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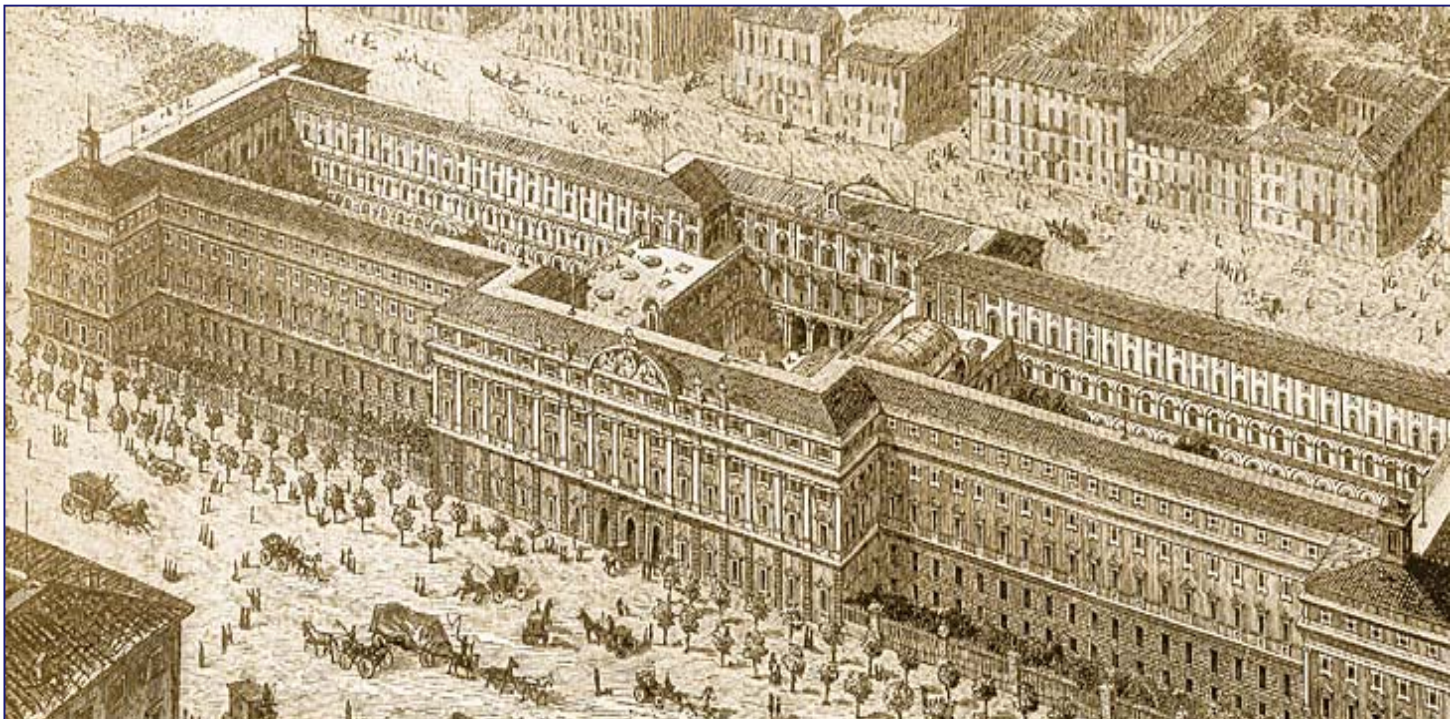
Measuring External Competitiveness: An Overview

Jules Leichter, Cristina Mocci, Stefania Pozzuoli



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Measuring External Competitiveness: An Overview[1]

Jules Leichter (*),Cristina Mocci (**) and Stefania Pozzuoli (***)

Abstract

The analysis of a country's competitiveness is of great interest to policy makers. Measuring the competitiveness of a country generally requires an assessment of the overall dynamism of the economy, including productivity and GDP growth, as well as the performance of exporting firms in the global market place. The focus of this paper is to outline the methodology commonly used to determine the state of a country's external performance, both the level and trend, and the factors which have contributed to recent developments. The literature shows that while macroeconomic indicators are essential to provide a broad picture of trends, they should be supplemented with an analysis using microeconomic data. We report on recent work analyzing Italy's external competitiveness which highlights some negative trends, including a loss of export market share, but also shows that there are some positive developments in terms of quality upgrading and firm restructuring. Finally, some preliminary estimates of the potential impact of the recent crisis on external competitiveness are presented using methods of multivariate analysis.

JEL Classification: F1, F23
Keywords: Competitiveness, Exports, FDI, International Trade.

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[1] We have benefitted from the insightful comments of Cecilia Frale, Flavio Padrini and Cristina Quaglierini.

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1 INTRODUCTION

The issue of competitiveness has always been an important topic in a nation's economic and political discourse and policy makers have attached great value to studying it. Creating an economic environment where firms can more easily face challenges brought on by globalization and increased competition from firms in international markets is an important policy objective.[2] In many countries, where monetary policy is focused on price stability in the context of flexible exchange rates, policy makers have looked to structural reforms for answers.

There is no generally agreed definition of competitiveness. Some institutions have taken a broad view with an emphasis on the overall competitiveness of an economy while others have focused on the competitiveness of the external sector. The European Commission (EC) defines competitiveness as "a sustained rise in the standards of living of a nation or region and as low a level of involuntary unemployment as possible".[3]

Some have questioned the usefulness of the concept of competitiveness. Notably, Krugman (1991) emphasized the importance of distinguishing between the concept of a business being internationally competitive, where its failure to compete in international markets could result in bankruptcy, and the international competitiveness of a country which is not subject to the same risks. In particular, the latter faces equilibrating forces related to comparative advantage which ensure external sustainability and allow for international trade to increase a country's welfare even if its productivity lags behind that of other nations. Nonetheless, Krugman acknowledges that comparative advantage can be "created" by countries through the promotion of "external economies" which benefit the industry. This provides some rational for policy intervention since certain industries may not develop as may have been the case had international markets been allowed to function without intervention.

The concept of competitiveness is usually discussed in the context of the performance of exporting firms; a country being more competitive means higher exports and, therefore, higher GDP growth. However, competitiveness also has implications for the current account balance. The focus of the last few years on global imbalances has made external sustainability a policy priority. In particular, while it may be true, as emphasized by Krugman, that market forces tend to bring external positions back into balance, the type of adjustment (commonly referred to as soft landing versus hard landing) can lead to instability. Many have argued that global imbalances lie at the root of the current crisis, leading international fora such as the G7 and G20 to call for urgent action to address this issue.[4]

[2] A number of countries have set up councils tasked with producing annual reports on competitiveness, sometimes mandated by law, which include extensive policy recommendations to address underlying weaknesses deemed responsible for a country's suboptimal performance. A notable example is Ireland's National Competitiveness Council.
[3] European Commission (2008).
[4] The International Monetary Fund (IMF) has been tasked with developing a framework for evaluating recent international developments and monitoring national policies needed to reduce imbalances. While these

The most common indicator of competitiveness is the trade weighted exchange rate deflated by an aggregate price or cost indicator, such as consumer, producer or export prices, GDP deflator or unit labor costs (ULC). However, the recent literature, both from academia and policy institutions, has highlighted the problems associated with using aggregated data on price/cost indicators, and emphasized the important role of structural factors in determining export performance.[5] Such criticism has become particularly relevant given globalization-driven changes in market structure, factor mobility and the production process. This has resulted in a greater focus on non-price factors, including through studies using firm-level data.

Several institutions monitor country competitiveness using both macro and micro-based competitiveness indicators. The EC publishes annually the *European Competitiveness Report* analyzing recent developments of overall competitiveness performance of the European Union (EU) and the impact of economic reforms on productivity. The Organisation for Economic Cooperation and Development (OECD) also studies the impact of policies on labor productivity and utilisation in member countries in its annual publication entitled *Going for Growth*. The IMF regularly reviews competitiveness developments as part of its Article IV surveillance exercise of member countries, and the World Bank, World Economic Forum (WEF) and the International Management Development (IMD) Business School have developed international rankings of countries using competitiveness indicators which have a microeconomic focus.

The issue of competitiveness has become particularly crucial for Italy. According to some analysis, Italy has been steadily losing external competitiveness, contributing to a loss in export market share and a decline in GDP growth. However, some research has emphasized that this loss of competitiveness has been overstated given improved labor market conditions and restructuring of firms supporting greater product differentiation and quality, and high profit margins.

This paper reviews the literature on evaluating a country's competitiveness and presents some basic data and analysis of recent trends in Italy's external competitiveness. Section 2 analyses the relationship of competitiveness with a country's export performance. Section 3 examines competitiveness indicators and their main determinants, distinguishing between price and non-price competitiveness, highlighting the strategic role of services and structural factors in improving country competitiveness and reviews the performance of Italy's external sector. Section 4 surveys the recent empirical literature on Italian competitiveness which uses firm-level data. Section 5 provides a preliminary estimate of the impact of the 2007-2009 global crisis on the competitiveness of OECD countries using the Principal Components Analysis (PCA) and Cluster Analysis. Section 6 presents brief concluding remarks.

recommendations are not solely focused on competitiveness, international policy coordination, including increasing domestic demand in surplus countries and increased flexibility in exchange rates are intended to boost exports in deficit countries. See reference to the Framework for Strong, Sustainable and Balanced Growth, in the "G20 Leaders Statement: The Pittsburgh Summit", 24-25 September, 2009.

[5] Di Mauro F., Forster K., (2008).

2 MEASURING EXTERNAL SECTOR PERFORMANCE

The performance of the external sector is often measured by trends in (i) export growth and market share and (ii) the current account balance. While these trends can be explained, in large part, by competitiveness factors, they can also be influenced by other factors unrelated to competitiveness, such as global demand patterns.

To analyse the factors driving performance of the external sector, it is critical to look at the composition of exports, both in terms of sectoral specialization and geographical destination. Indeed, if changes in global demand can explain a country's export performance, then it would be difficult to infer that, for example, lower export growth was due to a loss of competitiveness. A Constant Market Share Analysis (CMSA) can be used to decompose a country's export growth into various components (global demand growth, geographical diversification of trade and sectoral specialization), with the residual representing the impact of competitiveness.[6]

Imports trends have important consequences for external performance directly through the current account and indirectly via channels affecting competitiveness. First, trade liberalization induces competition in domestic markets leading to resource reallocation among all the economic activities. There is evidence that import penetration increases productivity growth. Second, outsourcing, intra-sector trade and lower prices of imported inputs can lower the cost of producing exports and increase product variety and quality for consumers.[7] It is worth noting that imports are more affected by final demand than by competitiveness trends, and in cross-country analysis on external performance, imports play a minor role relative to exports.

Developments in the current account balance are also used to evaluate external performance. In the past, price competitiveness has been a major driver of current account trends. However, in the last decade, changes in individual country current account balances within the Euro Area have been closely correlated with growth in domestic demand (40-50 per cent), while differences in export competitiveness, external demand or oil exposure appear of secondary importance.[8] Consequently, "competitiveness and current accounts do not depend solely on the performance of exporting companies, but are also closely connected with the internal allocation of resources and demand across the tradable and non-tradable sectors".[9]

A snapshot of Italy

Globalization and increased integration have created both opportunities and challenges for Italy's economy. The fall in export market share and the shift from a current account surplus to a deficit in recent years has been interpreted by some as evidence of a loss of competitiveness. While Italy is not alone among industrialized countries in losing export market share, Italian exporters have faced particular challenges due to new low cost entrants from emerging and developing countries in sectors where Italy has traditionally specialized. However, Italy remains

[6] CMSA is a useful tool to (i) forecast the impact of trading partners' GDP growth on a country's GDP growth and (ii) evaluate a country's external competitiveness (see IMF (2007), p. 4.; ICE (2009), p.111).
[7] Bennet H., et al (2008).
[8] European Commission (2009a), p.29.
[9] European Commission (2009a), p. 45.

one of the largest exporters in the world and there is evidence that structural changes are taking place to sustain solid export growth.

In the period 1993-2008, Italy's total exports and imports grew steadily with a more marked increase since 2003, reaching, respectively, 28.7 and 29.6 per cent of GDP in 2008 (15.0 and 18.0 percentage points higher compared to 1993, Fig. 1). Italian exports have historically been directed mainly to the EU. However, the share of exports to non-EU countries has increased in the last three years, with the EU share of total exports falling below 60 per cent for the first time in 2008, underlining the growing relevance of emerging markets as an export destination.

In 2008, total exports and imports amounted to 365 and 377 billion, respectively, with growth of 0.3 percent and 1.1 per cent year-on-year, lower than in the previous year due to the 2007-9 global crisis. Trade transactions with non-EU countries increased (6.5 per cent for exports and 9.8 per cent for imports), mainly towards OPEC and Mercosur countries (20.7 per cent and 18.9 per cent respectively) and Russia (9.7 per cent). Trade with EU countries recorded a decline (3.7 per cent and 5.3 per cent for exports and imports, respectively), in particular with Spain (12.7 per cent) and the United Kingdom (9.4 per cent). Notwithstanding the recent decline in export growth, last year Italy reaffirmed its position as the world's seventh largest exporting country, increasing its presence in the Asian market: China became the fourteenth largest market for Italy's exports, rising eight positions with respect to 1999.[10] Sectors experiencing export growth included machinery and equipment (2.6 per cent) and basic metal and metal products (1.0 per cent). In 2008, the trade deficit was €11.4 billion overall, but, net of energy goods (crude oil and natural gas), the trade balance showed a surplus of around €50 billion, with an improvement of €9.7 billion year on year. Trade with EU countries produced a surplus (€9.9 billion), while the deficit with respect to non-EU countries was €21.4 billion.

In the first seven months of 2009, a marked contraction was recorded in cif-fob trade transactions with a higher reduction of imports than of exports (25.3 and 23.6 per cent, respectively) due to the sharp decline in global demand. Italian exports increased only in China (0.8 per cent), while sharp declines were registered with other trade partners.[11] The contraction of exports involved almost all manufacturing sectors. However, the main Made-in-Italy sectors generated noteworthy surpluses that were not much different from those reported for the same period of 2008 (Fig. 2). The trade deficit was €0.1 billion overall. Net of energy goods (crude oil and natural gas), the trade balance was a surplus (€23.6 billion), although lower than the one reported for the same period of the previous year (€31.9 billion). Trade with EU countries produced a surplus (€2.1 billion) and the deficit with respect to non-EU countries was €2.2 billion.

The geographical distribution of Italian exports in 1998 and 2008 are reported in Fig. 3. There were some significant changes during this period in geographical distribution[12] with the

[10] ICE (2009).
[11] The smallest decrease was seen with respect to the OPEC (10.0 per cent). Exports to Russia and Turkey fell significantly by 37.7 per cent and 35.5 per cent, while those to Germany and France were down by around 24.0 and 22.0 per cent.
[12] Lissovolik (2008), p.28. In the period 1992-2007, time series analysis shows global demand elasticity of exports is equal to 0.6, lower than Germany (0.96) and equal to France (0.59) indicating a good geographical diversification.

traditional European partners recording a decrease in their share of total exports (4.1 percentage points for Germany, 2.1 for the United Kingdom and 1.8 percentage points for France) in favor of Poland and Spain (1.0 and 0.6 percentage points respectively). Considering the structure of exports by sector, it is worth noting the stability of the distribution in the same period (Fig. 4). Only two sectors increase their shares of total exports in 2008: basic metal and metal products (3.7 percentage points) and machinery and equipment (1.3 percentage points).

For 1999-2008, Italy's market share of global exports at current prices decreased by 0.8 percentage points (Fig. 5). Other countries in the EU, excluding Germany, reported similar trends, partly due to the emergence of new competitors. Furthermore, Italy's export shares in dynamic emerging economies, such as OPEC countries, Russia and China rose, while they recorded a reduction in the United States, Mercosur and Japan.

Research using CMSA has shown that changes in external competitiveness largely explain the trend in market shares for Italy, France and the United Kingdom, but for different reasons relating to differences in trade specialization and diversification, and competitiveness trends. Developments in competitiveness explain around 50 per cent of the share reduction in Italy (94 per cent in United Kingdom, 71 per cent in France). The specialization in sectors with lower growth in global demand is the other important factor explaining the poor performance of Italy.[13]

As for services, in the period 1998-2007 the share of both exports and imports of the services sector as a percent of GDP was stable at around 6.0 per cent, lower than the average of the EU-15 (9.0 per cent in 2006). Italy's exports and imports recorded positive annual growth since 2002, finally falling for the first time in 2008, with a reduction of 0.4 per cent and 0.1 per cent, respectively. The last time Italy's trade balance was in surplus was 2004, after which imports and exports growth averaged 7.4 per cent and 4.6 per cent, respectively.

The current account balance of Italy has been negative since 1999 reaching a deficit by 53.6 billion in 2008, equal to the 3.4 per cent of GDP.[14] The components of the current account balance in the period 1999-2009 are reported in Fig. 6. For most of the last decade, both the travel (a subset of services) and goods balances were steadily in surplus with the goods balance recording a deficit in 2006 and 2008. Total income and transfers were in deficit for the entire period, while the services balance became negative in 2007-2008. In the first seven months of 2009, the goods balance returned to surplus suggesting a positive trend also in the following months.

In the last decade, FDI inflows and outflows in Italy were markedly lower than other large European countries. They increased in the period 2005-2007 (Fig. 7), but, in 2008, inflows and outflows recorded a contraction of around 60 per cent due to the impact of the global crisis. In 2008, the inward FDI stock was 343 billion dollars while the outward FDI stock was 517 billion dollars, compared to France (respectively 991 billion dollars and 1396 billion dollars) and

[13] ICE (2009).
[14] This trend is mainly due to the energy component, the price increase of raw materials, and a larger deficit of the income component (see ICE (2009), p.106).

Germany (respectively 700 billion dollars and 1450 billion dollars).[15]

3 DETERMINANTS OF EXTERNAL COMPETITIVENESS

The determinants of external competitiveness are usually classified as either price/cost factors or non-price factors. The latter are more structural and thus only partially quantifiable, while price/cost factors are easier to quantify, but require an appropriate level of data disaggregation (country, sector, industry, or firm) to be useful to achieve the objectives of the analysis. Standard methods for evaluating country competitiveness have historically utilised macro-level data covering the whole economy, sectors or a suitable basket of products, although there is a growing literature studying competitiveness using firm-level data. The literature has emphasized that both price and non-price structural factors are critical for determining competitiveness, with their relative importance, in part, determined by the price elasticity of export demand.[16]

Measures of price competitiveness

Price factors are determined mainly by: (i) the efficiency in production, distribution and marketing chains; (ii) the exchange rates between exporters of a good and importers of that good; and (iii) the price strategy applied by each firm in international markets. The first factor is measured by productivity. The first and second factors are combined when calculating an aggregate measure of competitiveness like the real effective exchange rate (REER).[17] The last factor is measured by relative export prices at a proper level of disaggregation. As the true level of productivity and competitiveness are difficult to measure, analysis of price/cost factors is usually based on changes in the REER.

Productivity

Productivity growth can be evaluated at a country, sector or industry level.[18] It is the ratio between the growth of the output and the growth of input factors such as labor and capital.[19] Both partial measures of productivity (measured by the ratio between output and the relevant input factor[20]) and Total Factor Productivity (TFP) are of interest for competitiveness.[21] Labour productivity is measured using alternative output indicators: GDP (Gross Domestic Product),

[15] UNCTAD, World Investment Report 2009, September 2009.
[16] A lower elasticity generally implying a greater role of structural factors in determining the external performance of a country.
[17] Durand et al (1992).
[18] Country productivity can be computed in two ways, either by direct use of macroeconomic aggregated data (e.g. Productivity = Added Value of Output / Total cost of input factors) or by weighted aggregation of sectoral productivities. The first way is easier to compute while the second, potentially more accurate, requires more data which is often unavailable or unreliable.
[19] Evaluations assume production functions of different forms and complexity; in particular different number of input factors (e.g. EU KLEMS uses five factors: Capital-Labour-Energy-Materials-Services) and different substitution elasticities among the factors (e.g. unitary or constant elasticity of substitution).
[20] Labour can be adjusted to take account of different skills and experience; similarly, capital stocks can be adjusted for depreciation.
[21] OECD (2008).

GDI (Gross Domestic Income) or NDP (Net Domestic Product), evaluated per hour worked or per person employed. Per capita GDP growth is equal to Labour Productivity growth (GDP per hour worked) plus Labour Utilization growth (hours worked per capita). ULC depends, among other things, on capital intensity (capital deepening). Growth in capital deepening is given by growth in capital minus growth in aggregate hours worked.

According to the "growth accounting approach" the contribution of each factor to output growth is computed as the growth of the factor multiplied by its share in total cost. TFP represents the part of output growth not explained by the growth of input factors i.e. the part of productivity growth generated by intangible factors such as technological progress and organizational innovation.[22] Homogeneous production processes over time and a limited number of input factors are generally assumed in evaluating productivity. In this respect, measuring productivity may be hindered by the presence of technological improvements, costs other than input factors costs, a shift in production sectors, or structural changes in the labour market. Such drawbacks, combined with other statistical distortions, can make correctly evaluating productivity difficult.

Real Effective Exchange Rate (REER)

While productivity differentials across countries provide useful information about competitiveness, it is essential to account for exchange rates in the analysis, usually measured by the REER. The REER combines goods and services cost/prices deflators in different countries, and movements of nominal exchange rates into a single measure.

To compute the REER for a country we need the following data: (i) set of countries against which to compute the external competitiveness[23]; (ii) cost/price indices in the countries; (iii) nominal exchange rates; and (iv) proper weights at given aggregation levels[24].

There is little consensus about the most appropriate deflator to measure the external cost/price competitiveness of a country. The most commonly used deflators, each with its own pros and cons, are[25]:

- *Unit Labour Costs* (ULC) may refer only to the manufacturing sector, which accounts for about 20 per cent of the total economy in large countries (thus too narrow) or to the total economy that includes non-tradable goods only indirectly affecting the price competitiveness of the export sector. Indicators based on ULC do not capture the full cost of production, ignoring, for example, cost of capital inputs, distribution costs and taxes; moreover, the evolution of these indicators may be affected by factor substitution, which does not necessarily imply more efficient production, and is often subject to significant revisions.

[22] For European countries, data on TFP can be obtained from the EU KLEMS Growth and Productivity Accounts at an aggregated and disaggregated industry level (see European Commission (2007)).
[23] The set of countries against which REER is evaluated depends on the analysis and on the availability of comparable data in the different countries.
[24] The weights reflect the relative importance of competitors in a market or the importance of a sector in exports. They are commonly computed using trade data.
[25] For a comparison of indicators, see Ca' Zorzi, Schnatz B., (2007), p.9.

- *Producer prices index* (PPI) is considered a suitable approximation of traded goods prices, as the underlying basket includes a broad range of industrial products and goods that are subject to international competition. The main drawback of the PPI is that it does not include services prices which have become increasingly important in international trade.
- *Consumer prices index* (CPI) is reasonably homogenous across countries, but is not conceptually a good representation of price competitiveness in the tradable sector. It does not take prices of capital and intermediate goods into account and is subject to distortions owing to taxes and subsidies. CPI-based indicators also include a significant share of non-traded consumption goods and do not capture adjustment in basket weights in response to changes in relative prices of goods in the basket.
- *GDP deflator* includes services prices, but is subject to distortions owing to taxes and subsidies. Moreover, like the PPI-based indicator, it has the drawback that the underlying price measures are not fully comparable across countries.
- *Relative export prices index* (RXP), intuitively the most natural candidate for explaining developments in the external sector of a country, is subject to pricing-to-market behavior and when measured in terms of average values per physical unit, a change in the composition of exports across countries may vary the index without a change in competitiveness conditions. Export price measures among different countries are less comparable and more lagged in their publication than other indicators of cost and price competitiveness.

To identify international competitors and their weights, the standard methods assume that (i) two countries are international competitors if they both sell products in the same country; and (ii) market is defined as a single representative sector (Representative Product Approach – RPA). Other more sophisticated micro-based approaches consider a single sector or a single product when defining markets, thus identifying more precisely the international competitors for each market (in a third country) and their weights (e.g. Heterogeneous Product Approach – HPA)[26]. With HPA, if wages and productivity growth vary across exporting sectors, differentiated cost measures at the sectoral level would yield a more accurate picture and evaluation of competitiveness.[27],[28]

Economic theory proposes a large range of possible drivers of the REER such as the Balassa-Samuelson (BS) effect, convergence in price levels, cross-country differences of ULC due to the business cycle, permanent variations of ULC, and suboptimal allocation of resources

[26] See Bennet H., Zarnic Z. (2008).
[27] In Bennet et al (2008), the sample of countries with differentiated ULC series (28 countries) is more restricted than the sample with aggregated ULC series (38 countries), particularly regarding Asian countries. Also, the available time span is one year shorter than in the aggregate ULC data. Moreover, the ULC series at the industry-level may be more volatile because of its disaggregated nature, which could be magnifying some of the known problems of the ULC indicator as a measure of cost competitiveness. Therefore, the results based on differentiated ULC should be taken with caution, given the data limitations detailed above, and should be read as an exploratory effort to determine the effect of differentiated cost measures on the REER.
[28] The ECB computes the Harmonized Competitiveness Indicators (HCI), where weights incorporate information on both exports and imports. Import weights are the simple shares of each partner country in the total imports. Exports are double-weighted in order to account for "third-market effects", i.e. to capture competition faced in foreign markets from both domestic producers and exporters from third countries. The final overall weights of each partner country are obtained as the weighted average of export and import weights. Weights are updated every five years to account for shifts in international trade flows.

among sectors and production. The EC defines some of these drivers as “benign”, as they correspond to market adaptation responses to demand shocks, others as “harmful”. Considering the BS hypothesis, if wages equalise across sectors, the general level of prices will increase when relative productivity rises in the tradable sector, impacting the REER. However, this link between inflation and the REER can be weak due to limited wage equalization and to different profit margins in the tradable and non-tradable sectors. As for the convergence of prices in the Euro Area, both goods and services relative prices have not changed substantially in the last decade and account for only a couple of percentage points of the total loss in competitiveness; also, the adjustment of the REER due to ULC changes during the business cycle has been very limited and broadly neutral in the same area. On the other hand, a wide range of domestic macroeconomic imbalances, including sluggish productivity performance, accumulation of high private sector debt, shift of productive resources from high-productivity fast growing tradable sectors to the low-productivity housing sector, and rigidity of relative ULC, can be seen as harmful drivers of the REER which potentially require policy intervention.

REER indices as measures of competitiveness over time can suffer the same shortcomings of the CPI index as a measure of the cost of living, since it does not capture adjustment in basket weights in response to changes in relative prices of goods in the basket. In a similar fashion, economy–wide measures of ULC and ULC-based REER can be seriously misleading, because average ULC can increase due to the shift in sectoral composition towards less labor-intensive sectors, even if labor productivity has not changed in any sector. To cope with these kinds of problems, it has been suggested to introduce in the evaluation an underlying model of the economy, take into account consumer behavior, consider import-competing sectors as well the exporting sectors in competitiveness evaluation, or account for other interactions between economic variables, as required by the analysis.[29]

Ultimately, the appropriate choice of deflator, level of data aggregation and weighting methods depend on the objectives of the analysis.[30]

To better understand the role of the REER in contributing to external imbalances, it is useful to measure the degree of exchange rate over or undervaluation using the concept of an equilibrium REER. This is estimated using a wide range of methodologies.[31] The extent of misalignment can then be used to determine the possible need for policy action.[32],[33] Adjustments can involve both export and domestic sectors, as the REER is connected directly to the capacity of exporting companies to compete, but also indirectly to needed changes in the allocation of domestic resources and demand.[34] As to the adjustment dynamics, there is econometric evidence that competitiveness will adjust more quickly towards equilibrium in economies with

[29] Neary P.(2006), p.6-9.
[30] Bennett H., Zarnic Z. (2008), Tab. 1, p.23 provides a survey of some of these choices made in various papers.
[31] The IMF uses the current account norm (CAN) and the net foreign asset stabilization (NFAS) approaches. Using these methods, they conclude that that the countries with the largest observed current account imbalances or unstable trend of foreign assets are the ones that exhibit pronounced REER misalignments.
[32] IMF(2006a).
[33] European Commission (2009a), p. 41.
[34] REER measures based on broad indicators are sometimes decomposed into a tradable and a non-tradable component. The first measures the competitiveness of the tradable sector (external REER), the second captures changes in relative prices in the non-tradable and tradable sectors within a country (internal REER).

more flexible labour markets and lower market regulation.[35]

Italy's price competitiveness in the manufacturing and services sectors

Currently, manufactured goods represent the largest share of external trade. However, in advanced countries services account for about 70 per cent of GDP and represent a potential source of future growth in global trade.

Goods

According to the OECD[36], in the period 2001-2006 Italy's labour productivity showed rather small variations (Fig. 8); average growth of labour productivity (growth in GDP per hour worked) and labour utilization have been around zero, much lower than other OECD countries. This below average performance is confirmed by other labour productivity indices (NDP per hour worked and GDI per hour worked). Almost in the same period, Italy's manufacturing value added per person employed annual average growth was negative at -1.8 per cent (Germany 2.5 per cent, France 2.7 per cent) and -0.8 per cent in services (0.7 per cent in France and Germany, Fig. 9). There is significant heterogeneity in labour productivity growth across different industries and company size; for example, in 2005 labour productivity was equal to 81.6 per cent of the OECD average in companies with 10-19 employees and to 146.2 per cent in companies with over 250 employees.

In 2001-2006 the ULC of the total economy grew 3 per cent per year in Italy (Germany -0.3 per cent, France 1.1 per cent), while labour compensation in industry increased 3 per cent per year (Germany 3.8 per cent, France 3.9 per cent) and 2.9 per cent in services (Germany 1.1 per cent, France 3.3 per cent). The user cost of capital relative to labour decreased so that the amount of labour input per capital input declined, leading to a fall in capital productivity.[37] The amount of labour input per capital input declined during 2001-2006, leading to lower capital productivity growth, equal to -2.0 per cent per year in Italy (Fig. 10), compared to -1.1 per cent in France and -0.3 per cent in Germany.[38] Capital deepening in Italy grew at a rate of 0.5 per cent, similar to France and Germany.

In 2001-2006, TFP growth slowed down significantly in Italy (-0.5 per cent per year) relative to other OECD countries (around 1 per cent both in Germany and France), as shown in Fig. 11. TFP growth in various sectors is reported for France, Germany and Italy for the period 1995-2005 in Fig 12.[39] Italy's TFP growth has been negative in all sectors, with the exception of the financial services sector.

The most cited factors explaining poor labour productivity and TFP performance are insufficient technological innovation, and labour and product market rigidities. However, it is worth noting that, during the period under discussion, globalization caused a significant

[35] European Commission (2009a), p. 45.
[36] OECD (2008).
[37] OECD (2008), p.20.
[38] From 1985 to 2006 capital inputs accounted for around one third of GDP growth.
[39] Di Mauro F., Forster K., (2008), p. 30.

restructuring of economies (e.g. delocalization, outsourcing, and network production). Under these circumstances, it may be difficult to isolate the exact determinants of productivity performance using standard techniques which rely on macroeconomic data (see Section 5). In this regard, the European Central Bank (ECB) also pointed out "the need of further analysis, using more detailed sectoral decompositions or even firm level data", because "developments at the aggregate, but also at the sectoral level, may blur productivity-enhancing effects related to globalization, partly because of statistical problems, but also because they may interfere with other factors weighing down productivity".[40]

Changes in different measures of GDP-based REER for France, Germany and Italy have been computed by the EC for the period 1998-2008[41] (Fig. 13). Italy's cumulative REER appreciation is particularly pronounced when considering exports prices (18.0 per cent Italy, -12.0 per cent Germany and France). The appreciation is lower when considering a broader measure of the REER. The difference is mostly due to pricing strategy adopted by Italian exporters (i.e. tradable prices higher than non-tradable prices). The influence of different deflators can be analysed referring to the ECB's Harmonised Competitiveness Indicators (HCIs) based on CPI, ULC and GDP deflators for the total economy[42] (Fig. 14). In the period 2001-2008, the estimate for Italy's loss of competitiveness is around 16 per cent for the HCI based on CPI, 24 per cent for the ULC deflator and 10 per cent for the GDP deflator.

The loss of competitiveness implied by the standard evaluation methods was revisited following a recent data revision[43] using a more refined method called the Heterogeneous Product Approach (HPA). The HPA applied to Italy shows slightly less of a loss in competitiveness compared to standard measures. Relative to the results obtained under the RPA, allowing for product heterogeneity (HPA) and services exports and still using a single average ULC deflator per country lowers REER appreciation for Italy by around 3 percentage points from 1998 to 2006.[44]

Competitiveness evaluations have been carried out by the IMF, also by applying CMSA to different European countries for the period 2001-2004 (Fig. 15). Italy's cumulative trade growth potentially driven by international demand growth is around 16.0 per cent (second only to Germany) which is almost completely offset by the negative effect due to the competitiveness loss as measured by the REER (around 10.0 per cent for goods and 15.0 per cent for services). However, looking at a more recent period (2005-2007), the IMF finds that the improvement experienced by Italy in export performance during that period can be explained by the

[40] Di Mauro F., Forster K., (2008), p. 32.
[41] European Commission (2009a).
[42] In December 2009, the ECB announced the updating of trade weights used in the calculation of HCIs to reflect recent developments in the pattern of international trade. (http://www.ecb.int/press/pr/date/2009/html/pr091215.en.html)
[43] It is worth noting that in 2008, the National Statistical Office revised the methodology to calculate the average unit value and volumes indices introducing the new ATECO 2007 classification which corresponds to the NACE Rev.2 European classification up to the 4 digit level (the indices base year was changed from 2000 to 2005). Comparing the new and the old indices in the same base (2000=100), the revision has shown a slower dynamic of new average unit value indices. The divergence of indices for goods exports was equal to 1.5 percentage points per year in 2004 and 2005, with the highest difference in 2007 (ISTAT, I nuovi indici del commercio con l'estero (base 2005=100), February 2008. For more details, see also ISTAT, I numeri indici del commercio con l'estero nella nuova classificazione Ateco 2007, May 2009).
[44] Bennett H., Zarnic Z. (2008), p.17.

competitiveness component of growth.[45]

Time series analysis in the period 1992-2007 shows a REER elasticity of exports equal to (-1/0.75=-0.75) for Italy (i.e. 1.25 per cent real appreciation will reduce exports by about 1 per cent), lower than in Germany (-0.5) and higher than in France (-1.29).[46] Such elasticity values suggest that non-price factors are favoring Italy's external performance, consistent with the observed improvement in product quality and strong market power.

As for the equilibrium REER, different estimations obtained by the CAN and NFA approaches reported in Section 3, indicate a slight REER misalignment for Italy in the range of a 5-8 per cent overvaluation as estimated by the IMF[47] or of 0.2-4.4 per cent as estimated by the EC[48]. This suggests that a return to equilibrium would slightly improve Italy's competitiveness.

REER trends presented above mostly reflect the impact of high export prices and an increasing ULC growth rate for Italy. However, one needs to be cautious in interpreting these results. First, the REER as a measure of price/cost competitiveness has many limitations. As noted previously, the macro-level data used makes it impossible to capture a comprehensive measure of input costs for exporting firms in a single variable. Second, some studies indicate that the high export price is strictly connected with quality upgrading and exporter market power, particularly in Italy's traditional exporting sectors. Thirdly, an analysis using the REER can be useful to understand changes in competitiveness but does not provide insights into absolute competitiveness. Finally, Italy's ULC growth has outpaced that of Germany and France, however, the cost of labor in Italy is still estimated to be much lower than in Germany and France.[49],[50] Evaluation based on average cost can be partially misleading as in Italy, marginal costs tend to be lower than average costs, due to the dual labour market generated by regulations covering earnings and employment flexibility.[51] The impact of all these factors together with other important factors such as undeclared employment, impact of migration and a shift in production is not captured in the above mentioned standard REER evaluations.

Services

As already noted, services represent the largest and most dynamic sector in advanced economies. Services (including network industries and non-market services) now account for over 70 per cent of the Euro Area's total value added and employment. Over the period 2000-2008, the annual turnover growth in services varied from 1.7 per cent in 'hotels and restaurants' to 6.7 per cent in 'water transport'. In most services sectors, rising demand has led to employment growth, particularly in ICT and knowledge-intensive sectors such as 'computer and related activities' and 'other business activities'. Since the beginning of the decade, jobs have been created in most of the services sectors with the exception of the 'air transport' and 'post

[45] Allard et al (2005), p.10.
[46] Lissovolik (2008).
[47] IMF (2006a).
[48] European Commission (2009a), p.42.
[49] Lissovolik (2008), p.6.
[50] In the mid-1990s, Germany had a wage austerity period to recover the productivity fall associated with unification and to respond to low wage competition from CEECs and East Asia (Zemanek H. et al (2009)).
[51] Codogno (2009), p. 9.

and telecommunications' sectors. In these two sectors, structural reforms appear to have gone hand in hand with job losses.[52]

In spite of the dominant role of services in advanced economies, they make up only 20 per cent of world trade. In 2007, manufactured goods trade as per cent of GDP was four times higher than services trade intra EU-25 and three times extra EU-25. Services markets in the Euro Area continue to be less integrated and competitive than goods markets. Services generally show a higher inflation rate than goods[53], a relatively lower frequency of price changes, higher downward price rigidities, and higher price dispersion among countries.[54]

Productivity and competitiveness figures for services should be interpreted with caution. In addition to the shortcomings underlined in relation to goods competitiveness evaluation, analysis of the services sector also suffers from: (i) problems in defining and measuring productivity in services because the most distinctive feature of services activity is intangibility and the effectiveness of the service which is difficult to measure; (ii) disaggregation of manufacturing and services ignore the positive impact on productivity that the use of some services used as intermediates have on other sectors; (iii) substantial heterogeneity across services sectors; (iv) significant amount of product differentiation in some services; and (v) significant data limitations, both in terms of availability and quality.[55]

Annual labour productivity growth rates in most services sectors fall below that in the manufacturing sector. There are important differences in labour productivity within the services sector: 'telecommunications' and 'financial intermediation, excluding insurance and pension funds, show positive productivity growth; on the other hand, negative productivity growth figures were recorded in 'insurance and pension funds', 'research and development', 'other business activities', 'hotels and restaurants' and, marginally, 'real estate activities'. Productivity growth in key services sectors, such as ‘transport’, wholesale and retail trade’, ‘tourism’, ‘sale and maintenance of motor vehicles’ and ‘business services’ show lagged growth with respect to other countries. Relative positions of Italy in overall services productivity and in specific sectors (‘wholesale and retail trade’, ‘hotels and restaurant’, ‘transport’, ‘storage communication’, ‘finance and insurance’) are reported in Fig. 16.

Changes in the REER and inflation in services in the period 1999-2008, as well as the current account balance in 2008, are reported in Tab. 1. Italy experienced a cumulative change in the REER of 2.6 per cent and an average inflation in services of 2.3 per cent (Germany -5.9 and 1.4 per cent; France -2.8 and 2 per cent, respectively). The share of value added in services as a percent of total value added and propensity to export services as a share of services export in total services value added for Italy, France and the EU-15 are reported in Fig. 17 and Fig. 18[56]. Both the size of the services sector and the propensity to export services are

[52] In the same period, manufacturing industry production rose at an annual rate of 0.3 per cent with substantial job losses.
[53] Services inflation appears to be less affected by the business cycle than goods inflation.
[54] Price rigidities, inflationary pressures and cross-country differences in services inflation have consequences for the conduct of monetary policy within the Euro Area.
[55] OECD (2008), p.46; Monteagudo J., Dierx A. (2009), p.36.
[56] For more detail on the other Mediterranean countries, see Bennet, H., Zarnic, Z. (2008).

small for Italy compared to other countries. Italy and other countries have significantly moved towards increased specialization in more dynamic sectors (high-increase in the share of services in world export) and in high-productivity services (services with high value added per worker).[57]

Non-Price Competitiveness

Price/cost factors are not the only items which determine the capability of firms and countries to compete successfully in international markets. The so-called Kaldor's paradox (1978) pointed out how industrialized countries (Germany and Japan), gained market shares in the past while simultaneously experiencing a rise in labour costs implying that factors other than prices (such as product differentiation, innovation, capacity to deliver, among other things) must be taken into account. Moreover, the traditional correlation between price competitiveness, usually measured by the REER, and export market share has weakened since the late 1990s, making trade performance increasingly dependent on factors other than price competitiveness.[58]

Indeed there are other factors that stimulate economic activity and external competitiveness and also allow for a quicker response to changes determined by market enlargement and entrance of new competitors. These drivers of competitiveness can be influenced by policymakers and relate to: (i) quality of human capital; (ii) flexibility of labour markets; (iii) tax and regulatory environment; (iv) transport and communication infrastructure; and (v) financial and services support to export (this last factor has become of primary importance in the current financial crisis characterized by the strong linkages among finance, trade and other macroeconomic factors).[59]

Services

From this perspective, developments in services become particularly important for the macroeconomic performance of the entire economy[60], for several reasons: (i) efficiency gains in services may contribute to lower inflation rates; (ii) services are increasingly used as inputs in manufacturing and other non-service sectors and can have a positive impact on the economic performance of other sectors; (iii) most services are relatively labour intensive, implying that a strong growth performance of these sectors will absorb unemployed workers hit by restructuring[61]; (iv) the services sector is a key element in the adjustment mechanism within the Euro Area because price rigidities in services markets may hinder the necessary adjustment essential to facilitate adjustment to shocks.

The lack of competition and market fragmentation that characterizes some segments of the services market can be explained by the specific characteristics of services (non tradable nature

[57] Dynamic sectors include computer services, royalties, insurance and financial services. High productivity sectors include insurance and financial activities, computer and communication services, business services (leasing, legal, technical, advertising) and water and air transport.
[58] Di Mauro F., Forster K., (2008).
[59] Fanelli J.M., Medhora R. (2002).
[60] Monteagudo J., Dierx A. (2009).
[61] Over the past decade rising demand has led to net job creation in most Euro Area services sectors.

of services which require physical interaction between producers and consumers[62], lower scope for standardization, and lower price competitiveness pressure from low-cost countries). Liberalization of trade in services lagged with respect to liberalization of trade in goods, with unnecessary and diverging regulatory national measures still in place. Many regulatory obstacles at the national level act as barriers to entry, limiting competitive pressures and reducing the potential for firms to achieve economies of scale and scope. Entry barriers in services and its dynamics are reported for different countries in Fig. 19[63]. Some of the services sectors most affected by the recent crisis, such as logistics and telecommunications, are particularly important for adjustment in the Euro Area, as they have large interactions with other sectors of the economy. A poor performance of these sectors can therefore create negative spillovers to the Euro Area economy as a whole, with potentially substantial job losses.

To improve the functioning of services markets, the Lisbon Strategy has mapped out an ambitious agenda with a specific focus on the Euro Area for the full transposition of the "Services Directive" by Member States, recommending:

- active pursuit of the "Better Regulation" agenda, notably the reduction of administrative burdens and obstacles to the "ease of doing business";
- removal of entry and other regulatory barriers in sectors characterized by significant inefficiencies such as retail trade and liberal professions;
- investment in ICT public infrastructure, such as broadband and other high speed internet connections, could help the diffusion of ICT and facilitate innovation in the services sector;
- discouragement of protectionist measures and entry barriers, and avoid direct support to enterprises in sectors characterized by permanent significant overcapacity.[64]

Indices used for global rankings

Several institutions evaluate country competitiveness using a comprehensive approach which emphasizes non-price factors. Periodically they provide country ranking in various sectors, combining statistical data and survey results. The following is a list of the main indicators:

- *Global Competitiveness Index* (GCI) – published annually by the WEF[65]. It captures the microeconomic and macroeconomic foundations of national competitiveness, including structural factors. The GCI considers 12 main determinants of competitiveness called "pillars": institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market sophistication, technological readiness, market size, business sophistication, and innovation.

[62] The tradability of services has increased significantly with ICT being increasingly used in services.
[63] Wölfl et al (2009).
[64] Overshooting sectors are sectors which experience a fall in production significantly above the average. The identification of 'overshooting' sectors is done by comparing the difference between sectoral turnover growth of a sector and overall services growth during the crisis period to the same difference over the last two decades.
[65] World Economic Forum (2009).

- *The World Competitiveness Index* (WCI) – published by the IMD[66], uses 329 criteria for evaluating enhancing factors for doing business and social welfare. It elaborates a country profile measuring macroeconomic performance, governmental and private sector efficiency and infrastructure levels for 57 countries.
- *The Doing Business Index* – published annually by the World Bank[67], investigates the business environment in countries, considering regulations that enhance business activity and those that constrain it. In its last report, the World Bank covered 183 economies analyzing 10 indicators: starting a business, dealing with construction permits, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, and closing a business.
- *The Competitive Industrial Performance Index* (CIP) – developed by the United Nations Industrial Development Organization (UNIDO)[68], measures the ability of countries to produce and export manufactured goods competitively. It is constructed from four indices: industrial capacity (manufacturing value added per capita), manufactured export capacity, industrialization intensity (share of manufacturing on GDP and share of medium and high-technology products in manufacturing), and export quality (share of manufacturing in export and share of medium and high-technology products in manufactured exports). The first two indicators provide information about industrial capacity, while the other two reflect technological complexity and industrial upgrading of a country. The key structural variables consider the following drivers: skills, technological effort, royalty and technical payment abroad, and modern infrastructure.
- *Trade Performance Index* (TPI) – published every two years by the International Trade Center (ITC) in collaboration with UNCTAD[69], considers competitiveness level and export diversification for 184 countries in 14 macrosectors (fresh food and raw agro-based products, processed food and agro-based products, wood, wood products and paper, textiles, chemicals, leather and leather products, metal and other basic manufacturing, non-electric machinery, computers and telecommunications, electronic components, transport equipment, clothing, miscellaneous manufacturing, minerals). For each country and sector, the TPI evaluates the current country position, the general country profile and the decomposition of market share changes using 22 indicators.
- *The Logistic Performance Index* (LPI) – published by the World Bank[70], measures the performance of 155 countries in the logistics environment. It is a simple average of the country scores in six key dimensions: the efficiency of the customs clearance process, the quality of trade and transport-related infrastructure, ease of arranging competitively priced shipments, competence and quality of logistics services, ability to track and trace consignments, and timeliness of shipments in reaching destination.

Each of these methodologies provides valuable information but results should be interpreted with caution. Commentators have pointed out some weaknesses with the ranking computed by WEF (e.g. the link of competitive advantage at the firm level to the national level is

[66] IMD, World Competitiveness Yearbook 2009.
[67] World Bank, Doing Business 2010. Overview, September 2009.
[68] UNIDO, Industrial Development Report 2009, 23 February 2009.
[69] International Trade Center - UNCTAD/WTO, The Trade Performance Index. Technical Notes, 2007.
[70] World Bank, Connecting to Compete. Trade Logistics in the Global Economy, 2010.

weak, theoretical justifications of causal relations of variables to competitiveness indicators subject to debate, and the weights applied to construct the indices, and data obtained through questionnaires tenuously related to the notion of competitiveness)[71]. For the UNIDO index, there is concern about the approach used to aggregate partial indices into an overall CPI by means of a simple average. Similar remarks can be made to a different extent for almost all of the indices described above.

Each of the rankings discussed above include Italy. A summary of Italy's position in each ranking is provided in Tab. 2.

- The GCI ranks Italy 48th out of 133 countries in 2009. Italy's scores in the different areas included in the evaluation are reported in Fig. 19. Compared to other "innovation driven-economies", Italy under performs in all the areas except (i) market size, (ii) health and primary education and (iii) business sophistication.
- The IMD ranks Italy 50th overall in 2009. In individual categories, Italy is ranked 47th in economic performance, 54th in government efficiency, 48th in business efficiency, and 34th in infrastructure.
- The Doing Business 2010 ranks Italy 78th out of 183 countries in 2009 falling four places compared to the previous report.
- The CIP ranked Italy 21st out of 122 countries in 2005, with Italy's ranking remaining stable in all six underlying indicators since 2000.
- In 2006, the TPI shows a strong competitiveness capacity in the traditional Made in Italy sectors: Italy is ranked 1st in clothing, textiles, and leather products, and 2nd in electrical machinery and electrical products, basic manufacturing, miscellaneous manufacturing and non electrical machinery, immediately after Germany.
- The LPI ranks Italy 22nd out of 155 in 2010. Italy is ranked 23rd in customs, 20th in infrastructure, 37th in international shipments, 18th in logistics quality and competence 21st in tracking and tracing, and 24th in timeliness improving its position in five dimensions out of six compared to the 2007 report.

While these indices note some positive elements related to Italy's competitiveness, Italy's overall ranking in most indices suggests that there is room for improvement through structural reforms to increase efficiency and reduce structural rigidities.

[71] Past WEF methodology had been criticized for the choice of weights in combining observable variables to estimate a latent measure of competitiveness. Squalli, Wilson and Hugo (2006) showed that choosing weights using structural equation models significantly altered the WEF country rankings. Fagerberg, Srholec and Knell (2007) used factor analysis for estimating latent competitiveness indicators. The New Global Competitiveness Indicator used in the 2008-2009 WEF report now uses Principal Component Analysis (PCA) to aggregate individual indicators. See Chapter 5 of this paper for a general discussion of PCA.

4 EMPIRICAL ANALYSIS ON ITALIAN COMPETITIVENESS AT THE FIRM LEVEL

Several studies on the Italian economy have taken a disaggregated, microeconomic perspective in order to supplement standard macro-based measures utilised for competitiveness evaluations. This literature has highlighted [72] the tendency of standard evaluation methods to emphasize the poor external performance of Italy relative to other competitor countries, without properly considering the significant adjustments made by Italy's production system in the last twenty years. The restructuring process in Italy has been many-fold: growth of immaterial investments, fragmentation and externalization of the productive process, delocalization abroad of lower value added production, greater integration of the production system and services sector, and increased labor flexibility.[73]

In relation to globalization, it has also been noted that "unlike in a relatively stable environment, where changes in competitiveness can be explained mostly by changes in exchange rates, or more generally in relative prices, the ability of countries and firms to successfully adjust to this changing environment will be determined by their capacity to change and adapt to new market conditions, by reviewing their production and exports portfolios in view of comparative advantage and by other means of enhancing productivity".[74] Pursuing this line of reasoning, additional insights on firm competitiveness performance can be achieved analyzing how firms have reacted to increased international competition, such as change in size and product mix, access to exporting channels, and adaptive export price strategies, as well as other factors.

Since 2000, micro data collected through periodic surveys reporting firm characteristics, employment structure, made and planned investments, turnover amount, capacity utilization and indebtedness on manufacturing enterprises, suggest the existence of a "creative destruction process" resulting from resource reallocation by less competitive firms to more productive enterprises.[75] This restructuring process of Italian firms has implied deep inter and intra-firm adjustments [76] with positive repercussion on export performance. The former adjustment shows: (i) a positive causal effect of productivity on decisions related to exports in the period 2000-2005; and (ii) a significant effect of firm size on exporting, suggesting that larger firms were better able to increase the export share in their total sales. The latter adjustment indicates that in the two-year period 2004-2005: (i) the largest gains in productivity growth were achieved by the exporting firms that re-shuffled their product mix and added new products (23 per cent of the total sample); and (ii) product pruning and product substitution favored the productivity and output of exporting firms relative to the firms that did not adopt these strategies. A negative correlation between the amplitude of product scope (number of product produced) and share of exports in total sales has also been found. The Italian exporters are more

[72] Calabrese G., Vitali G. (2007).
[73] Different performances in competitiveness could be also affected by regional divergences and may influence the measurement of competitiveness at country, regional or sectoral level.
[74] Di Mauro F., Forster K., (2008), p. 18.
[75] Bank of Italy (2009a).
[76] The inter-firm adjustment consist in self-selection of the more productive Italian firms in exporting activity. The intra-firm adjustment refers to the within-firm selection of "best" goods that affected company-level productivity.

productive than non-exporters and the main ability to export comes from previously realised productivity advantages; the active product-switching behavior of exporting firms is positively correlated to firm-level productivity growth.[77]

Some studies have analysed the relation between productivity, category and size of firms and their internationalization strategies.[78] Distinguishing three firm categories (domestic, exporting and multinational) micro data show that 25 per cent of the firms sampled operate only in the domestic market; about 70 per cent are simple exporters and 5 per cent of firms are exporters which actively promote FDI.[79] Multinationals perform better in terms of equipment and R&D investments, and product and process innovation, realizing a higher share of workers in R&D sectors (4 per cent). Benfratello and Razzolini (2007) conclude that TFP is the key factor determining how "internationalized" a firm will be[80]. The less productive firms, characterized by small size and low investments rates in R&D and ICT, tend to concentrate their activities in the domestic market, while firms with at least an intermediate productivity level are exporters. High levels of productivity result in more firms engaging in FDI. A relatively new finding is that R&D plays a more important role for export than for export and FDI, probably due to cost reductions and spillover effects of FDI.

There is no consensus in the literature on the issue of quality upgrading.[81] Current methods applied for product differentiation and quality evaluation mostly use prices, R&D expenses, or intra-sector trade, as proxies of quality upgrading. Such purely quantitative approaches to quality and, more generally, to market power, are restrictive since quality does not involve only physical properties of goods and technologies, but also includes intangible factors which influence customer decisions. Strength and weaknesses of an economy can be revealed analyzing concentration of trade in high quality layers of each sector as the quality component of intra-sectoral specialization can provide additional insights relative to a standard analysis[82]. The relation between quality and specialization also has been evaluated using trade data by the PRODY and Balassa RCA (Revealed Comparative Advantage) indices.[83],[84] Computations made with COMTRADE database confirms the historical persistence of Italy in low-medium technology sectors and its moving towards more sophisticated products within the sectors. Analysis of Italy's export prices[85] reveals a composition effect in response to globalization, which pushes lower quality products out of the market, thus increasing the average price level and

[77] De Nardis S., Pappalardo C. (2009).
[78] Castellani D., Giovannetti G. (2008).
[79] Benfratello L., Razzolini T. (2007), p. 19.
[80] TFP is estimated via a two factor Cobb-Douglas production function, together with other several factors (i.e. size, R&D propensity, a dummy for ICT adoption, and age and group membership). It is worth noting that the assumptions in a Cobb-Douglas production function could influences the TFP estimations. See Bhanumurthy (2002) for a list of standard criticisms of using the Cobb-Douglas function for analyzing production processes.
[81] Some have argued that, starting in the 1990's, Italian firms adopted a price strategy consisting of higher product prices in the external market relative to those in the national market as a response to international competitive pressures and changes to export destination. (see Basile R., De Nardis S., Girardi A., Pappalardo C., (a cura di Lanza A. Quintieri B.), Le politiche di prezzo degli esportatori italiani: Un'analisi su dati d'impresa, Eppur si muove. Come cambia l'export italiano, 2007, pp.161-188.
[82] Borin A., Lamieri M., (2007).
[83] Di Maio M., Tamagni F., (2006).
[84] PRODY index relates productive sophistication to the level of income in a trade destination country, while the Balassa index is given by the ratio of share in a sector and the relative share at the global level (values greater than 1 indicate specialization).
[85] Bugamelli (2006).

profits while lowering the quantity exported and market shares. It is also found that external prices are increased more than in the domestic market for similar goods. However, "export quality upgrading, product diversification and a sustained ability to enhance market power emerge from a disaggregated investigation of export data pointing out positive relative export unit value growth for Italy, whereas it is negative for other European countries (Germany, Spain and France)".[86]

Additional insights can also be derived using firm balance sheet indicators[87], which are largely uniform in European regulations, including turnover, value added growth deflated by production prices, Return of Investment (ROI), and ROT (turnover/invested capital). In a sample of 18,000 European firms classified by dimension and sectors in the period 2001-2006, Italy's high-tech sector accounted for only 9.4 per cent of overall turnover, compared to an average of 17.2 per cent in the entire sample. Average turnover in high-tech firms was €170 million, twice the average turnover in low-tech sectors, with -2.8 per cent growth in the period (compared to approximately no growth in Germany and France). The analysis highlighted that smaller firms have grown more than larger ones, the ROI is uniform in high- and low-tech firms, and the margins of Italian firms are greater than the average in 15 out of 20 manufacturing sectors. The analysis of ROT concludes that Italian firms have lower speed capital rotation, i.e. they need more assets and operational capital per unitary sale.

Other studies analyse the relation between the adoption of the euro and changes in Member States' productive structures of manufacturing measured in terms of productivity growth, R&D, ICT and skill intensity.[88] Bugamelli et al (2009) found that the creation of the euro did not significantly modify the productive pattern of countries which were more dependent on devaluation. On the other hand, these countries experienced a positive effect on productivity growth. The reallocation process of the workforce induced a reduction of the share of blue collar workers, but without negative effects on employment growth. As for the Italian case, the micro data[89] indicate that product differentiation and investment in activities not directly involved in production[90] were essential to compete in the global market, mainly in the low-tech sectors (such as clothing or leather) rather than in high-tech firms.[91] The authors note that the restructuring process is considered ongoing.

The research described above confirms the view that the Italian economy has experienced: (i) reorganization of production and sales networks; (ii) innovation of product mix; and (iii) increases of exporter market power. The emerging lights and shadows picture can be summarized in the following points:

- Italy's manufacturing specialization in traditional products continues to be pronounced

[86] Lissovolik B., Trends in Italy's Nonprice Competitiveness, op. cit, p.29.
[87] Calabrese G., Vitali G. (2007).
[88] Skill intensity is defined as the ratio of hours worked by high-skilled persons on total hours.
[89] In 2007 Bank of Italy's interviewed 40 entrepreneurs of manufacturing.
[90] These activities are classified as: (i) upstream including R&D, design and brand establishment (advertising, marketing); (ii) auxiliary referring to a large use of ICT in production organization (through outsourcing and offshoring); (iii) downstream involving sales network and post-sales assistance.
[91] High-tech firms did not consider the euro or globalization as new elements in the competitive landscape because innovation and R&D are the key factors determining competitiveness in their sectors.

and exposed to competition from China relative to other European countries. Also Italy's share of world exports has declined, particularly in some of its largest manufacturing export sectors that had robust global growth.

- "The evidence of improvements in the technological composition of exports is scant. Italy's combined share of high-tech and medium-tech exports is about 12 per cent lower than the EU average and increased by only 1 per cent (4 per cent for EU-15); though this result is partly driven by its sectoral specialization".[92]
- Italy's export reorientation has been comparatively more pronounced in its "geographical" than in the "sectoral" aspect.
- Disaggregated analysis of export data showed an improvement of Italian exporting firms' market power through the quality upgrading and product-switching processes.
- While Italy benefited only moderately from international outsourcing and increased efficiency in imports, these factors are beginning to have a greater positive impact.
- Indicators which suggest areas where Italy could strengthen competitiveness include low inward FDI, low levels of R&D investment (Fig. 21) and number of patents[93] (Fig. 22), and an underperforming services sector.

5 CRISIS AND COMPETITIVENESS: A COMPARATIVE ANALYSIS AMONG OECD COUNTRIES

The impact of the economic and financial crisis on country competitiveness is likely to vary across countries. Two important determinants of these potential changes in country competitiveness are the flexibility of factor markets and the type of anti-crisis measures adopted. While it is still too early to analyse these changes given that the post-crisis data is not yet available, we present some preliminary results using 2008 data.

Snapshot of economic and financial crisis

The economic and financial crisis, which began in 2007 in the United States with the sub-prime mortgage bubble, has led to a series of ripple effects which resulted in a strong credit contraction and a sharp fall in global demand. The high level of integration of the global economy fostered the diffusion of the economic and financial crisis to every corner of the world. Financial markets experienced considerable tension, even though policy makers acted promptly to bring the system back into balance. In the first quarter of 2009, world trade recorded the strongest contraction since World War II, although more recent data indicate that the worst may be over.

[92] Lissovolik (2008), p.20.

[93] Italy's R&D expenditure, in the period 1998-2006 was slightly over 1.0 per cent of GDP compared to higher values of other European countries (Finland is the only Member State where R&D intensity exceeded the 3.0 per cent goal set by the Lisbon Strategy). In 2005, the number of patents registered by Italy has increased very little since 2000, remaining notably lower than in the other European countries; the number of high technology patents fell substantially (31.2 per cent) similarly to other countries (see Eurostat yearbook, Science, technology, innovation and entrepreneurship: 2009, the year of creativity and innovation, September 2009; News release 127/2009, September 2009).

Extraordinary measures were adopted to provide liquidity and support the most affected economic sectors and households.[94] These measures led to a recovery in the second half of 2009, with Asia's emerging economies experiencing an earlier recovery than other areas thanks to strong economic policy interventions.[95]

International institutions are now forecasting a recovery in global growth.[96] However, uncertainty on the robustness of economic recovery remains given risks associated with exit strategies and continued labor market weakness.

The Italian economy has faced both a cyclical downturn and structural problems during the crisis. Although not affected by the sub-prime mortgage bubble directly, in 2008, Italy's GDP contracted due to the drop in world demand. Industrial production decreased significantly, especially in sectors specialized in capital goods production and related to the early stages of production. In 2008, the crisis significantly affected private consumption (in particular durable goods), although, since the second quarter of 2009, it has been recovering. Since October 2007, the banking sector recorded a deceleration of bank credit to enterprises and households, with the latter beginning to pick up in March 2009.

In 2010, Italy's economy is expected to recover, thanks to the forecasted rebound of the global economy and international trade.[97] During the crisis the government adopted targeted policies[98] to ensure the stability of public finances, to re-launch the economy, ensuring social cohesion.[99]

In this context, evaluating the impact of the current economic and financial crisis on competitiveness is important for informing economic policy. However, productivity growth during a crisis and in the early stages of recovery should be interpreted with caution given that data

[94] In February 2009, in addition to the bail out of major credit and insurance institutions, the US Administration approved the American Recovery and Reinvestment Act of 2009 amounting to 787 billion dollars, with an impact on the federal deficit of 2.0 percent of GDP in 2009, 2.3 percent in 2010 and 0.7 percent in 2011. The Federal Reserve reduced its policy rates until setting the reference interval in a range between 0 and 0.25 percent in December 2008. In Europe, the European Economic Recovery Plan was approved in December 2008, giving Member States more leeway for fiscal policy to contrast the crisis, while ensuring compliance with the Stability and Growth Pact. The Japanese government adopted four fiscal stimulus packages for the period 2008-2009 (4.2 percent of GDP), increasing public spending by around 10.0 percent in 2009.

[95] In 2009 Korea adopted a large fiscal stimulus package (6.0 percent of GDP) to support domestic demand, while the recovery in exports was helped by the depreciation of its currency. In 2008, China launched a public plan for infrastructure, along with a reduction of taxation and a changes to its health and pension systems equivalent to around 3.0 percent of GDP. In India, in the first half of 2009, the recovery was weaker than other Asian countries, despite the strongly expansionary monetary and fiscal policies.

[96] For more details: European Commission (2009b); IMF (2009); OECD (2009a).

[97] Ministry of Economy and Finance (2010).

[98] Decree Law n. 112/2008 converted in Law n. 133/2008; Decree Law n. 158/2008 converted in Law. n. 199/2008; Decree Law n. 162/2008 converted in Law. n. 201/2008. Decree Law n. 78/2009, Law n. 15/2009.

[99] From an economic and competitiveness point of view, the Public Administration Reform Plan plays an important role: it aims at improving the efficiency and the quality of public services which will reduce the costs of services provided to households and firms, and at implementing innovation policies to increase business competitiveness. These goals are being pursued through the implementation of "i2012" Plan – Strategies for Innovation 2012". It is a far-reaching technological innovation action plan, envisaging a set of innovation projects to modernise public administration and improve the competitiveness of Italy's economy (i.e. broadband infrastructure, related services and employment opportunities). In this regard, the role played by the Innovation Technology Agency will be enhanced by ensuring scientific and technical support for the analysis and assessment of industrial innovation projects (such as Industria 2015) and the promotion of new initiatives to favour technology transfer. A reorganization process started for the policies in R&D, aimed at supporting the restructuring of the competitive system in production and services.

may only reflect temporary factors related to employment dynamics rather than more fundamental changes to the production process or technology.[100]

Factors which could adversely affect productivity are the labor market structure and firm strategies on its labor force and investment. The former could be limited by rigidities in the labor market, while the latter concerns the postponement of investment due to a higher uncertainty in business dynamics, and to labor hoarding strategies to preserve human capital which could be costly to rebuild. Policy intervention to support employment could also affect productivity in the short run, as the fall in output is not matched by a corresponding fall in hours worked.

However, a recession could also provide an occasion to promote productive changes and structural reforms both at firms and at a country level through larger investment in R&D and human capital, in energy efficiency technologies and infrastructure. The closure of less productive firms could also facilitate an efficient reallocation of capital towards more productive activity. These factors could represent the key strategies to better cope with the downturn[101], to strengthen economic systems and to boost competitiveness and productivity in the future.[102]

Competitiveness analysis in OECD countries

As a very preliminary snapshot of the crisis effect on competitiveness, we compare the competitive position among the major OECD countries in 2006 (pre-crisis) and 2008 (most recent data available) through a Principal Components Analysis (PCA), a methodology to synthesize much of the information contained in a number of observed variables in terms of a smaller number of unobserved variables.

PCA models the variance structure of a set of observed variables using linear combinations of the variables. These combinations, or components, form the basis for the analysis, and the combination coefficients, or loading, are used to interpret the components. This analysis is able to explain the observed correlations between variables in terms of a reduced number of factors which are not directly observable and to transform the set of observations so that they can be analysed in the simple but informative structure described above.

After a preliminary step, to evaluate the correlation degree of variables[103], we identified the variables to be analysed.[104] In particular, we found two factors[105] composed of the most

[100] In general, employment reacts with a lag to recession and GDP per capita needs from two or four years to return to pre-crisis levels.
[101] The Innobarometer survey (2009) indicates a strong correlation between innovation and cost-saving strategies which determine a firm's success during the crisis.
[102] European Commission (2009c).
[103] The set of variables includes Gross domestic product (volume, base 2000); Private consumption (volume, base 2000); Government consumption (volume, base 2000); Gross fixed capital formation (volume, base 2000); Exports of goods and services (volume, base 2000); Imports of goods and services (volume, base 2000); Industrial production (Index base 2005); Consumer prices (based index 2005); Unit labor costs - industry (percentage change over previous year); Unit labor costs – market services (percentage change over previous year); Employment (based index 2005); Harmonised unemployment rate (percentage of active population); Long-term interest rates (annual percentage); Real effective exchange rates (based on relative consumer prices indices, 2005=100); Real effective exchange rate (based on relative unit labor cost in manufacturing, 2005=100); Imports (cif) (billions U.S. dollars; monthly averages, sa); Exports (fob) (billions U.S. dollars: monthly averages, sa); Population; Total domestic demand (volume, base 2000).

significant variables[106] (Tab. 3). We obtained the characterization of each component in terms of original variables through the matrix of factor loadings (Tab. 4). In particular, for both 2006 and 2008 the first factor is characterized by elements related to the changes in what we refer to as "economic robustness" [107] and the second factor is an indicator related to changes in competitiveness[108], characterized largely by the variation of the real effective exchange rate (based on ULC) and by the ULC in industry. The vertical axis (the y-axis) identifies two opposing economic areas: the first and second quadrants identify countries characterized by a high variation in economic robustness, whereas countries in the third and fourth quadrants have a low variation. The horizontal axis (the x-axis) identifies change in variables related to competitiveness: improvement on the left (in the second and third quadrant) and deterioration on the right (in the first and fourth quadrant) (Fig. 23).

The PCA shows that from 2006 to 2008 the crisis has had a greater impact on the competitiveness component than the economic robustness component. Most Anglo-Saxon countries (i.e. US, UK, Ireland, New Zealand and Australia), considered to have more flexible labor and product markets, experienced a shift to the left, indicating an improvement in competitiveness variation (Fig.24). For most Southern European countries (i.e. Spain, Greece and Portugal) which were hit particularly hard by the crisis and had large job losses saw their competitiveness variation also improve, while most other European countries experienced either some deterioration in their position or remained relatively unaffected. Of particular note is a strong deterioration in Germany, possibly explained by labor market policies intended to cushion the impact of the crisis on employment, and almost no change in France and Italy. The impact on Asian countries varied, with Korea experiencing a large boost to competitiveness variation, China a much more mild positive impact, and Japan a slight deterioration.

A Cluster Analysis is used to identify homogenous groups of countries (Fig. 24). This methodology generally allows for the grouping of items into homogeneous classes or variables

[104] The variables are indentified through the Kaiser-Meyer-Olkin test (known as Kaiser's measure of sampling adequacy) and the analysis of communality. The measure of KMO is an index that compares the magnitudes of the correlation coefficients observed to magnitudes of partial correlation coefficients and it can be calculated both for each variable and for the overall variables. High index values indicate an appropriate analysis. Therefore, the matrix of data (selected variables to be considered) measures the adequacy of the matrix, which is acceptable for values above 0.6 (good for values that exceed 0.8. Values below 0.5 require corrective action or possible elimination of variables with low index values, or inclusion of other variables related to those being discarded). For the analysis of communality (informative contribution of the variables) is adopted as the discrimination threshold value 0.5 (we discard the variables with value lower than the threshold). In particular, the characterization of the main components in terms of original variables is via the observation of the matrix of factor loadings, which provides guidance on the significance of factors. This matrix expresses the line, the correlation of a variable with each of the original CP and helps determine which of the CP that variable is correlated, identifying the component to determine which variable contributed most. The sum of the squared factor loadings for line represents the communality, namely the total variance explained by the variable's original main factors (CP) considered.

[105] To select the components, we utilized the Mineigen criterion, the analysis of Scree plot and the percentage of explained variance. These factors together explain 69 percent of the total variability, with a KMO equal to 80 percent.

[106] The most significant variables are GDP, exports (fob), government consumption, gross fixed capital formation, employment, imports, consumer prices, real effective exchange rate (based on unit labor cost, and unit labor cost in industry).

[107] That is, the change of GDP, exports (enters with a negative sign), public and private consumption, gross fixed investment, employment, imports, and consumer prices. Negative (positive) values of economic robustness indicate bad (good) performance.

[108] Negative (positive) values of change in competitiveness indicate good (bad) performance (low values of the real effective exchange rate and unit labor costs represent a good competitive position).

belonging to a larger set.[109] The cluster analysis reveals new clusters in 2008, relative to 2006, due to a decrease in competitiveness variation for some countries while economic robustness remained relatively unchanged. In particular, the countries which recorded a high variation in economic robustness in 2006, showed a reduction in competitiveness variation in 2008, such as in Germany.

In both 2006 and 2008, Italy is characterized by a low variation in competitiveness and economic robustness. In 2008, Italy is in the same cluster with Austria, Belgium, Denmark, France, Sweden and the Netherlands. This lack of significant change over the period studied is consistent with the view that Italy was less exposed to the current crisis and may have benefitted from an effective firm restructuring process. However, a further analysis using 2009 data will be needed to provide a better estimate of the impact of the crisis on country competitiveness.

The IMD conducted an analysis for 2009 through a "Stress Test"[110] to evaluate which countries are better equipped to face the crisis and improve their competitiveness in the near future. Although the economic forecasts are still weak for the current year, smaller countries (less than 30 million inhabitants) from Northern Europe and Southeast Asia fare well.[111] On the other hand, the United States finishes 28th (they are first in the overall World Competitiveness Yearbook rankings), underlining the significant impact of the crisis and the difficult economic challenges which lie ahead. The larger European countries (i.e. France, UK, Germany and Spain) [112] generally experience a deterioration in competitiveness, while Italy gains three positions compared to WCI 2009 (from 50th to 47th).

The ultimate impact of the crisis on competitiveness is likely to differ across countries and over time (short run versus the long run). Countries such as the US which are characterized by a higher degree of flexibility and mobility of labor force may experience an increase in productivity and lower ULC in the short run. Countries such as Germany, which have chosen to limit the negative effects on households and on strategic economic sectors are likely to experience a fall in productivity growth and higher ULC in the short run, but may benefit over the longer run as human capital may be better placed to contribute to output growth as global demand recovers.[113]

[109] In particular, we use the Ward's clustering method or minimum variance which is based on the ascending hierarchical classification of groups.
[110] The Stress Test uses a selection of 20 criteria, and is future-oriented. It focuses on exposure, readiness and resilience during a global recession (http://www.imd.ch/news/IMD-WCY-2009.cfm) .
[111] The Asian nations already underwent severe financial and real estate crises in the nineties, so that they may have been more cautious in their policies.
[112] In this Stress test, France records the higher loss compared to the WCI 2009 (44th from 28th) followed by Germany (24th from 13th), UK (34th from 21th), and Spain (50th from 39th).
[113] Some European countries such as Germany and Italy so far have experienced a lower impact on the labor market due to the continuation of short-time working programmes (Kurzarbeit or wage supplementation schemes such as the so-called Cassa integrazione guadagni, CIG).

6 CONCLUSIONS

Increased economic and financial integration at the global and regional level combined with the large and rising presence of firms from dynamic emerging and developing countries has augmented pressure on market participants to strengthen competitiveness in both domestic and export markets. For countries with a monetary policy focused on price stability, competitive devaluations are no longer possible. To increase a country's competitiveness, policy makers must pursue structural reforms which boost productivity, increase flexibility in product and labor markets and facilitate adjustment by firms to the new global environment.

There is a vast literature on the determinants of a country's competitiveness which study both price/cost and non-price factors. Price/cost factors can be quantified using various measures of the REER, but usually suffer from some drawbacks, including issues related to data aggregation, measuring costs of production, and calculating appropriate index weights. While the movements in the REER can account for part of the change in a country's external performance, the empirical literature suggests that there are other factors at play. Recent studies have increasingly emphasized the importance of non-price factors in understanding competitiveness developments. Non-price factors usually relate to structural issues and are more difficult to measure. A promising strand of the literature uses firm-level data to better understand how exporting companies have adapted to a rapidly changing marketplace.

An extended period of poor productivity performance combined with falling export market shares suggests that Italy has lost competitiveness over the last 15-20 years. This is also reflected in comprehensive competitiveness indices developed by the WEF and other institutions which rank Italy below many of its developed country peers. This apparent decline has been, in part, explained by Italy's specialization in low technology manufacturing where competition from lower cost producers, including China, has been particularly intense. However, research has shown that an analysis based on macroeconomic aggregates can overstate the apparent loss of competitiveness.

Studies based on firm-level data present evidence that Italian exporting firms have made efforts to adapt to increased international competition by reorganizing production and marketing (e.g. network production, delocalization, and outsourcing), enlarging market geographical distribution and modifying the product mix by improving the quality and variety of products. While this response has helped to counter, in part, adverse trends in price competitiveness, it is unlikely to be sustainable over the longer term. In particular, Italy will continue to face challenges due to the difficulty small-medium firms face in operating internationally and the need to modify traditional manufacturing specialization.

The services sector represents a potentially important source for growth in trade, not just for Italy, but globally. Services account for a significant part of global GDP and only a small part of global trade. Moreover, they represent an important input into both the production of goods and the production of services, and are therefore important for improving competitiveness in a wide range of sectors. Italy's service sector has not performed well internationally and will require increased investment and structural reform to become competitive. Implementation of the EU

"Services Directive" will further increase competition in this sector creating additional challenges.

Country competitiveness could be strongly affected by the significant adverse, and potentially persistent, impact of the recent economic and financial crisis. This effect will vary across countries and is likely to depend on the flexibility of factor markets and anti-crisis policy interventions. Preliminary results for OECD countries comparing data from the pre-crisis period (2006) and during the crisis (2008) suggest that countries, such as Anglo-Saxon countries, with relatively flexible labor markets which experienced large falls in employment received a boost to competitiveness variation, while countries, such as Germany, which adopted measures to cushion the impact of the crisis on the labor market, experienced a deterioration of competitiveness in the short run. Competitiveness variation in Italy was left relatively unchanged by the crisis. However, these results should be considered very preliminary; a further analysis using 2009 data could provide a better estimate of the impact of the crisis on country competitiveness.

Policy makers have an important role in facilitating adjustment to increased international competition in both goods and services. There is a general consensus that Italy will need to: (i) implement macroeconomic reforms, including increasing the flexibility of labor and product markets, to improve the business environment and promote competition domestically; (ii) reduce bureaucracy and encourage sharing of ideas and best practice; (iii) encourage R&D spending and investment in human capital; and (iv) improve transport and ICT infrastructure. Implementation of the Lisbon Agenda will be essential to boost productivity and facilitate the efficient reallocation of resources to increase Italy's external competitiveness.

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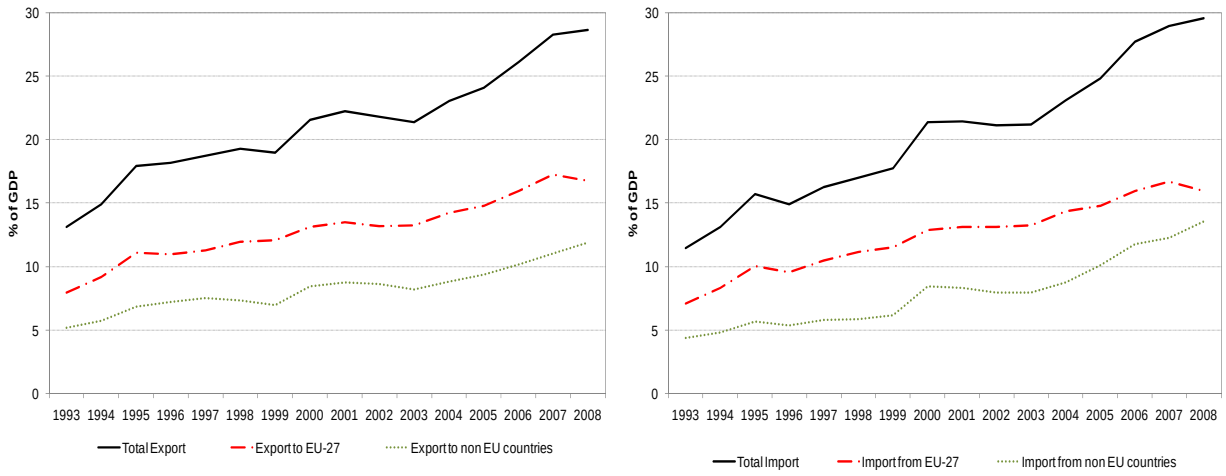
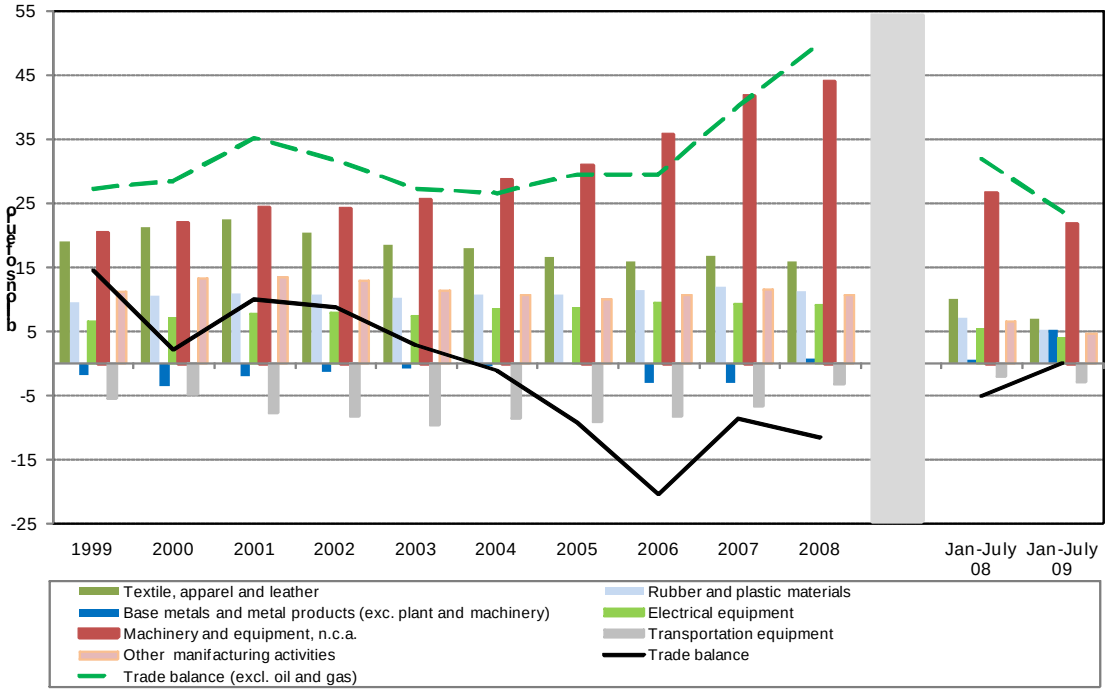
ANNEX

Fig. 1. Italy - Exports and imports of goods (cif-fob data, as percentage of GDP)



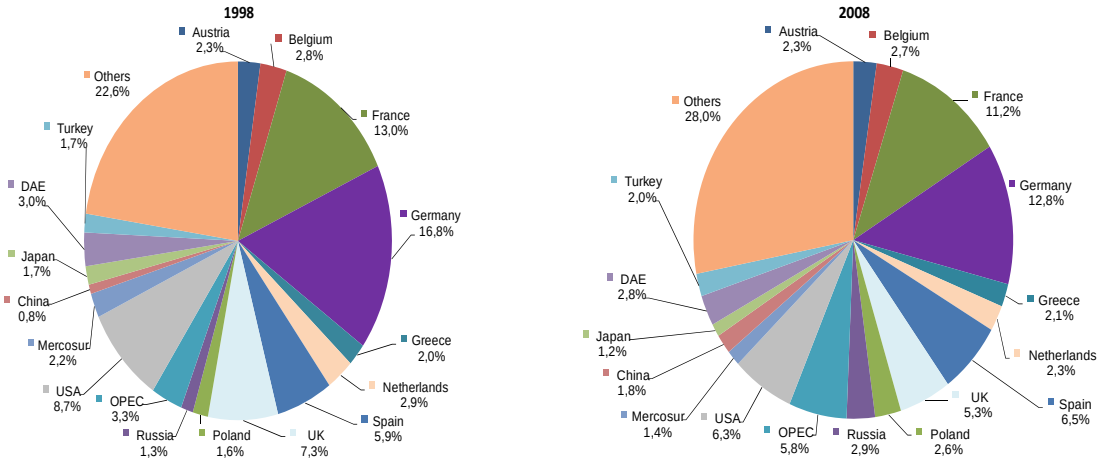
Source: ISTAT.

Fig. 2. Italy - Trade balance by sector (billions of euro)



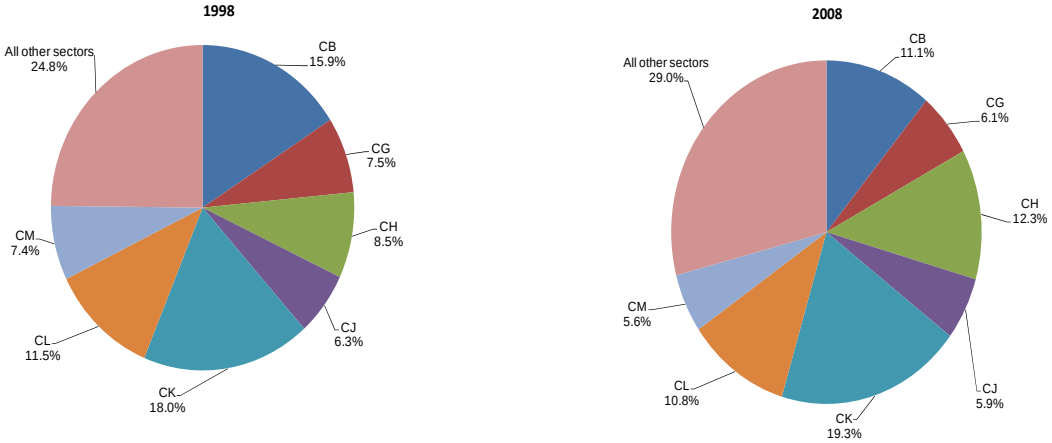
Source: ISTAT.

Fig. 3. Geographical destination of Italian exports (share of total export by country)



Source: Calculation on ISTAT data

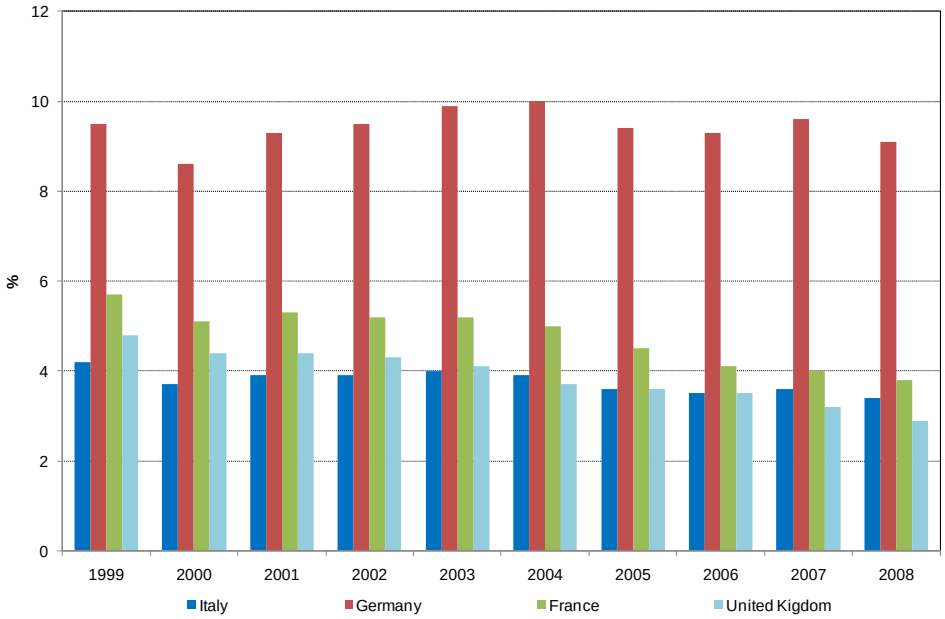
Fig. 4. Structure of Italian exports by manufacturing sector (share of total exports)



CB: Textiles, clothing, leather and apparel; CG: Rubber, plastic and other non metal mineral products; CH: Basic metal and metal products (excl. Machinery and equipment); CJ: Electrical equipment; CK: Machinery and equipment n.e.c.; CL: Transport equipments; CM: Other manufacturing.

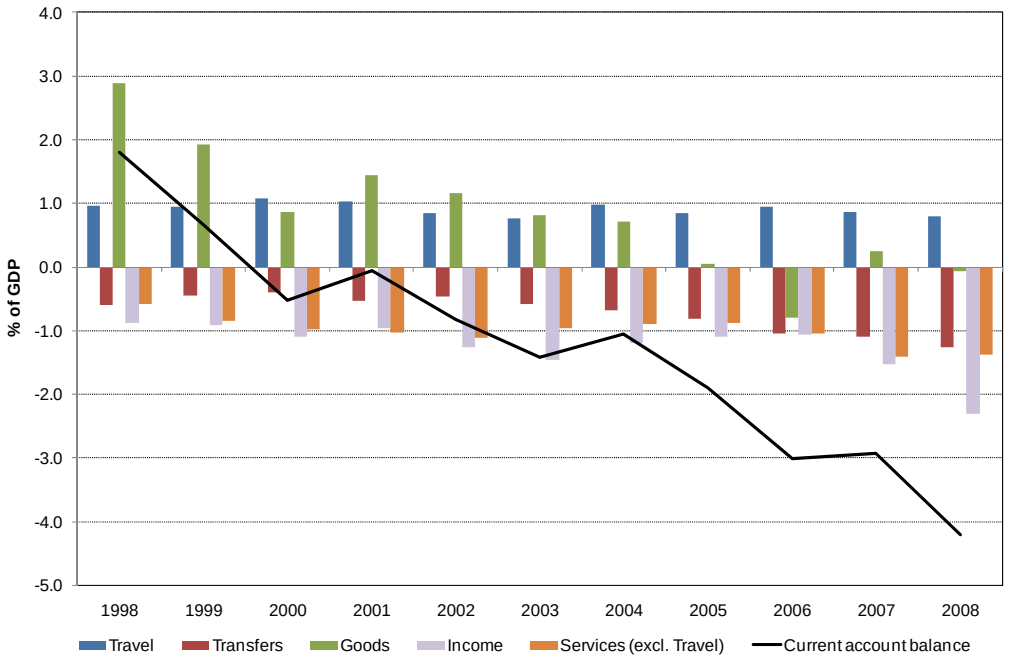
Source: Calculation on ISTAT data.

Fig. 5. Market share of larger European countries (calculated at current prices and on world exports)



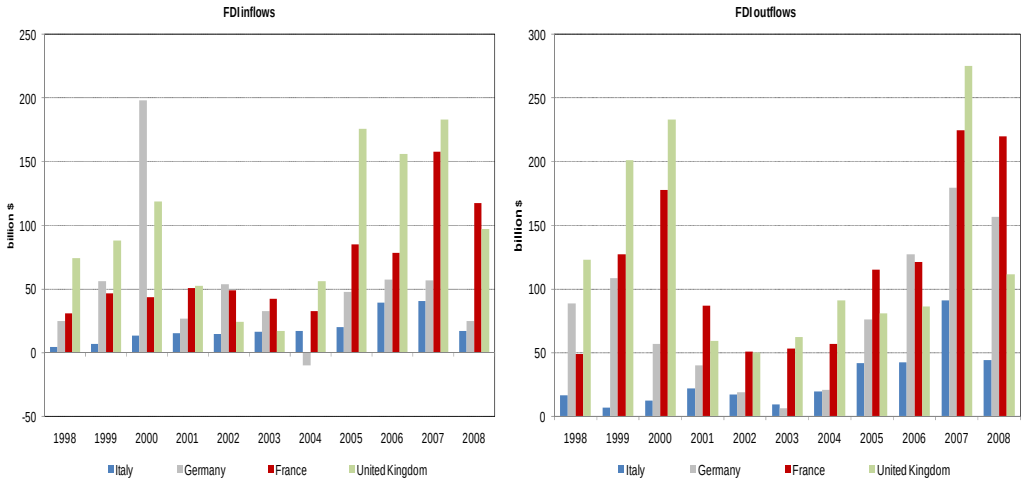
Source: ICE.

Fig. 6. Italy - Current account balance by components (as percentage of GDP)



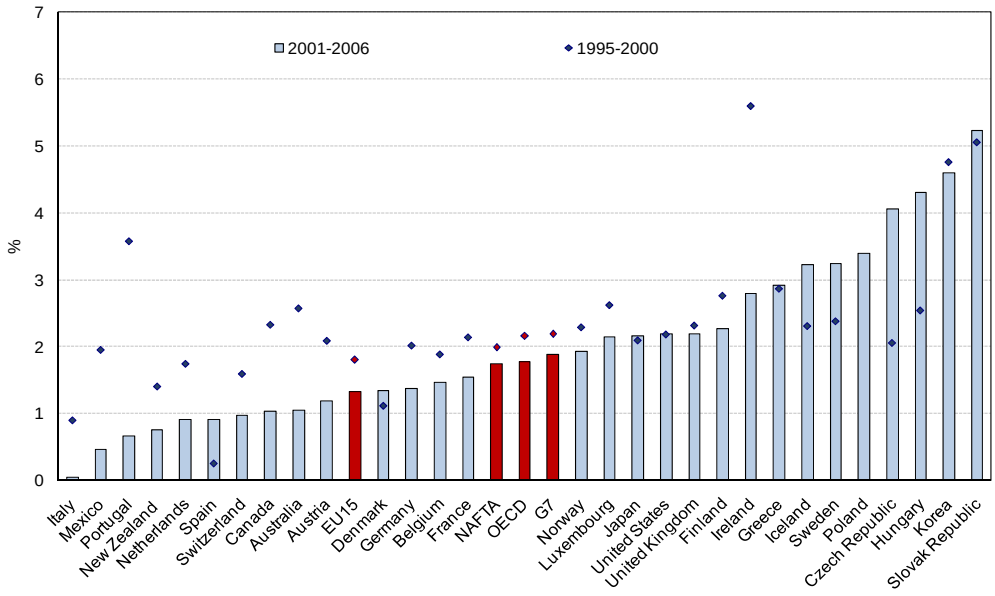
Source: Bank of Italy.

Fig. 7. FDI inflows and outflows in large European countries (billions of dollar)



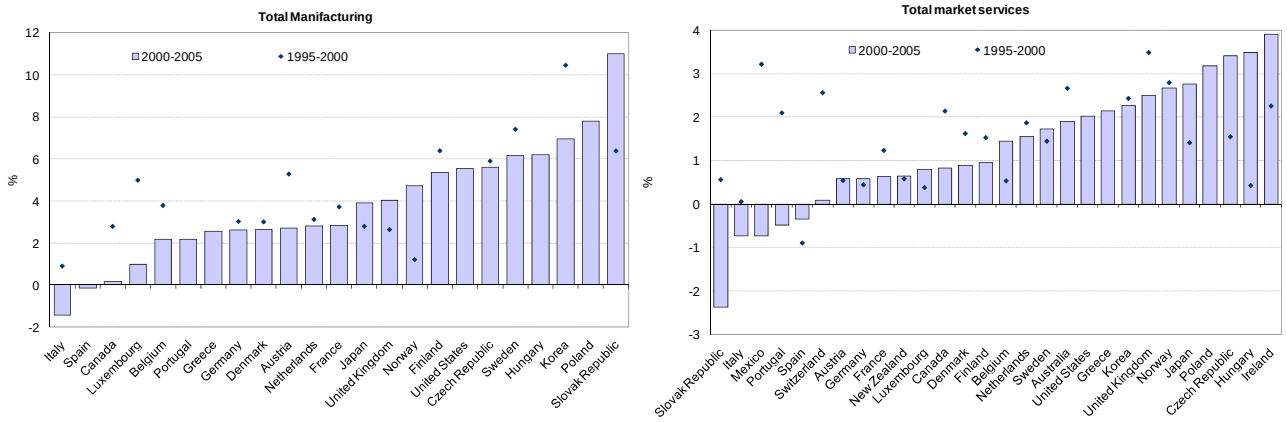
Source: UNCTAD, WIR 2009.

Fig. 8. Growth in GDP per hour worked (average annual growth in percent)



Source: OECD, Compendium of Productivity Indicators, 2008.

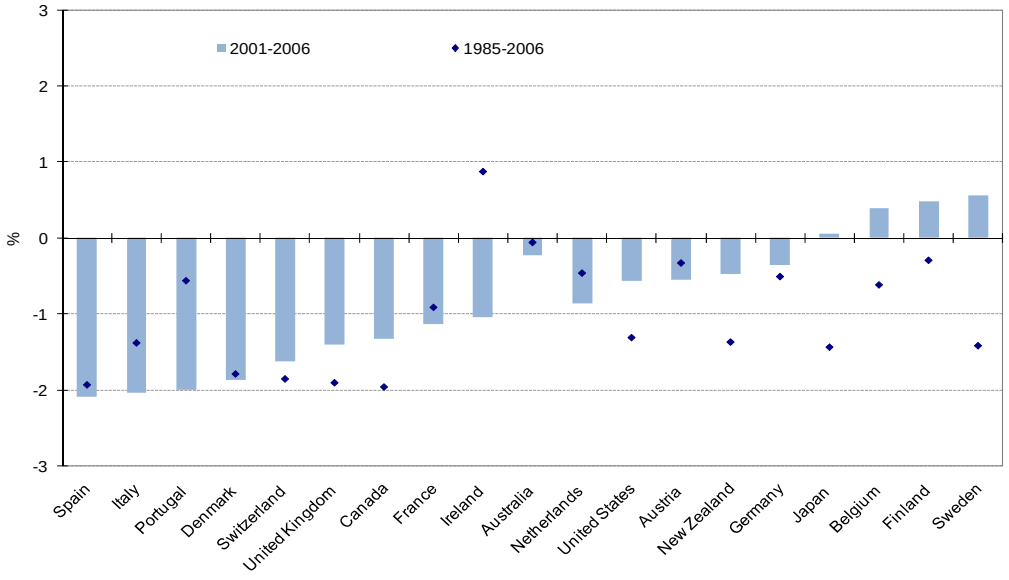
Fig. 9. Value added per person employed in manufacturing and services (percentage change at annual rate)



Source: OECD, Compendium of Productivity Indicators, 2008.

Note: In both figures, 1996-2000 for Japan;2000-2004 for Canada, Portugal and Sweden; 2001-2005 for Poland. For Japan, total market services does not include hotels and restaurants (ISIC 55).

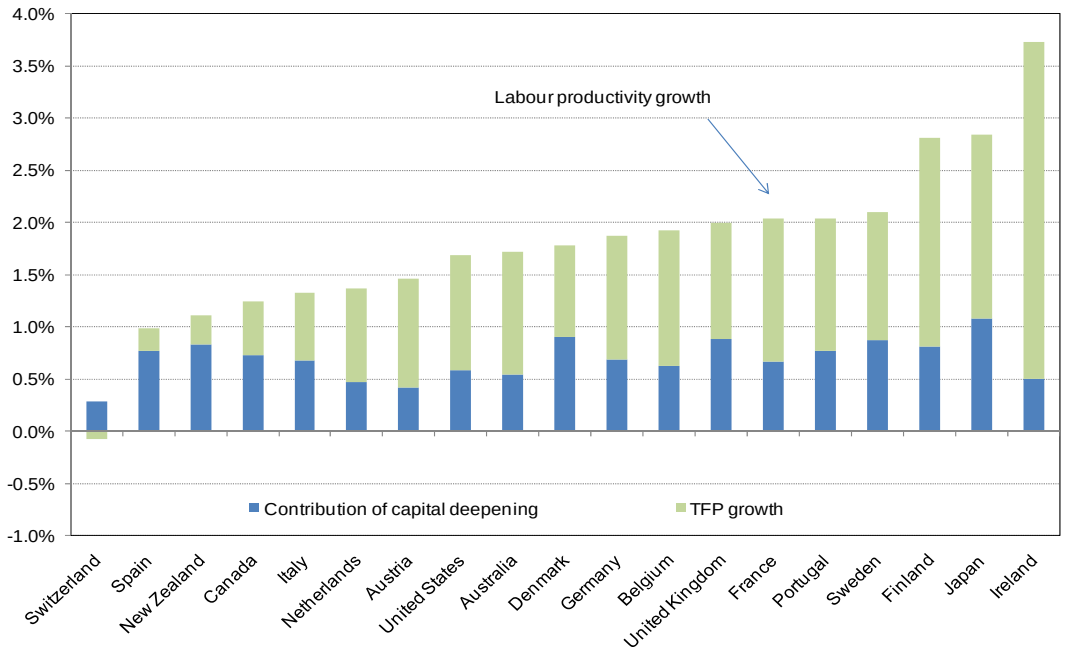
Fig. 10. Growth in capital productivity (total economy, percentage change, annual rate)



Source: OECD, Compendium of Productivity Indicators, 2008.

Note: 2001-2004 for Australia, Belgium, Japan and Switzerland, 2001-2005 for Austria, Denmark, Finland, the Netherlands, Portugal and the United Kingdom.

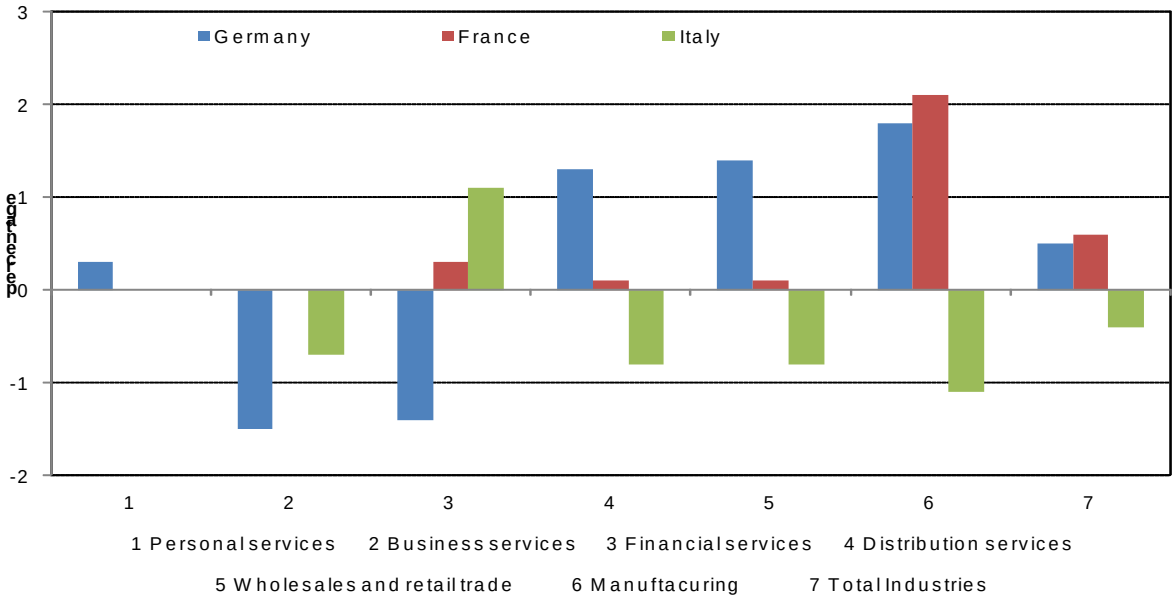
Fig. 11. Decomposition of labour productivity growth into TFP and capital deepening (2001-2006; average annual growth rates)



Source: OECD, Compendium of Productivity Indicators, 2008.

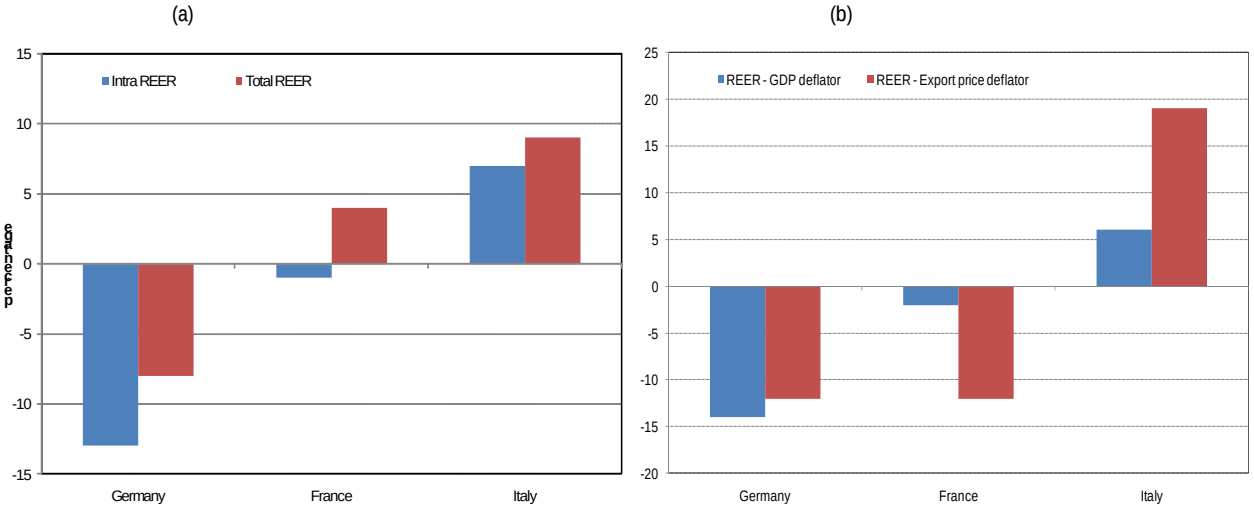
Note: 2001-2004 for Australia, Austria, Belgium, Japan, Portugal and Switzerland; 2001-2005 for Denmark, Finland, the Netherlands and the United Kingdom.

Fig. 12. TFP growth of major Euro Area countries by sector (1995-2005; annual averages)



Source: Di Mauro F., Forster K.(2008).

Fig. 13. Change in REER, (a) intra and total; (b) broad and narrow measures (in percent, 1998-2008)



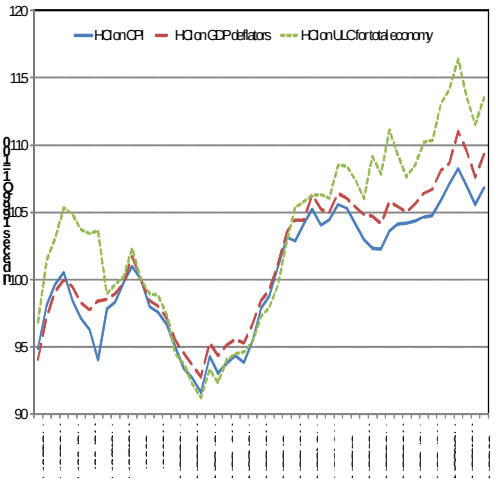
Source: European Commission (2009a).

Note: (a) Intra REER (GDP deflator) against other Euro Area countries (EA-16); Total REER (GDP deflator) against other industrialized countries (35). (b) REER against other Euro Area countries (EA-16).

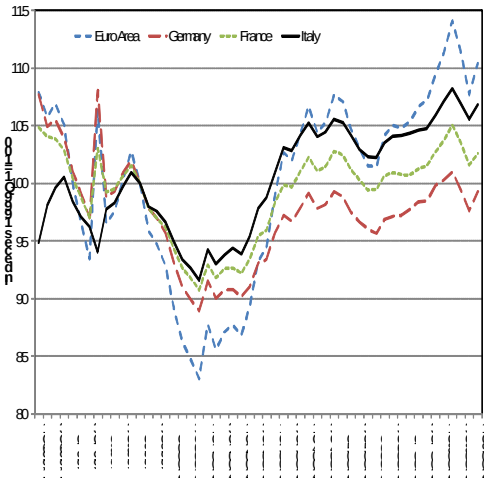
An increase of the indicator means a loss in competitiveness.

Fig. 14. Harmonised Competitiveness Indicators of large European countries (1996Q1-2009Q1, Indices 1999 Q1=100)

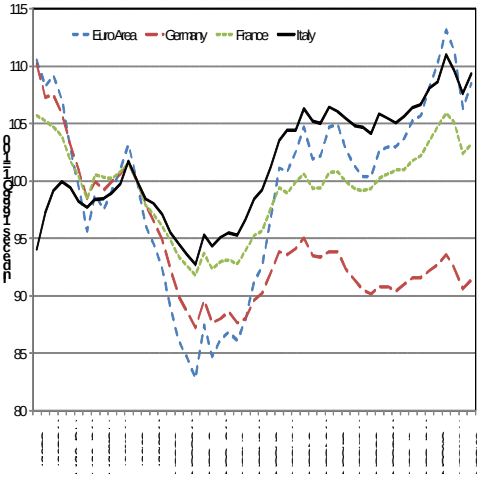
Italy



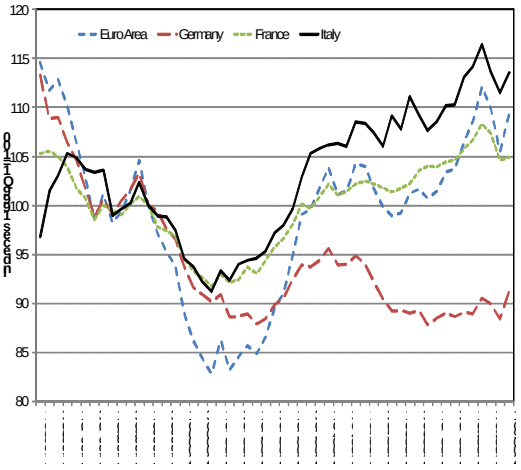
HCI based on Consumer price indices



HCI based on GDP deflators



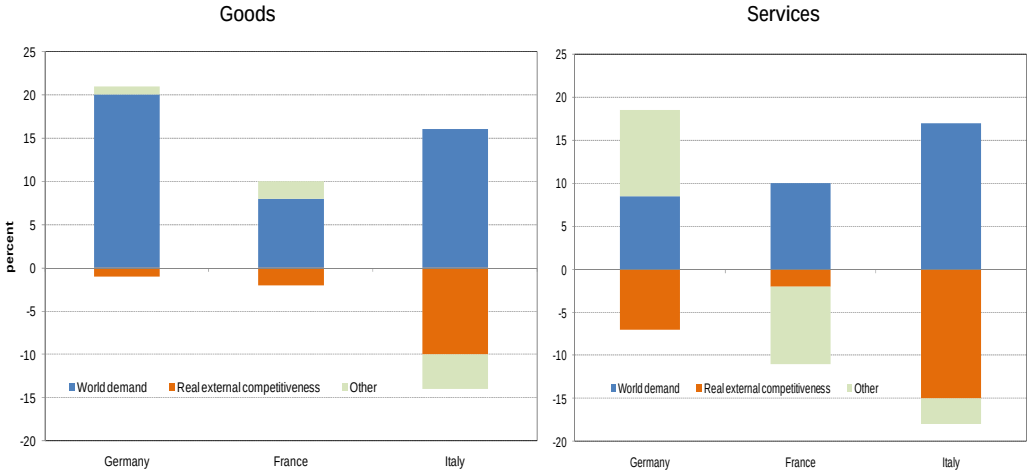
HCI based on ULC for the total economy



Source: European Central Bank.

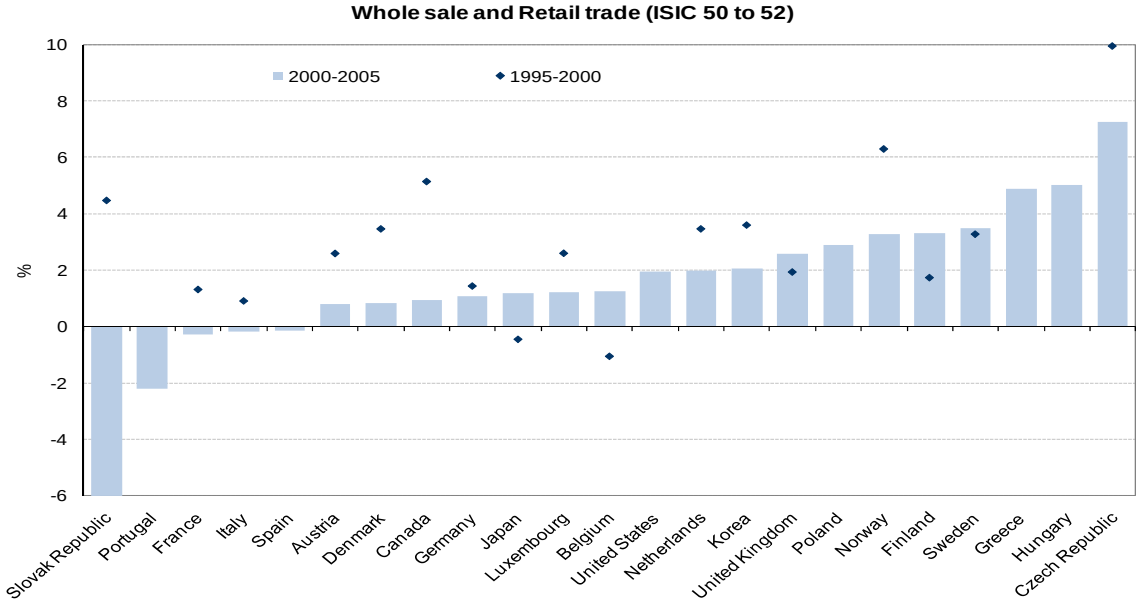
Note: An increase of the indicator means a loss in competitiveness.

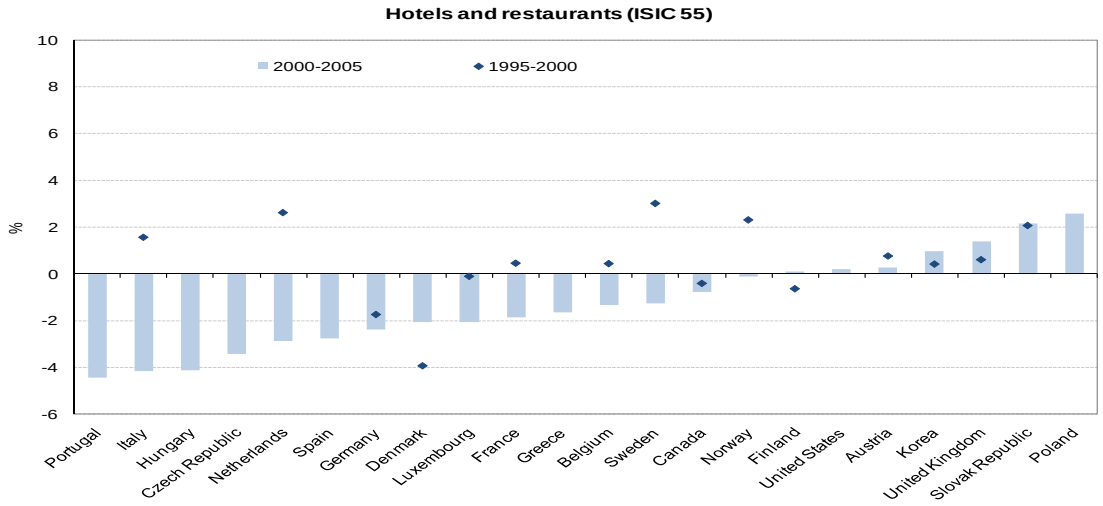
Fig. 15. Contribution to export growth in goods and services (in percent, cumulated growth rate, 2001-2004)

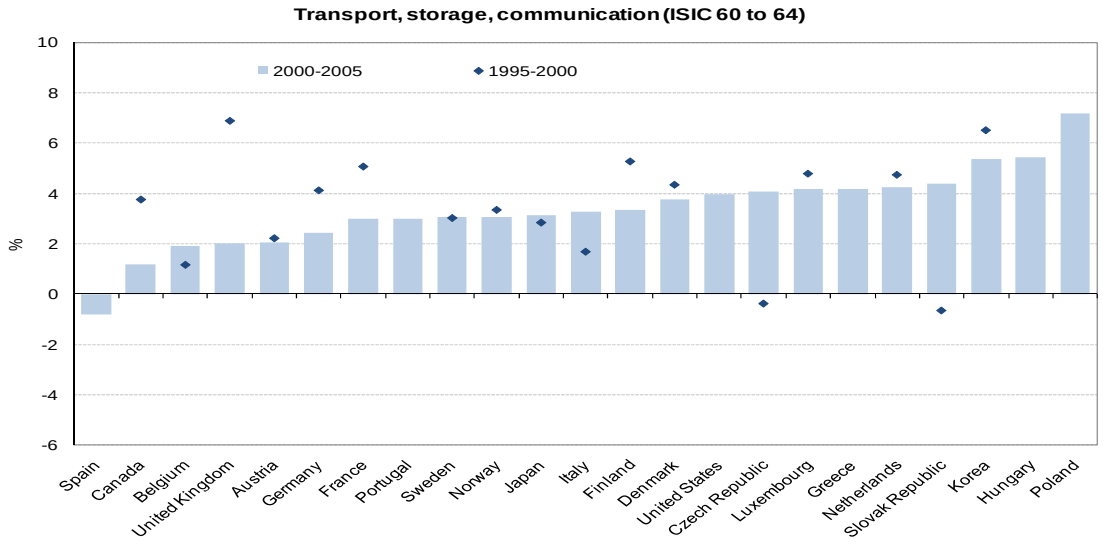


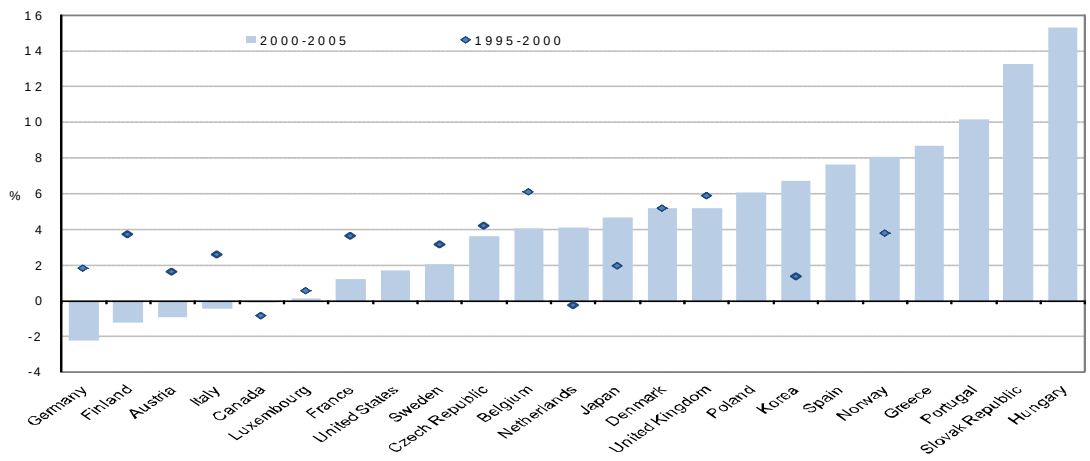
Source: IMF, Country Report No. 05/401, November 2005.

Fig. 16. Value added per person employed in services sectors (percent change at annual rate)





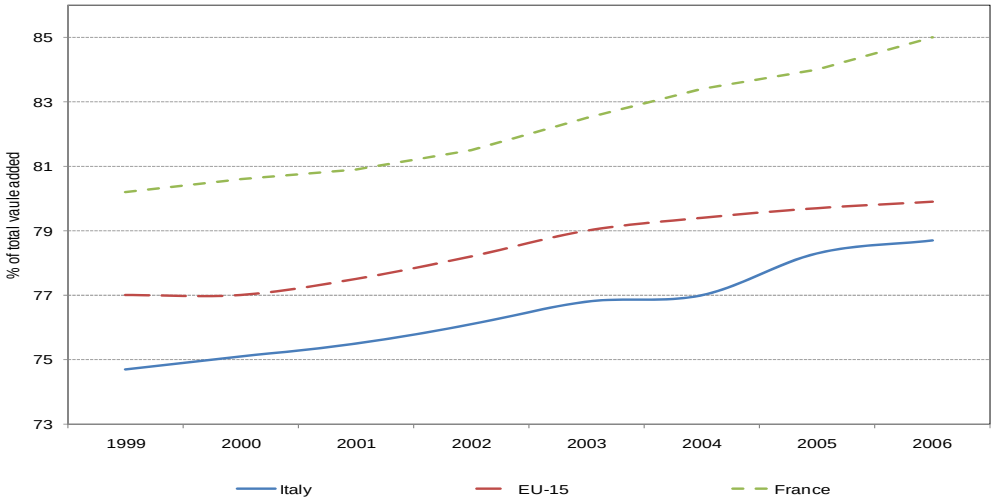




Source: OECD, Compendium of Productivity Indicators, 2008.

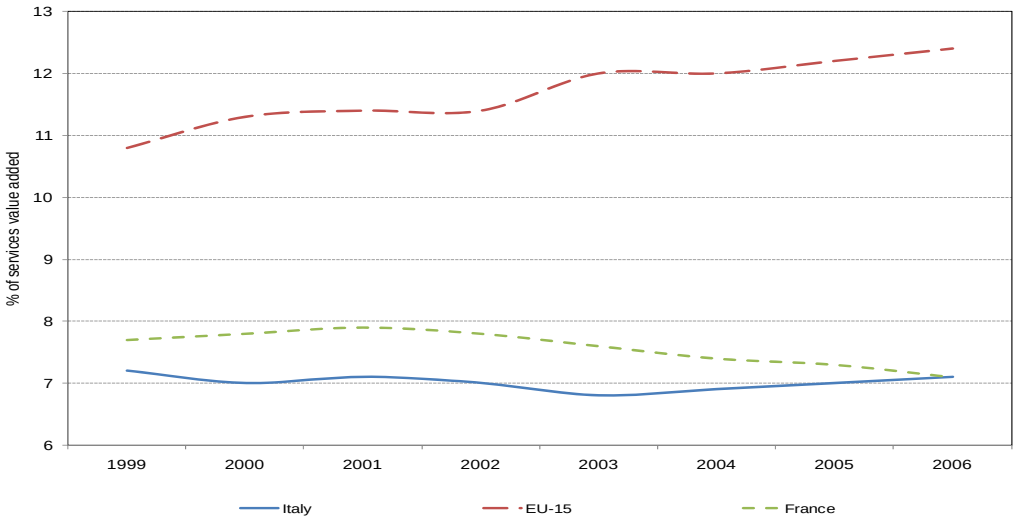
Note: In all figures, 1996-2000 for Japan; 2000-2004 for Canada, Portugal and Sweden; 2001-2005 for Poland.

Fig. 17. Services value added (percent of total valued added)



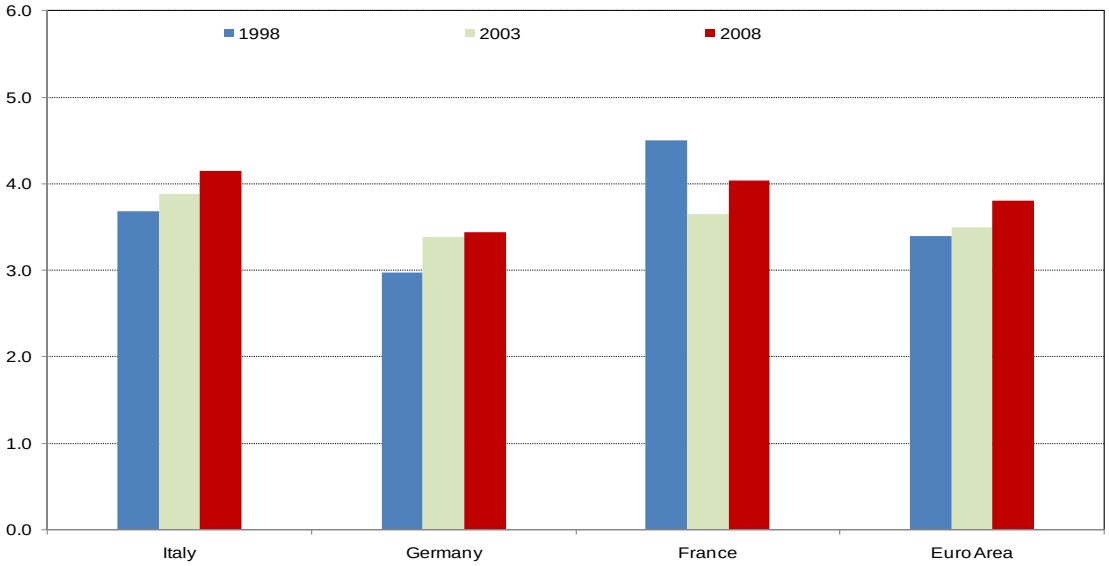
Source: IMF 2008.

Fig. 18. Propensity to export in services (percent of services value added)



Source: IMF 2008.

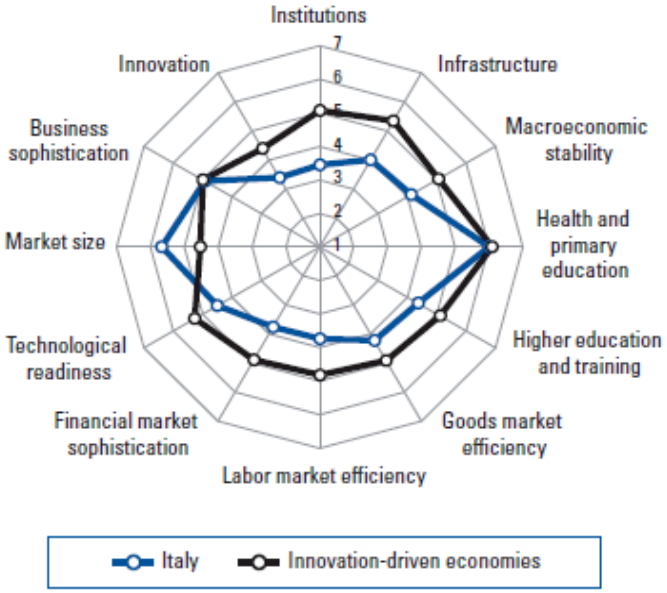
Fig. 19. Entry barriers in services (Index scale of 0-6 from least to most restrictive)



Source: OECD, Product Market Regulation Database

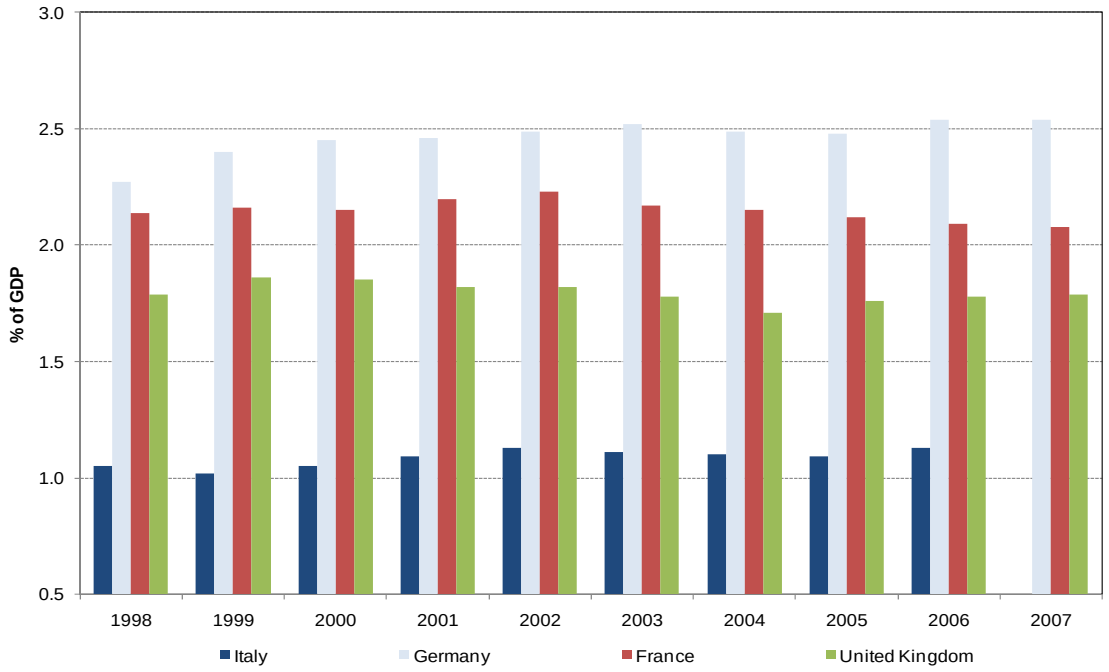
Note: This indicator measures barriers to entry in retail trade and professional services.

Fig. 20. Global Competitiveness Index



Source: WEF, Global Competitiveness Report 2009-2010, September 2009.

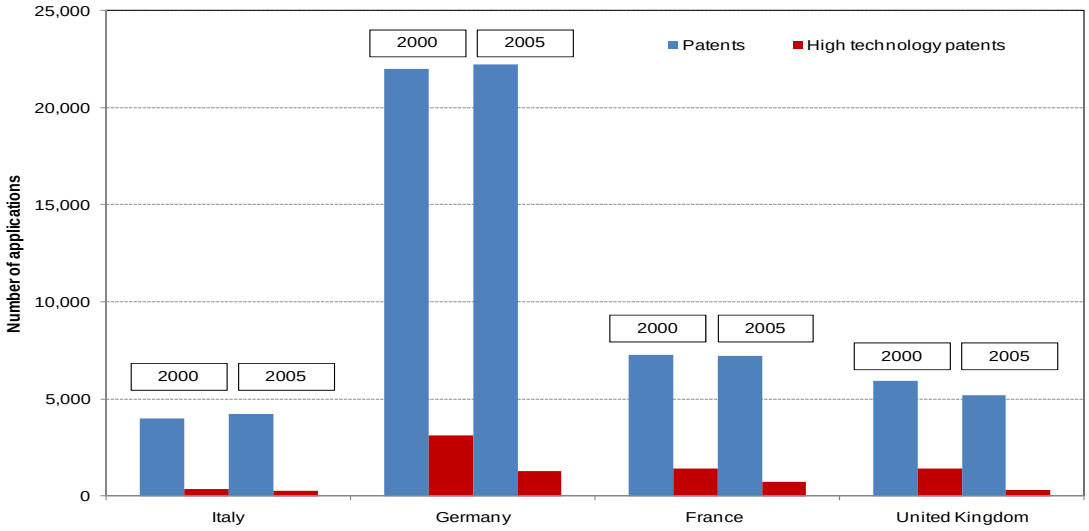
Fig. 21. R&D expenditure in large European countries (as percent of GDP)



Source: Eurostat.

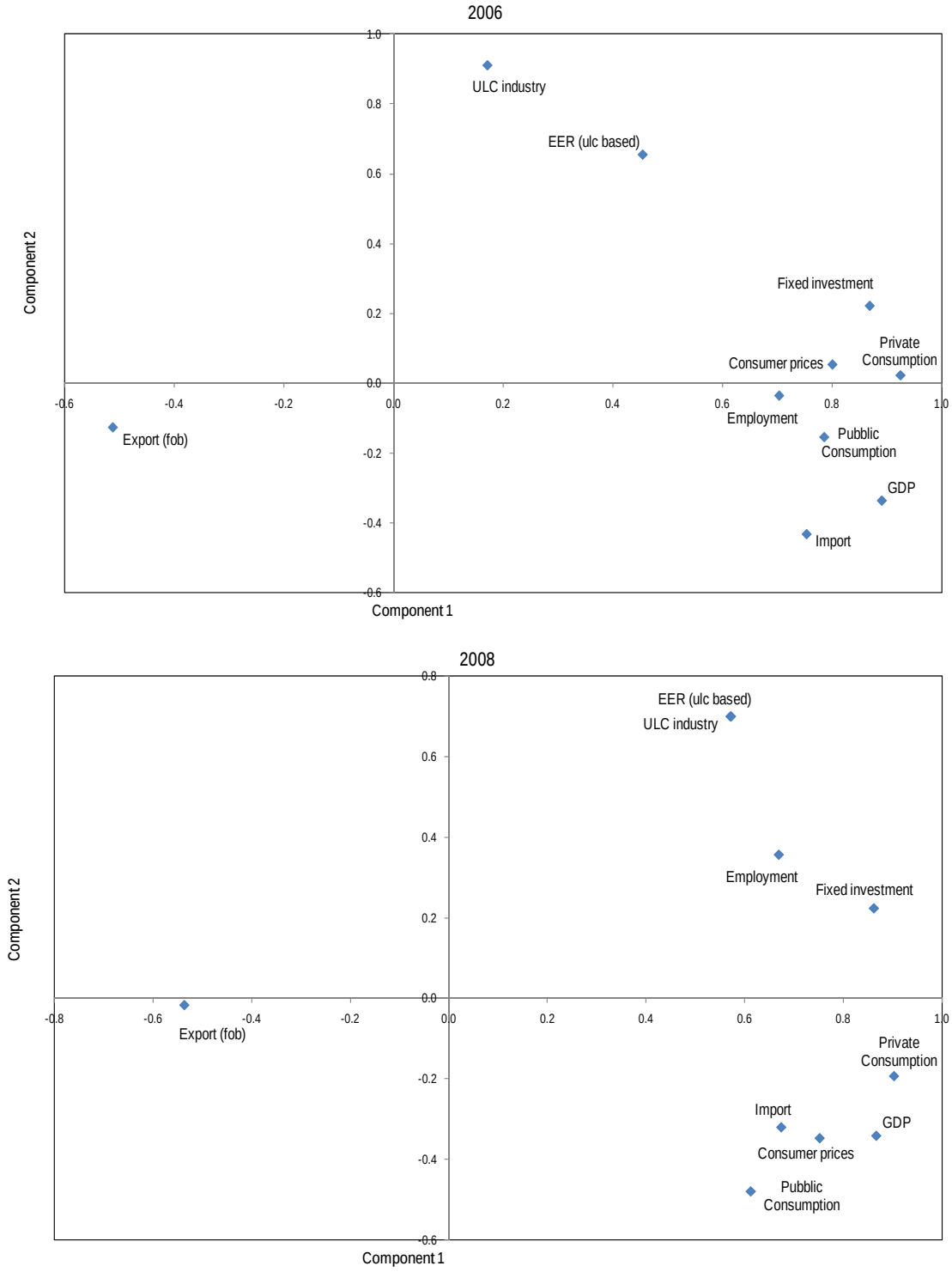
Note: For Italy, data on 2007 is not available.

Fig. 22. Patent applications to European Patent Office (EPO) in large European countries



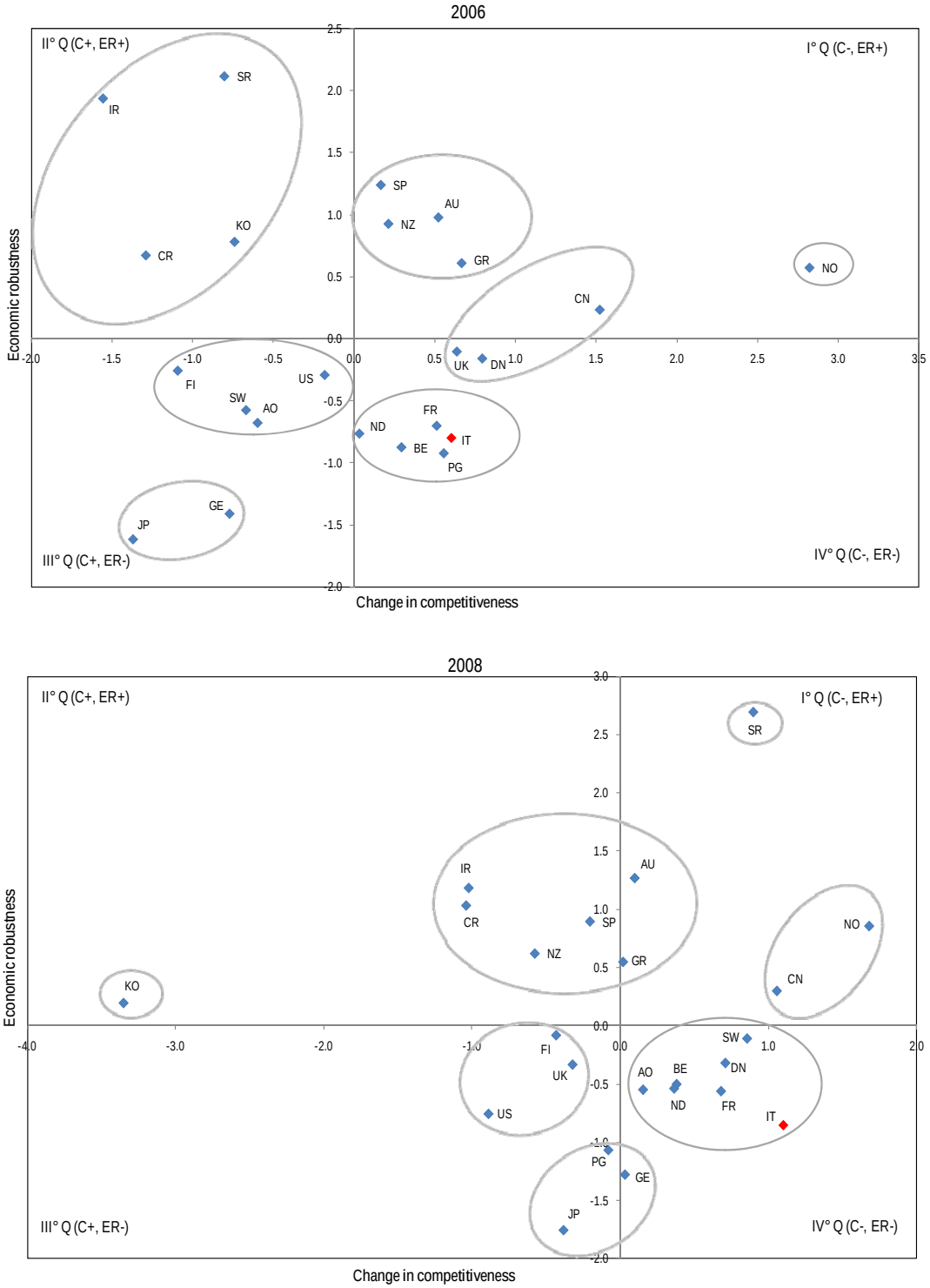
Source: Eurostat.

Fig. 23. Component Plot 2006 vs.2008



Source: Calculation on OECD data.

Fig. 24. Positioning of countries in factorial axes in 2006 and 2008



Source: Calculation on OECD data.

Note: Negative (positive) values of change in competitiveness indicate good (bad) performance (C+; C-). Negative (positive) values of economic robustness indicate bad (good) performance (ER-; ER+).

Tab. 1. International competitiveness and inflation in services

	Change in REER [1]	Current account balance [2]	Inflation in services [3]
	cumulative change 1999-2008 in %	2008, in % of GDP	average 1999-2008 in %
Italy	2.6	-3.0	2.3
Germany	-5.9	6.6	1.4
France	-2.8	-3.8	2.0
EA-16	-	-0.8	2.2

Source: EC, Occasional Papers N.53, September 2009.

Note: (1) Monthly REER (HICP deflator) against other Euro Area countries (Source: Commission services). An increase of the indicator means an appreciation of the REER.

(2) Source: AMECO database.

(3) HICP annual rate of change. Overall index excluding goods (base year 1H-2000=100; Source: Commission services).

Tab. 2. Competitiveness indices

Institution	Index	N. of countries	Italy's rank
WEF	GCI 2009-2010	133	48th
IMD	WCI 2009	57	50th
WB	Doing Business 2010	183	78th
WB	LPI 2010	155	22nd
ITC-UNCTAD	TPI 2006 [1]	184	1st position in 3 manufacturing sectors 2nd position in 4 manufacturing sectors
UNIDO	CIP 2005	122	21st

Source: WEF, IMD, World Bank, ICT-UNCTAD, UNIDO.

Note: (1) In the TPI 2006, Italy is ranked 1st in textiles, clothing, leather products, and 2nd in electrical products, miscellaneous manufacturing and non electrical machinery. The TPI analyses 14 macrosectors.

Tab. 3. Total Variance Explained (2006 and 2008)

Component	Eigenvalues 2006			Eigenvalues 2008		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,227	52,273	52,273	5,106	51,064	51,064
2	1,651	16,511	68,785	1,760	17,601	68,665
3	,885	8,853	77,638	,825	8,253	76,918
4	,621	6,211	83,849	,695	6,951	83,869
5	,485	4,851	88,700	,500	5,003	88,872
6	,406	4,062	92,762	,386	3,858	92,730
7	,338	3,381	96,143	,313	3,134	95,865
8	,250	2,501	98,644	,204	2,045	97,909
9	,102	1,018	99,662	,140	1,399	99,308
10	,034	,338	100,000	,069	,692	100,000

Source: Calculation on OECD data.

Note: Extraction Method: Principal Component Analysis.

Tab. 4. Component Matrix

	2006		2008	
	Component		Component	
	1	2	1	2
GDP	.891	-.337	.868	-.341
EXP (fob)	-.511	-.127	-.537	-.017
Public Consumption	.786	-.155	.613	-.479
Private Consumption	.925	.022	.904	-.193
Gross Fixed investment	.869	.221	.863	.223
IMP	.754	-.433	.675	-.320
Employment	.704	-.036	.670	.356
Consumer prices	.801	.053	.753	-.347
EER (ULC based)	.455	.654	.572	.699
ULC (industry)	.172	.910	.573	.699

Source: Calculation on OECD data.

Note: Extraction Method: Principal Component Analysis. Two component extracted.

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