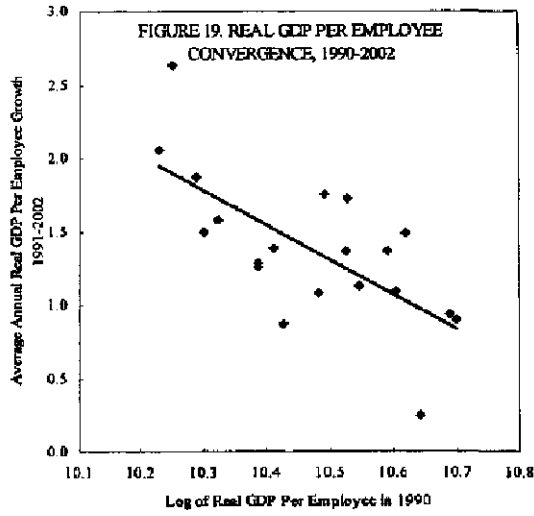
Sources: see data appendix.



Sources: see data appendix.



Sources: see data appendix.



Sources: see data appendix.

DATA

Real GDP, demand and supply components, public investment in infrastructure, employment, labor force, working age population 1960–96: CRENOS, Centro Ricerche Economiche, (http://www.crenos.unica.it/about_crenos/history.html).

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All other data for 1995–2001: Eurostat, Regional Statistics, 2002.

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Note: there is a break in the National Account data in 1995. Consistent data were calculated assuming that growth rates were the same for both definitions of the series—before and after 1995.

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IV. PENSION REFORM ISSUES¹

A. Introduction

1. During the 1990s, Italy introduced some of the most radical pension reforms in industrial countries. Among others, reform steps included a switch from a pay-as-you-go, defined benefit system to a defined contribution system. However, important parts of the reforms will be phased in over a very long period, using mostly a “mixed-system” before the defined contribution system is fully implemented after 2030. Throughout the transition period the share of pension expenditure to GDP—presently one of the highest in the EU—will increase further.

2. Against this background, the chapter reviews the case for additional pension reform steps in Italy. Its focus is on three central arguments. First, *fiscal sustainability*: the projected rise in aging-related spending (in relation to GDP) until about 2030 threatens fiscal sustainability, particularly in view of Italy’s high public debt-to-GDP ratio. Moreover, as discussed in more detail in the staff report, the already very high level of social security contributions (and other taxes) implies that the onus of adjustment falls clearly on expenditures, including on pensions. Second, *creating room for other reform priorities*: recent (and ongoing) labor market reforms have strengthened the argument for a broader reform of the social protection system. However, expanding unemployment benefits and spending for other social priorities will be difficult to secure without redirecting some spending from the category that currently absorbs the vast majority of social spending, that is, from pensions. Similarly, growth-oriented reductions of tax and contribution rates could also make a case for curtailing future pension outlays. Third, *intergenerational equity*: the long transition period to the defined contribution system generates significant income gaps, in terms of replacement rates, between workers with very similar contribution periods. Reducing these inequities could argue for a faster phasing-in of the contribution-based system.

3. Future pension spending, and thus the case for additional reforms, depends in part on the (inherently uncertain) evolution of economic growth over the coming decades. In particular, official baseline projections assume that labor productivity will rebound considerably over the next 50 years. Instead, if productivity growth were to remain around the rate observed over the past decade, pension spending-to-GDP ratios would rise significantly more than assumed in the official baseline projections. The chapter highlights the implications of alternative macroeconomic assumptions for future pension spending.

4. The rest of the chapter is structured as follows: Section B provides a brief overview of social expenditures and pensions in Italy, and it highlights the relatively high (low) spending on pensions (other social objectives) in comparison with other EU countries.

¹ Prepared by Luisa Zanforlin.

Section C reviews the history of pension reforms in Italy and describes the main features of the current system. Section D presents medium-term projections of the Italian Treasury and those of the *European Policy Committee-Aging Working Group* (EPC/AWG), compares Italy with other EU countries, and illustrates vulnerabilities. Section E discusses recent reform proposals and provides a quantitative assessment of expenditures under different reform scenarios. Section F concludes.

B. Pensions and Social Protection Expenditures in Italy

5. Italy has the largest share of pension expenditures across EU countries (according to Eurostat definition; see Table 1), with old-age and survivor pension expenditures alone representing over 15 percent of GDP in Italy, and when disability pensions are also included the share climbs to about 17 percent of GDP.^{2 3}

6. Over the past 50 years, pensions have represented the most important component of social spending in Italy and almost the only social safety net available to a large segment of the population. Since total estimated spending on social protection in Italy ranges 24 percent of GDP, expenditures appear heavily skewed toward pension benefits, thus recent calls for a broader reform of the pension system to allow for a better-targeted social protection policy.

7. The recent political debate in Italy has challenged the definition of pension spending both at a national and a cross-country level, on the basis that pension expenditures based on contributory schemes should be more clearly separated from "social" pensions paid on the ground of a broader objective of social protection spending and unrelated to contributions.

² Cross-country comparisons of pension expenditures have proven difficult in the past, mainly because of the different definitions adopted for pension expenditures, not only by the different reporting international entities, but also across different reports produced by the Italian authorities. These issues were confronted with by the EPC/AWG when it tried to evaluate trends in public pension expenditures across EU countries. Additional difficulties arise from the fact that the source of funding for social protection expenditures is not always a criterion for statistical definitions. Eurostat's harmonized definition includes pensions or benefits relating to old age or retirement from all schemes: basic (first pillar), supplementary (second pillar), personal (third pillar), means-tested welfare, early retirement, and other old-age-related schemes.

³ The Italian Treasury (*Ragioneria Generale dello Stato*, RGS) defined pension expenditures for purposes of long-term projections for public sector expenditure trends. This definition was harmonized with that used by the EPC/AWG and includes pension for old-age and early retirement schemes, invalidity and survivors pensions (defined as IVS in the Italian terminology) and welfare (social) pensions. In contrast with the Eurostat definition, the RGS pension definition (e.g., in Table 7 below) does not include the private severance fund *TFR* (1.6 percent of GDP in 2000; see below).

Table 1. Selected European Countries: Old Age and
Survivor Benefits 1/
(In percent of GDP; in descending order as of 2000 figures)

	2000
European Union (15 countries)	12.2
Italy	15.4
Switzerland	13.5
Austria	13.5
Greece	12.6
France	12.5
Sweden	12.4
United Kingdom	12.3
Germany	12.1
Belgium	11.1
Netherlands	10.9
Denmark	10.7
Portugal	9.2
Spain	9.1
Finland	8.8
Luxembourg	8.1
Norway	7.6
Iceland	6.0
Ireland	3.4

Source: Eurostat.

1/ Data includes all transfers from all old age related schemes, basic (first pillar), supplementary (second pillar), and personal (third pillar), including the *IFR* in the case of Italy.

Unions have been claiming that Italy's pension expenditures also include pension benefits awarded as social safety nets. Thus, in the critics view, the size of pension expenditures is overestimated in official statistics, and pension expenditures would be otherwise sustainable. Their argument hinges on the fact that, were it not for the rapid growth of "social" pension expenditures, the system would be sustainable, and "social" expenditures could be financed through budgetary transfers.

8. However, in a defined benefit pension system, general and "social" pension expenditures are inevitably intertwined, as such systems are founded on principles of revenue aggregation and income redistribution. Defined benefit pension systems can be thought of as an insurance against old age, which tend to redistribute income across workers. For this reason, the sustainability of the system would be better evaluated as a whole.⁴

9. In Italy, and across most EU countries, pension expenditures award an income stream not directly related to the capitalized value of workers' contributions, and thus implicitly tend to contain an element of social protection. The distinction between welfare based spending

⁴ For example, in the Italian system, the pension scheme of farmers has had a persistent deficit, while that of professional workers has had surpluses.

and pension spending would become clearer in the context of a defined contribution pension system where the amount of “pension” benefits received by workers will only depend on the amount of capitalized contributions, thus clearly separating flows generated from contributions from those deriving from income redistribution.

10. With the exception of the large shares of pension-related expenditures, social protection expenditures in general have not been very high in Italy by EU standards,⁵ leaving Italy with one of the lowest expenditures shares for unemployment benefits and family/children benefits. Interest in expanding needs-based benefits—for example, on unemployed in the context of ongoing labor market liberalization—have added urgency to the discussions on pension reform.

Table 2. Pensions and Social Protection Expenditure - Italy vis-à-vis Other European Countries, 2000
(In percent of GDP; in descending order as of 2000 figures)

Total Social Protection Expenditure 1/		Total Means-Tested Social Protection Expenditure	
2000		2000	
European Union (15 countries)	26.2	European Union (15 countries)	2.7
Sweden	31.7	United Kingdom	4.2
Germany	28.5	Ireland	3.6
France	28.3	France	3.2
Denmark	28.0	Finland	3.2
Austria	27.9	Netherlands	3.1
Switzerland	26.1	Germany	2.7
United Kingdom	25.8	Spain	2.5
Netherlands	25.7	Greece	2.3
Greece	25.5	Switzerland	1.8
Belgium	25.3	Austria	1.6
Norway	24.9	Portugal	1.6
Finland	24.4	Sweden	1.5
Italy	24.3	Norway	1.3
Luxembourg	20.2	Italy	1.1
Portugal	20.2	Luxembourg	1.1
Spain	19.6	Iceland	0.9
Iceland	19.2	Denmark	0.8
Ireland	13.4	Belgium	0.7

Source: Eurostat.

1/ Data includes all transfers from all old age related schemes, basic (first pillar), supplementary (second pillar), and personal (third pillar), including the *TFR* in the case of Italy.

⁵ The Italian statistic agency definition of pensions includes pensions from old age, retirement and early retirement schemes, invalidity and survivor pensions, including pensions for reasons of health not relating to specific contributions, war pensions and the like (amounting to about 0.8 percent of GDP in 1999). The Eurostat definition for old-age pensions and survivors also includes payments through the severance pay funds (so-called *Trattamento Fine Rapporto* (TFR), which are paid out as capital and not in a pension form, and also are not matured at retirement age but at employment separation).

C. The Current Pension System: Past Reforms and Policy Challenges

The public scheme

11. The public pension system is comprised of more than 50 different schemes but the five largest schemes account for four-fifths of total pension expenditure, and the remainder schemes involving very few workers or retirees. The system is mainly administered through the National Social Security Institute (INPS), which manages the great majority of social security schemes for private sector employees that account for about two-thirds of the public pension system. Only few categories of workers are not included in INPS, for example, journalists and workers in the performing arts and postal and telecommunication services. A relatively large fund, that of industry managers, was recently incorporated into INPS. Of the pension schemes not included in INPS, the largest by far is administered by the social security institute of the public employees (INPDAP) accounting for about one-fourth of total pensions. The remaining professional schemes are fragmented across numerous very small institutions.

12. The contribution rates differ across workers' categories and currently are set at 32.7 percent for private sector employees.⁶ These rates were increased significantly during the late-1980s and early-1990s following the acceleration of pension expenditures. As an example, in 1985 the contribution rates for private sector employees were 24.5 percent, while that for artisans was more than 10 percentage points lower.

The pre-reform system⁷

13. Prior to the 1992 reform, the Italian pension system was entirely a defined benefit, pay-as-you-go (PYG) public system, very generous in many ways. In particular, the replacement rate granted by the pension formula was high, as it was based mainly on

Table 3. Pension Contribution Rates in Selected OECD Countries, 1967-95
(Percent of average earnings)

	1967	1995
United States	7.1	12.4
Japan	5.5	16.5
Germany	14.0	18.6
France	8.5	19.8
Italy	15.8	29.6
United Kingdom	6.5	13.9
Canada	5.9	5.4
Austria	16.5	22.8
Belgium	12.5	16.4
Denmark	1.0	1.0
Finland	6.5	17.9
Ireland	5.2	15.7
Netherlands	10.2	14.5
Norway	12.8	22.0
Portugal	13.5	13.9
Spain	16.0	28.3
Sweden	6.4	19.8
Switzerland	4.0	8.4

Note: Contribution rates are expressed as system averages.

Sources: Blöndal and Scarpetta (1998); and *The Retirement Decision in OECD Countries*, OECD Economics Department Working Paper No. 202.

⁶ For example, artisans have a contribution rate of 17 percent (2004), shopkeepers (self-employed) contribute 17.3 percent (2004).

⁷ For a detailed discussion of the reform process and the impact of the reforms on medium- and long-term expenditure trends see Annunziata and Laxton (1999) and Annunziata (2000).

earnings during the latest contribution period;⁸ the indexation rules for existing pensions awarded increases linked to wages; and the minimum required contribution period was relatively short.⁹ Workers could not receive pension benefits if they remained in the active labor force, a regulation that tended to foster underground employment while benefiting from retirement income. The lack of an actuarial correlation between the size of the pension benefits and the retirement age acted as a tax on continuing to work (Brugiavini, 1999). Finally, the absence of correspondence between contributions paid and the pension entitlement accrued encouraged contribution avoidance.

14. Such benefits, coupled with an overall aging of the population led to significant increases in pension expenditures in the early-1990s. In addition, official projections indicated expenditures would accelerate over the medium and long term, a clear indication that the system had become unsustainable.

The reforms of the 1990s

15. The “Amato” reform in 1992 reduced the generosity of the benefits in several ways: (i) the reference period for calculating benefits was gradually extended across all categories of workers; (ii) the minimum number of contribution years needed for eligibility to an old-age pension was increased (from 15 to 20 by 2001); (iii) the level of the minimum contribution required by public sector workers was increased; and (iv) pensions were no longer to be indexed to wage but just to consumer prices. Also, the minimum retirement age for old-age pensions was increased by five years, at the time, over the course of ten years, and hence is now entirely effective. However, workers that had at least 35 years of contributions could still take early retirement at 57, receiving so-called seniority pensions.¹⁰ It is important to note that these reforms, with the notable exception of the indexation mechanism on pensions, only applied to the contributions following the year of the reform. Recent research has evidenced how the change in the methodology for indexing pensions is the one measure that has contributed most in reducing the pension expenditure growth rates during the 1990s.

⁸ The reference period varied across workers, with the latest monthly earnings representing the reference wages for public employees, and the average earnings over the latest five or ten years represented the reference wages for private employees and self-employed, respectively.

⁹ The minimum contribution period for an old-age pension was 15 years, and 35 years for a seniority pension in the private sector; in the public sector, the minimum contribution period for a seniority pension was 20 years, and 15 years for married women with children.

¹⁰ The “seniority” pensions still exist under broadly the same conditions, but for a slight increase in the retirement age and contribution period starting from 2008 (2006 for some categories; see below).

Table 4. Expected Old-Age Replacement Rates in Selected OECD Countries, 1961-95 1/
(Percent)

	1961	1975	1995
United States	39.1	49.1	56.0
Japan	24.6	54.1	52.1
Germany	60.2	59.6	55.0
France	50.0	62.5	64.8
Italy	60.0	62.0	80.0
United Kingdom	33.4	33.8	49.8
Canada	31.3	45.1	51.6
Australia	19.1	32.8	40.9
Austria	79.5	79.5	79.5
Belgium	72.6	70.5	67.5
Czech Republic	..	..	53.2
Denmark	35.9	42.3	56.2
Finland	34.9	58.6	60.0
Greece	..	..	120.0
Hungary	..	..	54.6
Iceland	..	..	93.0
Ireland	38.6	28.9	39.7
Luxembourg	..	..	93.2
Netherlands	32.2	48.0	45.8
New Zealand	32.0	43.0	61.3
Norway	25.3	61.2	60.0
Poland	..	..	53.7
Portugal	85.0	77.0	82.6
Spain	..	50.0	100.0
Sweden	53.8	77.1	74.4
Switzerland	28.4	51.7	49.3
Average of above countries 2/	44.0	54.6	59.3

Sources: Blöndal and Scarpetta (1998); and *The Retirement Decision in OECD Countries*, OECD Economics Department Working Paper No. 202.

1/ The figures refer to theoretical replacement rates and are based on assumptions detailed in Blöndal and Scarpetta (1998).

2/ The average for 1995 refers only to countries for which data are available for the whole period covered in the table.

16. While the 1992 reform reduced pension benefits, the system continued to remain a defined benefit system. However, the projections of the social security administration continued to point at a significant deterioration of the expenditure ratios in the medium term. Thus, in 1995 the government passed a second major reform, the "Dini reform," which aimed at stabilizing the medium-term path of expenditures, reducing distortions in the labor market and improving equity in the system. The pension system was changed to a defined contribution system with a long transitional period, implying that the system will become fully effective only in 2030.¹¹ Pensions awarded during the transition period, beginning

¹¹ The defined contribution system will apply only to workers with less than 18 years of contributions and only for the contributions after 1995, according to the methodology discussed below in the summary table.

around 2014, would be computed with a “mixed” formula depending on the number of years the worker had been contributing to the old system at the time of the reforms. The defined contribution system assures that retirees’ pension benefits will depend on the capitalized value of the contributions (according to a mechanism that is explained below), thus representing a significant change in work incentives.

17. In 1997, the “Prodi reform” aligned private and public sector requirements for seniority pensions and increased contribution rates for some categories. These reforms improved horizontal equity and resulted also in some savings on pension spending.

The current mixed system and the transition to the defined contribution system

18. The 1995 reform substantially changed the pension calculation methodology across workers depending on the number of years they had contributed to the pension system at the time of the reform:

- Workers who had already contributed for 18 years to the “old” system in 1995 will continue to retire exclusively under the defined benefit system, although subject to the changes on the calculation of replacement rates and contribution periods introduced in 1992.
- Workers who had contributed for less than 18 years in 1995 will have their pension calculated with a so-called “mixed-system” formula. For the “mixed-system workers” contributions paid in the system prior to 1995 will give rise to an earnings related benefit in the pension formula, while the contributions paid in the system after 1995 will be capitalized according to the defined contribution formula.
- Workers who entered the workforce after 1995 will have their pension entirely calculated according to a defined contribution formula and will retire after 57 years of age if they have accumulated sufficient contributions to generate a pension 1.2 times higher than the old-age allowance pension.¹²
- Finally, all workers in the workforce at the time of the reforms have the right to early retirement after 35 years of contributions and 55 years of age (seniority pensions).¹³

19. The defined contribution formula implies that the future pension flow is calculated as a stream of annuities based on the capitalized value of past contribution periods:

¹² The amount of the old-age allowance pension is routinely revised in the financing law of the budget and is paid to all people over 65 years of age who do not have other means of subsistence.

¹³ The requirements vary slightly across categories of workers and minimum age is to increase as of 2008, see summary table for further details.

- The total capitalized value of past contributions is computed by applying a contribution coefficient of 33 percent to past wages and capitalizing the contribution values at the five-year average GDP growth rate for the year in which the contribution was paid.
- The flow of annuities is determined by applying to the capitalized value of contributions an internal rate of return, set at 1.5 percent, and a transformation coefficient, which is calculated on the basis of life expectancy parameters at the time of the workers' retirement (thus it differs depending on the worker's age when he or she retires).

20. The capitalization formula contains an implicit subsidy since the actual contribution rate is currently 32.7 percent, while the contribution rate applied to past wages is 33 percent. This feature is often indicated as one of the vulnerabilities of the defined contribution system, as it introduces a grant element into the pension formula.

21. The transformation coefficients are to be revised every ten years through new legislation. This would take into account changes in life expectancy in the calculation of future pensions, so that the value of each annuity is reduced on the basis of an expected longer period of pension flows (thus replacement rates are reduced). However, since the revisions to the transformation coefficients apply only to new retirees, the system adapts very slowly to changes in life expectancy.

22. One aspect of the system that has often been criticized is that the revisions of the transformation coefficients are to be issued by the government, in consultation with the social partners, every ten years. According to demographic projections, population will age significantly in the next decades and, from a political economy point of view, it may prove difficult for the government to effectively reduce benefits for a large segment of the electorate.

23. Another weakness of the defined contribution system is that the rate of return of capitalized contributions represents an implicit assumption on average GDP growth over the workers' retirement period, which, if proven too optimistic, would put the system under strain. In addition, the minimum effective retirement age is still among the lowest of the EU area (57) (Table 5). Also the minimum contribution period for entitlement to an old-age pension (20 years as of 2001) is low compared with other EU countries.

Table 5. Selected European Countries:
Average Retirement Age 1/ 2/

	Old Age	Early Retirement
Italy	61.6	56.3
France	61.8	..
Ireland	62.0	..
Germany	62.2 / 62.3	..
United Kingdom	62.6 / 60.4	..
Belgium	62.6	55.6
Austria	62.6	57.9
Finland	63.6	60.5
Sweden	64.5	62.0
Luxembourg	65.0	59.5
Netherlands	65.0	60.0
Spain	65.3	61.0
Portugal	65.7	61.9
Denmark	67.0	61.0

Source: Eurostat.

1/ Latest available year: DK, D, E, A, NL, P, FIN, and S:2000; I, L, and UK:1999.

2/ Sorted by average retirement age for old age pensions.

Table 6. Italy: Average Effective Retirement Age, 1994-2001

	Men	Total
1994	58.8	58.4
1995	58.5	58.4
1996	58.3	57.8
1997	57.4	57.4
1998	58.8	58.9
1999	59.8	59.4
2000	59.5	59.3
2001	59.1	59.4

Source: RGS: "Rapporto di Strategia Nazionale sulle Pensioni 2002: Appendice Statistica."

24. While the reforms introduced only marginal changes to the replacement rates of workers that had at least 18 years of contributions in 1995 (see Table 7 below), the replacement rate for workers with a pension calculated entirely under the defined contribution system would drop by about 30 percent. During the mixed-pension system, replacement rates, which currently are still among the highest in the EU, will gradually decline. But, it is not until the defined contribution system will become fully implemented in 2030 that the replacement rate from the public pension system would decline significantly. Benefits will reduce to 50 percent of the average wage, even if considered net of income taxes, and the replacement rate climbs to 60 percent of the average wage, a substantial reduction from the current net replacement rate of 80 percent (see Table 7).¹⁴

¹⁴ Assuming a worker retires at 60 after 35 years of contributions. The replacement rate increases as the worker postpones retirement.

Table 7. Italy: Summary of the Main Features of the Current Italian Pension System, 2000-2030

Pension benefits and entitlements for workers retiring in 1/:

Year		2000	2005	2006-	2008 -	2012	2013-	2029	2030 onwards
Pension Benefits		P = 2% (C1W1 x C2W2)		P = 2% (C1W1 + C2W3)			P = PA + PB PA = 2% (C1W1 + C3W4) PB = ct x M		P = ct + M
Entitlement	Old age	Age		65 years male 60 years female					At least 57 years of age
		Entitlement		19 - 20 years contributions (as of from 2001)					5 years contributions + and matured pension equal to 1.2 times the old age allowance
	Early retirement	Age		Private 55 years	57 years (as of 2002 /6 for some categories)				
		Entitlement		Public 54 years	57 years (as of 2004/ 6 for some categories)				
		Self 57 years		58 years (as of 2001)					
		Private 35/37 years contributions 2/		35/40 years contributions 2/					
		Public 35/37 years contributions 2/		35/40 years contributions 2/					
		Self 35/40 years contributions 2/		35/40 years contributions 2/					
Year		2000	2010		2020		2030	2040	
Theoretical gross replacement rates 3/		Private 67.3	67.1		56.0		49.6	48.5	
Assuming 60 years of age and 35 years of contributions		Public 68.6	68.1		58.9		49.6	48.5	
		Self 64.4	64.7		41.2		30.7	29.4	

Sources: RGS tables and calculations in "Rapporto di Strategia Nazionale sulle Pensioni 2002: Appendice Statistica" and "Rapporto di Strategia Nazionale sulle Pensioni 2002: Appendice Normativa;" and Fund staff estimates.

1/ Assuming uninterrupted career.

2/ No age restriction corresponds to the higher contributory period.

3/ In percent of average production worker wages, assuming real GDP growth of 1.5 percent and wage growth of 2 percent.

Definitions:

C1: Years of contributions before 1992.

W1: Last monthly wage for public employees, average of the last 5 for private employees, and 10 for the self employed (indexed to CPI increase).

C2: Contributions after 1992.

W2: Average of the last 4 years wages for public employees, 10 years wage for the private, and 13 years wage for the self employed (indexed to the CPI increase augmented by 1 percent).

W3: Average of the last 10 years for public and private employees, and 15 years for the self employed.

C3: Contributions between 1992 and 1993.

W4: Is average wage calculated over the shortest between i) the lifetime contribution period; and ii) the number of years between retirement and 1992 augmented by 1 year for public employees, 5 for private employees and 10 for the self employed. So that the reference period would be lowest between the entire career and eg. [10 + (Yr-1992)] years of contributions for the self employed; where Yr is the retirement year. Wages are indexed to the yearly CPI increase augmented by 1 percent.

ct: Transformation coefficient for accumulated contributions; for retirement ages below 65, ct takes into account the decrease in the number of annuities to be paid given a certain life expectancy parameter. For retirement ages in excess of 65 the transformation coefficient does not change. Total accrued contributions are capitalized assuming a rate of return of 1.5 percent per year.

M: Total contributions accrued during the whole working life capitalized at the rate of growth of GDP; where contributions are calculated as 33 percent of private and public sector worker income and 20 percent of self employed income.

The private pension system

25. Historically, the main form of saving for retirement outside the public pension system has been the severance pay fund (*Trattamento Fine Rapporto*, TFR). This is essentially a workers' saving scheme that is set up from a yearly contribution, at a rate of 6.9 percent, subject to a yearly capitalization rate of 1.5 percent (in real terms), which is maintained in the employers' accounts until the employment relationship terminates. However, there are some differences between a traditional second pillar supplementary pension system and the TFR, mainly because the capitalized amounts are paid out at the time of employment separation as capital and not in the form of a pension. Moreover, these funds are available for employees during their career for specific financing, for example, first house buying.

26. The 1995 reform envisaged that the gradual shift of the pension system to a defined contribution system was to be accompanied by the development of supplementary private pension funds—a so-called second pillar—to compensate for the significant decline in replacement rates entailed by the defined contribution system with respect to the current defined benefit-earnings-related system. The second-pillar was designed to include both closed and open funds. Finally, the system was to include also fully private funds to be set up only on a voluntary basis, thus constituting a so-called third pillar.

27. The closed funds have to be set up on the basis of unionized agreements, to be accessed by employees within a certain structure identified either by territory, by branch of activity, or by specific enterprise. Open funds would be accessed by all workers and can be set up by authorized financial intermediaries.

28. However, the pension funds have remained mostly underdeveloped as evidenced by the few (eight) closed funds that presented accounts at the end of 2001. This has been also due to the fact that, so far, fiscal incentives to participate in open funds are only limited to specific cases.¹⁵ Some progress was made in 2000, with a new law that allowed for life insurance products to benefit from the same fiscal treatment of private pension funds, if the type of contract entailed a similar financial return as that of a pension fund, and thus to constitute third-pillar type arrangements.¹⁶

29. The 1995 reform envisaged that TFR funds could be allocated to second-pillar pension schemes. Since the standard rate of contribution in the long term to the pension system is high as compared with most other OECD countries, dismantling the severance pay

¹⁵ According to the recent legislation, contributions to an open pension fund benefit from a favorable fiscal treatment if workers did not have an option to participate in a closed fund and if he/she transfers the TFR funds to the pension fund.

¹⁶ Fiscal benefits apply to contributions paid into the funds, though all returns are subject to an 11 percent tax rate on interest earnings.

system (TFR) would release resources that could be allocated to pension funds while providing a funding base for pension funds. However, this intention has not been implemented yet as it encountered a strong resistance from the labor unions and other parts of the political spectrum.¹⁷

D. Trends in Current Pension Expenditures: New Policy Challenges

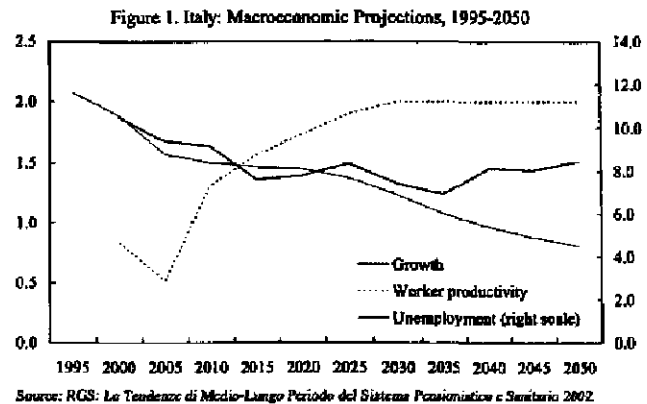
30. This section presents the main assumptions underlying the authorities' pension projections for the coming decades; compares pension expenditures trends in Italy with that for other EU countries; and discusses several important risks to the authorities' baseline projection. It also presents simulation results, which suggest that if these risks were realized, they would undermine fiscal sustainability (see also the staff report). This motivates the discussion of several reform scenarios in the following section.

Demographic scenario

31. The most recent demographic scenario released by ISTAT indicates that life expectancy at birth should increase by about five years for both men and women by 2050. In spite of the projected net positive migratory flows to Italy over the next 30 years and of the slight increase of women's fertility rates to 1.4 against the current 1.2, the dependency ratio for old-age people is projected to climb to nearly 70 percent by 2050 from the current 28 percent, among the highest across EU countries.

Macroeconomic scenario

32. According to the assumptions underlying the latest scenario of the RGS, the unemployment rate is expected to decline from 9 percent in 2002 to 4.5 percent at the end of the projection period, while women's activity rates are assumed to increase from 48.9 to 64.2 percent in the same period. Most importantly, workers' productivity growth is expected to gradually increase and display a long-term trend value of 2 percent after 2026. The combination of these hypotheses would imply that, for the next 50 years, average GDP growth is not expected to fall below 1.4–1.5 percent.



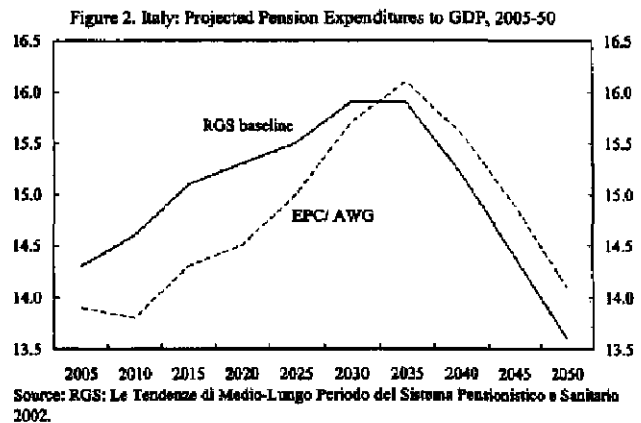
¹⁷ Employers represent severance pay as a cost to the firm. Since cash disbursements mostly take place at retirement, TFR funds provide a form of cheap financing for firms that would otherwise be confronted with tougher conditions on the financial or capital markets.

33. The RGS scenario depends importantly on a strong rise in productivity in future decades, and several factors suggest that labor productivity may indeed increase—at least somewhat—under the envisaged demographic scenario. In particular, as the active labor force declines, labor is likely to become more scarce (relative to capital), resulting in higher labor productivity. In addition, the total population is expected to decline more gradually than the labor force, and this would tend to support aggregate demand during this period and possibly also productivity. Moreover, as families have less children, resources are freed, which may be used for higher investment in education, thereby increasing future productivity. In all, these arguments provide a strong case that productivity growth rates could be higher than the rates observed in recent years. However, they leave open the question if the magnitude of this long-run effect is likely to be as large as envisaged in the RGS baseline, and if this provides the most appropriate baseline scenario (see below).

34. The projected increase in worker participation rates together with the expected increase in labor productivity growth will tend to countervail the impact of adverse demographic trends on pension expenditure. According to the RGS's baseline scenario, pension expenditures are expected to reach 15.9 percent of GDP in 2030—about 2 percent of GDP higher than in 2002—before gradually declining to 13.6 percent by 2050.

Trends in pension expenditures across Europe

35. The *European Policy Committee-Aging Working Group* (EPC/AWG) also projected long-term expenditure paths of the public pension system across EU countries (EPC/ECFIN/5812/00). Since underlying assumptions were to be broadly uniform, they vary slightly from those of the RGS: unemployment was projected to decline by 30 percent (50 percent according to the RGS scenario); female fertility rates and net immigration flows were assumed to be slightly higher than in the RGS scenario; and workers' productivity growth has a different intertemporal profile than in the RGS scenario.



36. The EPC/AWG exercise allows for cross-country comparability of pension expenditures: while public pension expenditures in Italy are currently above the EU average, over time, under the AWG baseline scenario, they are expected to fall well below EU averages in particular vis-à-vis those countries that have not reformed so far. Table 8 evidences how, under the baseline scenario, Italy compares with EU peers.

Table 8. Pension Expenditure Projections Across Selected European Countries 1/ 2/

	2000	2010	2020	2030	2040	2050
Austria	14.5	14.9	16.0	18.1	18.3	17.0
Italy 3/	13.8	13.8	14.5	15.7	15.6	14.1
Greece	12.6	12.6	15.4	19.6	23.8	24.8
France	12.1	13.1	15.0	16.0	15.8	...
Germany	11.8	11.2	12.6	15.5	16.6	16.9
Finland	11.3	11.6	12.9	14.9	16.0	15.9
Denmark	10.5	12.5	13.8	14.5	14.0	13.3
EU	10.4	10.4	11.5	13.0	13.6	13.3
Belgium	10.0	9.9	11.4	13.3	13.7	13.3
Portugal	9.8	11.8	13.1	13.6	13.8	13.2
Spain	9.4	8.9	9.9	12.6	16.0	17.3
Sweden	9.0	9.6	10.7	11.4	11.4	10.7
Netherlands	7.9	9.1	11.1	13.1	14.1	13.6
United Kingdom	5.5	5.1	4.9	5.2	5.0	4.4
Ireland	4.6	5.0	6.7	7.6	8.3	9.0

1/ Projections in the 2001 EPC/AWG document "Budgetary Challenges Posed by Aging Populations."

2/ By expenditure levels in 2000.

3/ Latest estimate, December 2002 "Le Tendenze di Medio-Lungo Periodo del Sistema Pensionistico e Sanitario."

Vulnerabilities of the projected pension expenditures

37. All estimates of pension expenditure trends hinge crucially on employment and productivity patterns of the economy until the pension system is shifted to a contribution based system. In addition, the particularly adverse population trends in Italy, as compared to other EU countries, tend to exacerbate the pitfalls of the relatively long transition phase between the PYG and the defined contribution system. As discussed above, even the defined contribution system is vulnerable to low growth rates and population aging as capitalized contributions are assumed to have a pre-set rate of return of 1.5 percent, and workers can still retire very young, while transformation coefficients are very slow in adjusting pension flows to population aging trends.

38. Most importantly, the assumptions in the RGS scenario regarding increases in workers' long-term productivity are set at the upper bound of productivity growth rates recorded in recent decades. While increases in labor productivity averaged about 1.8 percent per annum for the period 1980–95, the increase was only 0.9 percent during 1995–2002. Moreover, projections for labor productivity in mature economies, such as the United States, generally assume long-run growth rates of around 1¼–1½ percent a year.

39. Against this background, the subsequent analysis is based on somewhat more cautious assumptions for future productivity growth. For the reasons described earlier, the scenario still envisages a considerable pick-up over time from the low productivity growth observed in recent years. But the long-run rise in productivity would be smaller than in the RGS scenario. Specifically, the scenario referred to as "IMF baseline" below assumes a gradual rise in labor productivity from current levels, reaching 1.5 percent in the longer run.

For the entire projection period through 2050, labor productivity growth would average 1.2-1.3 percent per annum. This scenario will be used below to evaluate fiscal sustainability.

Fiscal sustainability issues

40. This section reviews fiscal sustainability issues in the context of the IMF baseline scenario outlined above. The results—crucially hinging on the specific assumptions listed in the next paragraph—indicate that additional adjustment steps will likely be needed to secure fiscal sustainability.

41. The baseline scenario assumes: (i) a constant structural primary balance net of health and pension expenditures (jointly referred to as aging-related spending below) at its 2003 level; (ii) a rise in aging-related spending in line with the RGS baseline, adjusted for staff's baseline assumption on labor productivity growth;¹⁸ (iii) a gradual increase in the average real interest rate on public debt to 3½ percent (its average level during 1998–2003); (iv) GDP growth of slightly below 1 percent, reflecting the combined effect of the assumptions for labor productivity growth and the decline in the number of workers for demographic reason (the projection for participation rates is the same as in the RGS baseline).

42. Under these assumptions, aging-related expenditures rise by considerably more than in the RGS scenario, and the public debt dynamics would become unsustainable. The peak of pension expenditures (in relation to GDP) would increase by about 1¼ percentage points in the IMF baseline scenario relative to the RGS baseline (see Figure 3). As concerns the fiscal deficit and public debt, the IMF baseline implies a declining deficit over the next five years (as the output gap closes). However, the deficit would rise thereafter due to increased aging-related spending and, later, also increased interest payments. As a result, the public debt ratio would rise steadily after 2014,

Figure 3. Italy: Pension Expenditures as a Share of GDP, 2005-50

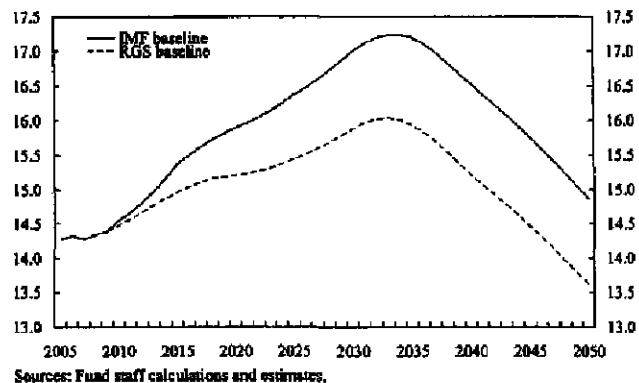
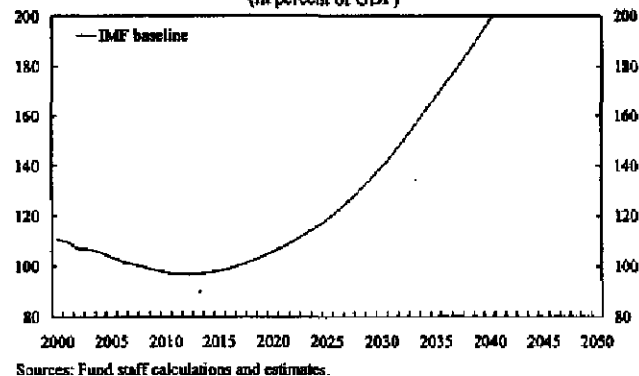


Figure 4. Italy: Public Debt Dynamics, 2000-50 (In percent of GDP)



¹⁸ In this simulation, aging-related spending includes also health care spending, which is assumed to grow in line with population aging.

and ultimately at a rapid and unsustainable rate. While this scenario makes a strong case for reducing the structural fiscal balance vis-à-vis the assumptions of the scenario—and, indeed, this is part of the government's medium-term program—it also provides a case for considering further reforms to alleviate aging-related spending pressures.

E. Issues Underlying Further Reforms

Direction of reform

43. In recent literature, there have been many proposals to reform the current pension system to achieve both medium-term savings and to increase intergenerational equity. In particular, increases in the effective retirement age and in labor market participation rates would be efficient with respect to the first objective, while measures to develop the second third pillar would address the second objective. More specifically:

- *Increases in the effective average retirement age* been estimated to entail significant savings, in particular if applied to the minimum entitlement age for seniority pensions, because of the high share of seniority pensions in pensions expenditures. To achieve this result many have proposed a lengthening in the statutory retirement age or the introduction of a discount on pension benefits for people retiring prior to the minimum retirement age for old-age pensions. For example, Brugiavini (2000) suggests that a steeper curve of capitalization coefficients for accumulated contributions, by discounting more contributions before the age of 65, would provide an incentive for workers to postpone retirement.
- *Incentives to increase labor participation* would tend to reduce the deficit between contributions and expenditures, as workers would continue on the job, and thus pay contributions, while already qualifying for seniority pensions.¹⁹ However, it has often been noted that incentives to increase labor market participation of the older

¹⁹ Under current laws, if a pensioner is over 58 and has fully contributed to the system (37 years of contributions), then he/she will be able to continue working either employed or as self-employed without losing pension benefits. Pensioners of any age and pensioners receiving an old-age pension according to the rules of the earnings related system will also be able to benefit from labor income without losing their pension benefits if they have at least 40 years of contributions. Pensioners that receive an old-age pension according to the defined contribution system (i.e., who do not have 37 years of contributions) with less than 63 years of age will not be able to receive pension benefits if working as employees and will lose 50 percent of the benefits exceeding the minimum pension if self-employed. After their sixty-third birthday, old-age pensioners will be able to access pension benefits if working as employees, but the benefits, as in the case of self-employed work, will be curtailed by half of the amount of the pension in excess of the minimum pensions.

generations would only generate expenditure savings if accompanied by disincentives to early retirement (Boeri and others, 2002).

- *Incentives to develop a supplementary pillar* would countervail the decline in replacement rates following the implementation of the defined contribution system. The severance pay fund (*Fondo di Trattamento Fine Rapporto* (TFR)) could be used, as initially envisaged in the 1995 reform, to constitute the base for the private sector pillar, but the tax structure between needs to be examined to avoid excessive taxation levels on pension funds.

44. As contribution levels are among the highest across OECD countries,²⁰ and are often identified as one of the reasons for poor employment performance in the past decade in Italy. Thus, further increases of contribution rates would be difficult to implement as a means to finance increases in pension expenditures.

Current government proposals

45. The government presented a draft proposal for pension reform proposal in October 2003 that, together with an earlier framework law, envisages several changes to the current pension rules:

(i) An increase of the minimum contributory period for entitlement to seniority pensions from 35 to 40 years for workers both in the current "mixed" and in the defined contribution system for rights maturing after 2007.²¹

(ii) Incentives to increase the effective retirement age. The current proposal envisages that workers that postpone retirement beyond the minimum entitlement age for seniority pensions can opt for a new regime where they would continue to work and receive: a salary increase equal to the full amount of their social security contributions, a tax exemption on the additional earnings, and a pension calculated on the basis of the contribution period up to the time in which the worker opted for the new regime.

(iii) Workers would be allowed to earn labor income while receiving pension benefits. This proposal aims at increasing labor participation and employment for older segments of the working age population.

²⁰ Feldstein and Siebert, eds., "*Pension System Across Europe*," Chicago University Press (2002).

²¹ Until 2015 workers will still be able to retire within the current seniority pension framework (35 years of contributions and 57 years of age), but the pension will be calculated on the basis of the formula for the defined contribution system, thus implying a significantly lower replacement rate.

(iv) A plan to draft legislation for a supplementary pension scheme, both by devising better fiscal benefits and by allowing the transfer of severance pay funds (TFR) to the pension funds.

(v) A cut in contributions rates for new employees, while leaving pension benefits unaffected. This measure is to stimulate employment growth.

46. With many of the specifics still to be worked out, it is too early to fully assess the potential impact of these reform proposals. Moreover, the government intends to discuss the proposals with the social partners and has indicated its openness for modifications, provided that these would not detract from the overall savings envisaged from the reforms. As it stands, the increase in the minimum contributory period extended to workers in the defined contribution system would entail significant savings in the medium and long term. The savings from the remaining measures, however, are highly uncertain and unlikely to be sizable. For example, the cost of the lower social security contributions from those workers that would have postponed retirement even in the absence of incentives is immediate, while the savings from the measures favoring higher labor participation would arise only in the medium term (as evidenced in paragraph by the simulations below). As there would no disincentives to discourage workers from taking early retirement, with workers allowed to retire and continue working, it appears unlikely that the retirement behavior would change significantly. Finally, the envisaged decline in contribution rates for new employees is unfunded and even if it increased employment, this would not reduce the funding gap in the pension system (although it might have other beneficial effects on growth and tax revenues).

Expenditure paths under different reform scenarios

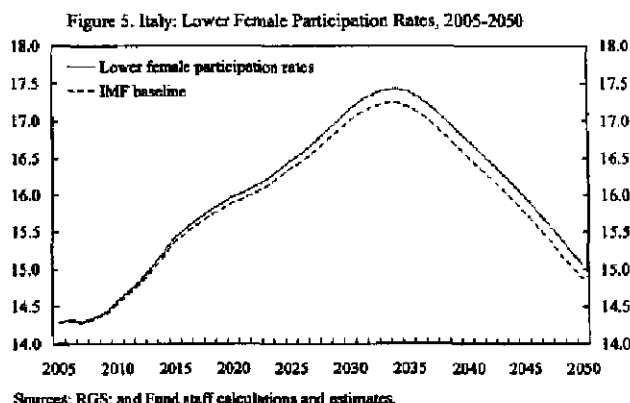
47. To better evaluate the quantitative impact of the different reform proposals discussed above, a series of alternative pension expenditure scenarios were constructed, each of which entailed a change in the current pension regulations with respect to the RGS's baseline. At times, scenarios were designed on extreme assumptions to generate "upper-bound" type of paths—and the scenarios should be seen primarily as a qualitative illustration of different reform options that than specific recommendations for reform. A summary of the numerical savings from different scenarios entailing regulatory changes is presented in Table 7.

48. Savings from each simulation are compared with the IMF baseline scenario, which, as discussed above, was drawn to encompass the same assumptions as the RGS for all macroeconomic and demographic variables with the exception of workers' productivity growth. The latter was assumed to average 1.2-1.3 percent over the projection period (as discussed above), rather than 1.7-1.8 percent in the RGS scenario.

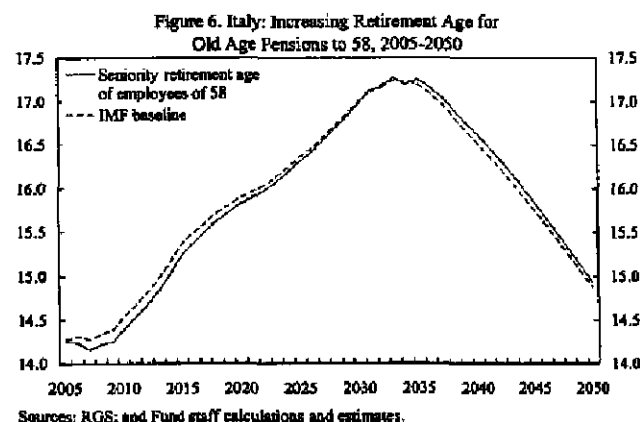
49. In particular, the expenditure paths were estimated under the following assumptions:

- *Lower labor participation rate of women.* Under this scenario, female labor force participation (in the age-bracket 20-54) would reach only 65 percent rather than

70 percent as in the RGS scenario, from its current level of about 50 percent. The lower participation rate is obtained by lowering the hypothesis on the education level and by reducing the rate of growth of population. The hypothesis of a lower participation rate reflects directly on a lower GDP, through a reduction of the number of workers, since GDP is assumed to depend directly on the productivity per worker and on total employment. Thus, the share of pension expenditures increases. However, lower participation rates also result in a gradual reduction of pension expenditures, due to a decline in the number of pensioners, and a reduction of the value of pensions calculated in the defined benefit system reflecting shorter contribution periods, as more time is spent achieving education. The increase in pension spending is gradual and peaks at 0.2 percent by 2040, but then declines thereafter.



- Increasing the minimum retirement age for seniority pensions from 57 to 58 for employees (as it is already 58 for self-employed) beginning in 2005, after 37 years of contributions. In general, increases in the retirement age generate an increase in GDP in the short term, as evidenced by savings of 0.1 percent in 2010. This reflects higher labor participation, and a reduction in the number of pensioners with respect to the baseline scenario. However, as more workers retire with a defined contribution benefit, a longer contribution period implies higher pension outlays. In the specific scenario under consideration, savings from increasing the minimum retirement age would disappear around 2035 when the defined contribution system would become fully phased in and seniority pensions would disappear. In the long run, the regulation would imply an increase in expenditures of 0.1 percent in the period 2040–50.*



- Increasing the minimum retirement age for old-age pensions for women by one year every two years until it reaches 65, with the first increase effective in 2005. This regulation would equalize the age requirement for the entitlement to an old-age pension across men and women. The effects of the regulation, as in the case of the scenario assuming an increase in the entitlement age for seniority pensions has only*

effects until the defined contribution system becomes fully phased in. As in all cases where the contribution period is increased, there will be an increase in long-term expenditures due to the higher values of pensions paid, and also, because of a longer payment period given women's higher life expectancy is longer. Savings were estimated to reach 0.3

percent of GDP in the period 2015–35 before being phased out following implementation of the defined contribution system.

- *Increasing the minimum retirement age for seniority pensions by one year every two until reaching 62 across all categories of workers, and raising the minimum retirement age for women, with the first increase effective in 2005. The combination of these measures would generate significant savings in the short term, before peaking at 1 percent in 2015. However, as in the previous cases discussed, the size of the savings would gradually reduce as the defined contribution system gives rise to higher pensions for workers with longer contribution periods and ultimately generates an increase of pension expenditures in 2035, by 0.2 percent of GDP, which would increase to ½ of a percent in 2050.*

Figure 7. Italy: Women's Retirement Age for Old Age Pension Increased to 65, 2005-2050

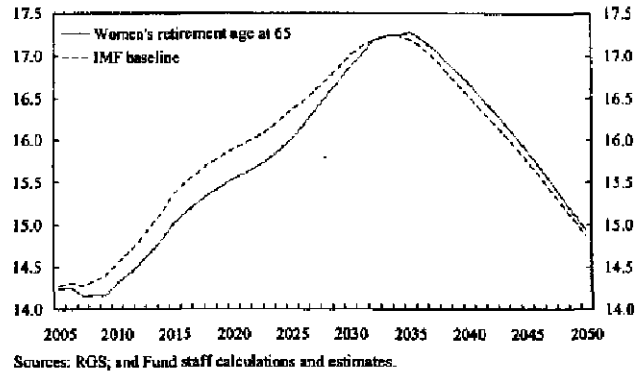
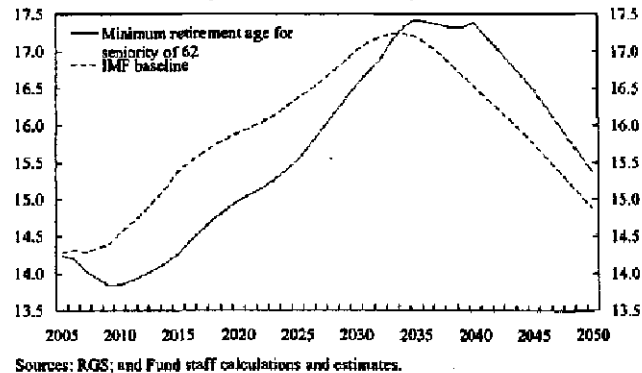
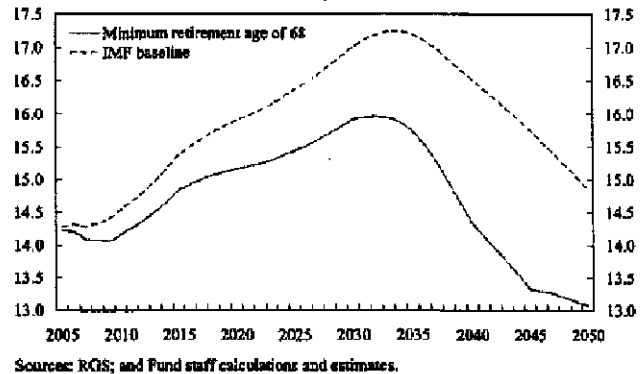


Figure 8. Italy: Minimum Retirement Age for Seniority Pensions Increased to 62, 2005-2050



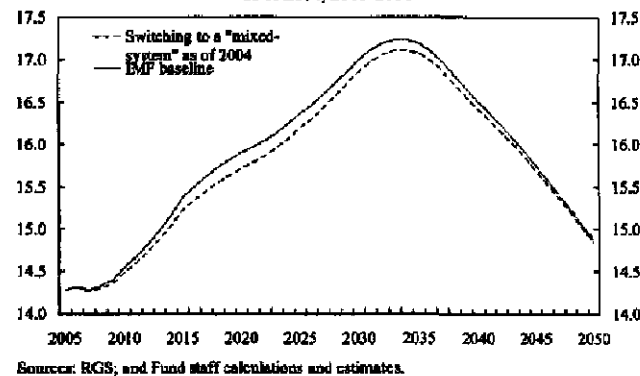
- Increasing the current minimum retirement age for all workers, including those covered by the defined contribution system, by one year every two until reaching 68, with the first increase effective in 2005.*²² This simulation was designed to evaluate the upper bound to the savings obtainable through increases in the “de iure” minimum retirement age. This would represent an increase of 8 years for women, 3 years for men, and 11 years for workers who would be eligible for pensions in the defined contribution system. Since in the current legislation the transformation coefficients are defined to be inversely correlated with age only for the ages 57–65; the coefficient currently applied to workers retiring at 65 was used for ages greater than 65. Not surprisingly, this measure generates significant savings in the medium and long term, as it both entails a reduction in the number of pensions and the increase in workers which is maintained throughout the projection period. As of 2015, savings are about ½ a percentage point of GDP, and peak at 2.5 percent in 2044, reflecting the increase of the retirement age in the defined contribution system.

Figure 9. Italy: Minimum Retirement Age Increased to 68 in All Pension Systems, 2005-2050



- Shifting workers to the so-called mixed-pension system as of 2004.* This would imply that workers now entitled to an entirely defined benefit pension under the 1995 reform,²³ would have part of the pension calculated with the defined contribution system for contributions paid after 2004. Such a change would entail savings of around 0.2 percent of GDP in the period 2010–30. The savings would gradually dissipate

Figure 10. Italy: Switching to a Mixed System Formula as of 2004, 2005-2050

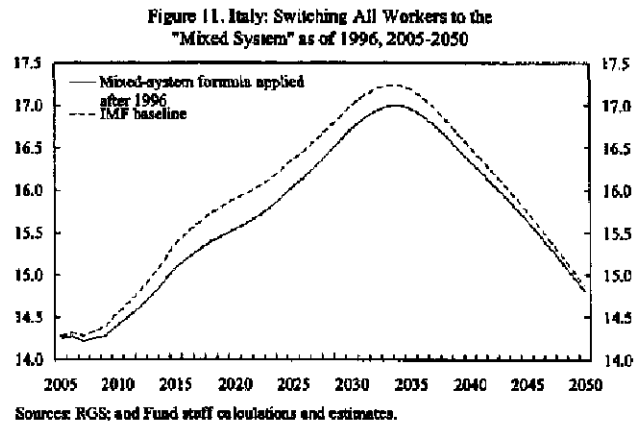


²² This would entail that in the mixed system, early retirements would be abolished and the minimum retirement age would be increased to 68 from the current 65 years of age (60 for women). In addition the age requirement to qualify for pensions would be increased by 11 years in the defined contribution system.

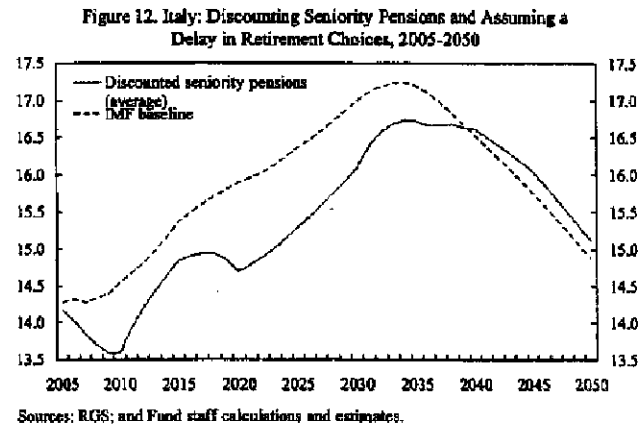
²³ As discussed above, this refers to workers with more than 18 years of contributions to the pension system in 1995.

thereafter as an increasing share of pensioners falls, in the baseline, under the defined contribution system pension scheme.

- Shifting all workers to the mixed-system for contributions paid after 1995 as of 2004.* This would imply equalizing the pension calculation formula across all workers retiring after 2004, whether they had matured 18 years of contributions in 1995 or not: all contributions after 1995 would be capitalized according to the contribution system rule. This is clearly an extreme assumption as it would entail retroactively changing the rules of the game. Savings would be about twice as large as in the previous case, reaching 0.3 percent of GDP in the period 2015–30. However, once again, the effects of this measure would be phased out with the implementation of the defined contribution system. Nevertheless, it contributes to a smoothing of the medium term “hump” in the expenditure path.



- Discounting seniority pensions for workers that retire before reaching the retirement age for old-age pensions (65).* Under this scenario, workers in the transition phase who decide to take early retirement would be faced with a discount of 5 percent for each year the worker retires before the age of 65 (60 for women), beginning in 2004. There is no penalty for women that retire after the age of 60 (minimum retirement age for old-age pensions). Such discounts are not applied to invalidity pensions. In the context of this simulation, retirement choices could change.



To take into account the effects of differences in retirement behavior two scenarios were run: one, which estimated the savings from the new regulation assuming workers would not change their retirement behavior; a second, where workers are assumed to remain in the labor market until they reach the “full” value of their pension (i.e., age 65 for men, 60 for women). These two hypothesis were taken to represent upper bound type of behavior, with the choice of a retirement age for most workers probably falling somewhere between the minimum age for the seniority pension and the statutory retirement age. In the first case, the expenditure savings

would reach 0.2 percent of GDP as early as 2007 and to 1 percent of GDP between 2010 and 2030 before being phased out. In the second case, expenditure savings are close to 2 percent of GDP by 2015, before declining. However, the phasing out of the benefits is also very rapid as outlays in excess of the baseline projections by 1 percent of GDP are generated after the defined contribution is fully implemented. The dynamic path reproduced in Table 9 and Figure 12 is obtained by averaging the point estimates in the two scenarios.

50. Some of the numerical simulations of the different scenarios on legislative changes discussed are reproduced below.

Table 9. Italy: Savings with Different Regulatory Changes, 2005-2050 1/
(In percent of GDP)

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Lower female participation rates	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Minimum retirement age for seniority (58)	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.1	0.1
Minimum retirement age for seniority (62)	0.0	-0.7	-1.1	-0.9	-0.8	-0.5	0.2	0.9	0.7	0.5
Equal retirement age for man and women (65)	0.0	-0.2	-0.4	-0.4	-0.4	-0.1	0.1	0.2	0.1	0.1
Minimum retirement age of 68 for all systems	-0.1	-0.4	-0.5	-0.7	-0.9	-1.1	-1.5	-2.2	-2.4	-1.8
Switching to a mixed-system as of 2005	0.0	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0.0
Switching to a mixed-system as of 1996	0.0	-0.1	-0.3	-0.4	-0.3	-0.3	-0.2	-0.2	-0.1	-0.1
Applying discounts to seniority pensions 1/	-0.1	-1.0	-0.5	-1.2	-1.1	-0.9	-0.5	0.1	0.3	0.2

Source: IMF scenarios calculated with the RGS pension model.

1/ Average of two retirement behavior scenarios.

Comparing scenarios

51. The regulatory changes simulated in the scenarios discussed help evaluate the size of the savings generated through different measures.

52. Increases in the *effective retirement age* appear to generate significant savings, and as expected, the effects are larger if the increase is applied to the minimum retirement age for seniority pensions. In particular, the size of savings following measures on seniority pensions evidences how the generosity of the early retirement mechanism is generating medium term spending pressures on long term sustainability of the overall system.

53. However, *increases in the minimum effective retirement age for workers in the transition period* also tend to imply higher pension expenditures at the time when expenditures peak. As the average effective retirement age increases, the value of capitalized contributions also increases, as workers contribute for longer periods and the value of future pension flows increases. Thus, some measures that yield short-term savings by changing the benefits in the transition phase also generate increases in long-term expenditures and tend to exacerbate the problems with the expenditure "hump". The dynamics of the transition phase of the pension system is such that, given the very low minimum retirement age in the defined

contribution system (57), the flow of workers exiting the labor market at the end of the transition period exceeds the savings generated by the implementation of the defined contribution system.

54. As evidenced in the simulation above, an *increase in the minimum retirement age of workers under the defined contribution system*, or an increase in the minimum contribution period for entitlement under the defined contribution system would significantly reduce the "hump" in pension expenditures.

55. Thus, simulation results tend to confirm that the measures contained in the framework pension law which are directed at increasing labor participation, given the absence of disincentives to take early retirement, do not generate sufficient savings to impact pension expenditure trends leaving the expenditures dynamic path unchanged. However, the prospective increase of the minimum contribution period for seniority pensions and for pensions in the defined contribution system would appear to generate sufficient savings to bring pension expenditures on a more sustainable path in the medium term.

56. The savings generated by *equalizing the pension formula for all workers* that had been contributing to the PYG system before 1995 (those with more and less than 18 years of contributions), are low because of the ten years that have already gone by since the time of reform. Nevertheless, they remain positive and would contribute to a smoothing of the medium-term "hump" in the expenditure path. It would also toward make more homogeneous the pension benefits across workers with very similar contribution periods.

F. Conclusions

57. Notwithstanding major reforms of the Italian pension system over the past decade, the long transition phase to a defined contribution system implies a further increase in pension spending (in relation to GDP) over the coming three decades. The extent of the increase depends importantly on the evolution of labor productivity—and official projections, assuming a considerable rebound vis-à-vis the growth rates observed over the past decade, entail considerable risks of underestimating future pension ratios. The rise in pension spending constitutes also a risk to fiscal sustainability in Italy, already burdened by a very high public debt. Moreover, the high share of pension expenditures in GDP—presently among the highest in the EU—crowds out other fiscal objectives, be it other social spending priorities or growth-fostering tax reductions. Finally, a case for additional reforms can be made on the grounds of strengthening intergenerational equity, as the long phase-in period of the earlier reforms would result in significantly different pension benefits for people with fairly similar pension contributions.

58. Against this background, the chapter analyzes several pension reform scenarios. The results suggest significant savings from increases in the effective retirement age; this is in particular the case if the increases are obtained by introducing disincentives for early retirement in the mixed-system and by increasing the minimum retirement age in the defined contribution system. The government's current reform proposals—which still remain to be finalized—contain important elements of such a strategy and could thus provide a significant step toward containing future pension spending.

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