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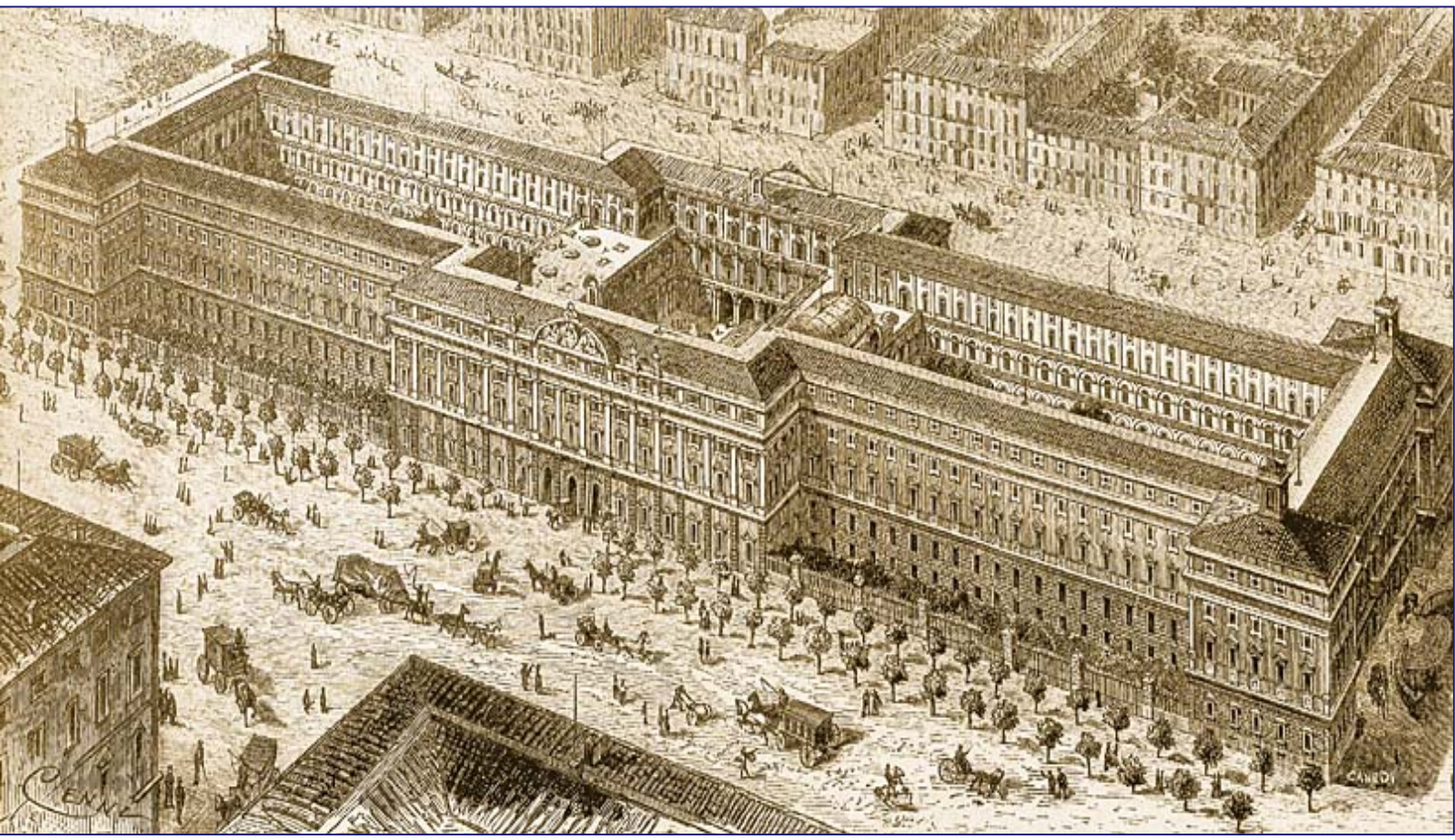

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Assessing Italy's Reform Challenges: What Do Growth Accounting and Structural Indicators Say?

Lorenzo Codogno (*), Francesco Felici (*)

Abstract

Italy's overall GDP growth has been dismal in recent years and this poor performance has been compounded by a declining trend in labour productivity and total factor productivity growth. This paper looks into growth accounting and structural indicators and analyses Italy's performance against other European countries. We look at the evidence provided by newly available information from the Lisbon Assessment Framework (LAF) developed by the Working Group on Lisbon Methodology (LIME) attached to the Economic Policy Committee and the European Commission services (DG ECFIN). Building upon the results of existing literature, we investigate whether this new evidence is supported by data from other sources and provides fresh insight into Italy's reform process. The main message from the analysis of growth accounting and structural indicators appears to be that Italy's GDP growth significantly underperformed that of the EU15 in 2001-2007 notwithstanding progress on reforms.

JEL Classification: D24, O40, O52
Keywords: Productivity, Economic Growth and Aggregate Productivity, Italy

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CONTENTS

1 INTRODUCTION

Since the mid-1990s, the Italian economy has recorded a significant slowdown in its growth rate. While the same trend has been observed in most other European countries, Italy's performance has been comparatively weaker. In 2001-2007, the GDP growth gap versus the EU15[1] average was almost one percentage point a year (2.0% as against 1.1%).

Structural factors, such as persistent rigidities in the labour market and a low degree of competition in product markets, have played a major role in causing Italy's disappointing performance.

This paper identifies the factors which had a negative impact on Italy's performance in 2001-2007 by looking at growth accounting and structural indicators. Structural weaknesses are to be considered critical areas for policy making, i.e. areas where reforms are most needed and also potentially most beneficial.

The approach we use is based on the screening methodology which has been developed by the LIME Working Group on Lisbon Methodology (LIME), attached to the Economic Policy Committee, and European Commission services (DG ECFIN). The methodology, called LAF (Lisbon Assessment Framework), provides a transparent and simple framework which helps shaping a policy debate on many aspects of the Lisbon reform process. It ensures consistency across countries based on structural indicators with literature links to growth components and policies. In our paper, LIME data are complemented by EU KLEMS and national source data and information.

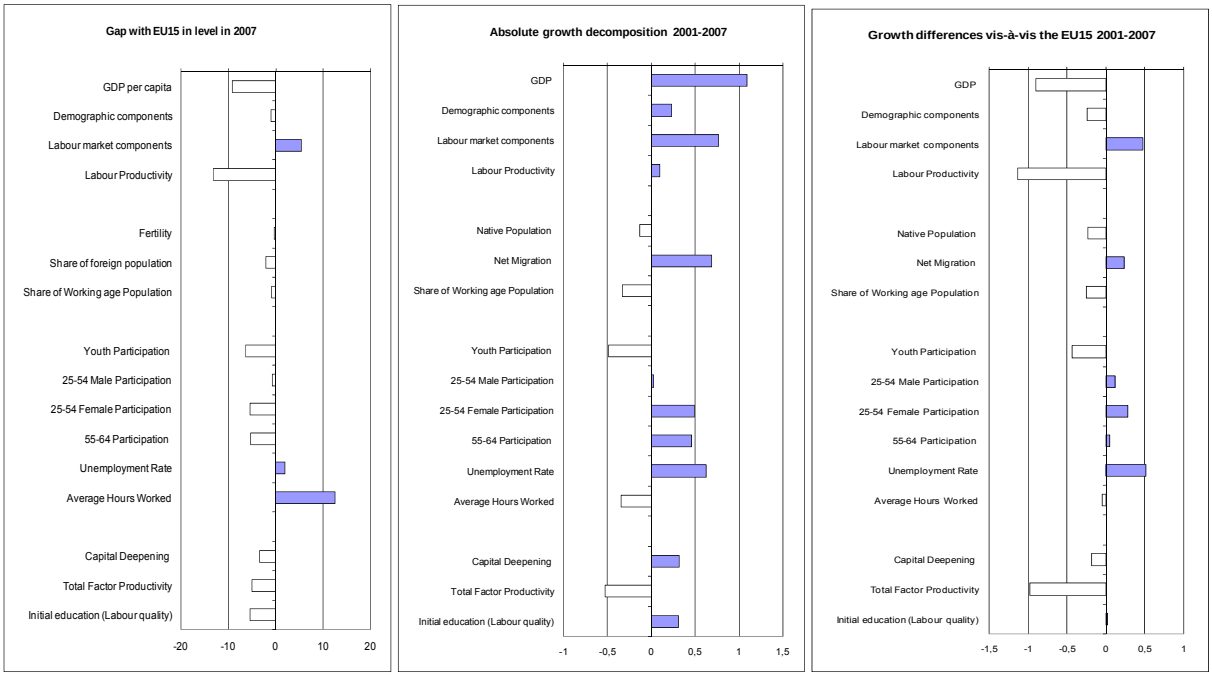
First, the analysis identifies the GDP components which negatively contributed to growth, either in absolute terms or in comparison to the EU15 average. The analysis focuses on the medium- to long-term dynamics of economic growth, and investigates the relevant variables on the supply side. Developments in labour and capital stock – through an increase in employment and investment – and progress in technology and work organisation – which bring changes in total factor productivity – are the GDP growth determinants. Then the analysis cross-checks growth accounting results with those structural indicators that have shown in the literature a link to relevant GDP growth components.

2 BREAKDOWN OF GDP GROWTH AND LEVELS

This section identifies components of GDP growth where Italy underperformed relative to the EU15 average and assesses the underperformance gap. Growth accounting results in GDP level and changes are summarised in Figure 1 and Table 1 (LAF scores).

[1] The EU15 countries are: Germany, France, Italy, Spain, the Netherlands, Belgium, Finland, Portugal, Austria, Greece, Ireland, Luxembourg, Sweden, Denmark, and the United Kingdom.

Figure 1. An overview of income and growth differentials and sources



Source: AMECO, with data mostly sourced from ISTAT (Italian Statistical Office).

Note: The left-hand panel shows the gap in per-capita GDP versus EU15 in 2007 and its decomposition into individual components: a demographic component, a labour market specific component and hourly labour productivity. Each of these components is further decomposed into subcomponents. The horizontal axis shows the gap in percentage points versus EU15 levels. The middle panel depicts the decomposition of absolute GDP growth into its (sub) components between 2001 and 2007. The horizontal axis shows percentage point contributions to absolute growth. The right-hand panel also provides decomposition of GDP growth, although this time relative to EU15. The horizontal axis thus shows by how many percentage points each (sub) component contributed more/less to growth than the EU15. 'Initial education (labour quality)' measures the average productivity per person employed relative to the productivity of the low skilled, proxied by those with lower secondary education or less (it is usually incorporated in total factor productivity, i.e. Solow's residual).

As shown in Figure 1 and Table 1, Italy's economic performance was weak. Both the growth rate and final per-capita level of GDP were below the EU15 average. In 2001-2007, Italy's GDP moved gradually away from the EU15 benchmark, with average annual growth almost one percentage point lower, resulting in a wider gap in level to approximately 9 percentage points in 2007.

Italy's unfavourable performance is mainly caused by poor productivity both in growth and level terms differentials. This in turn is largely due to a sizeable underperformance in total factor productivity (TFP) and, to a lesser extent, a smaller progress in capital deepening in terms of change from 2001 to 2007. In terms of 2007 levels, it is also due to labour quality. While TFP made a positive contribution to growth in the EU15, it did not in Italy. Italy's TFP recorded a contraction over the seven-year period under consideration (a 0.5% drag per year).

Table 1: Relative performance of GDP components vis-à-vis the EU15

GDP components	Level	Growth	Absolute contribution to annual growth
Demographic component	**-8**	**-4**	**0.2**
Fertility / Native Population	-9	-10	-0.1
Share of foreign population / Net Migration	-8	6	0.7
Share of Working age Population	-5	-10	-0.3
Labour market component	**6**	**11**	**0.8**
Youth Participation	-14	-20	-0.5
25-54 Male Participation	-15	9	0.0
25-54 Female Participation	-20	11	0.5
55-64 Participation	-15	2	0.5
Unemployment Rate	5	18	0.6
Average Hours Worked	13	-2	-0.3
Labour productivity	**-9**	**-17**	**0.1**
Capital Deepening	-6	-11	0.3
Total Factor Productivity	-6	-15	-0.5
Labour quality (Initial education of labour force)	-17	2	0.3
GDP per capita (level) / GDP (growth)	**-8**	**-10**	**1.1**

Note: This table summarises data contained in the right-hand and left-hand panels of Figure 1 and provides information on the relative importance of individual growth (sub) components. The scores are computed as follows: score = 10 * (component - EU15 average)/ EU15 standard deviation. The score is trimmed at -30 and +30 (+/- 3 standard deviation) to avoid getting the picture distorted by outliers.

Capital deepening increased at a slower pace than the EU15 average, and it was below the EU15 average level in 2007. In 2001-2007, it decelerated as labour became cheaper relative to capital and more flexible as a factor of production. Labour quality, as measured by the initial educational attainment of the workforce, caught up slightly over the seven-year period, but it was still lagging well behind the EU15 average level in 2007.

As for labour utilisation, Italy outperformed the EU15 in terms of increase in labour market participation and reduction in the unemployment rate, although this progress was partly offset by the contraction in average hours worked per person employed. More specifically, progress in participation was greater than for the EU15 average for prime-age workers (males and females), also thanks to migrant workers who entered the labour market, whereas older workers' participation increased only slightly more than the EU average. By contrast, Italy moved further away from the EU average in terms of youth participation.

Demographic developments[2] are less favourable for growth in Italy than in the EU15, given the size of the contraction in the share of the working-age and native population, only partly offset by net migration. This represents a major challenge for the future.

[2] Strictly speaking, Fertility and Net migration are not a component of per capita GDP (total population is a component of GDP but not of per capita GDP). LAF takes the growth decomposition of GDP and to also show the performance of variables capturing the 'level' of each growth component. In most cases, these variables in level correspond to the breakdown of per capita GDP, but not for Fertility and Net migration. The idea is to jointly interpret variables in level and growth, as the interpretation of the score in growth differs if the level is initially very high or, conversely, very low but subject to a 'catch-up effect'. The fertility rate is instead a useful stock variable for assessing the starting conditions of the increase in native population (flow variable). It is much better than the size of population which makes no sense in a benchmarking perspective, where small countries would always be the worst performers. The fertility rate also complements the share of working-age population, as the former gives information on future population trends as opposed to the latter, which is the result of past trends. Net migration as a share of total population is a useful stock variable for assessing the starting conditions of net migration flows.

Italy's performance was strongly influenced by sizeable regional differences. In 2006[3] the Central and Northern macro region had a higher level of per-capita GDP than the EU15 average, while in the South this level was only around 60% of the EU15 average. The North-South divide has always been wide in the past. Italy's regions are among the most- and least-developed European regions. In 2001-2006, the difference in per-capita GDP growth vis-à-vis EU15 was more pronounced in the Centre North mainly due to demographic components. Italy's productivity was also significantly affected by the regional divide. The gap in labour productivity levels is much lower in Central and Northern Italy than in the South. Differences in terms of growth were negative in both areas. In 2007, Italy's outperformance in labour market participation was mainly the result of performance in Central and Northern Italy, whose employment rate was higher than the EU15 average. Nevertheless, growth in employment was stronger in the South[4].

3 THE PRODUCTIVITY GAP

As explained above, Italy's underperformance in GDP growth relative to the EU15 average in 2001-2007 (-0.9 percentage point) can entirely be attributed to gap in labour productivity. Labour productivity contributed only 0.1 percentage points in absolute terms and the differential with the EU15 was 1.1. This is almost completely explained by the growth gap in total factor productivity (-1.0pp), which measures a set of factors such as technological progress, factors organisation in the production process, market regulation, etc.. By contrast, the contribution of labour was positive relative to the EU15 (0.5pp). Within the labour factor, labour participation performed in line with the EU15 due to sizeable improvements also in other countries, while in absolute terms it accounted for almost half (0.5pp) of the annual GDP growth in 2001-2007 (1.1%). Besides, the contribution of (i.e. the decrease in) unemployment was substantial (0.5pp; 0.6pp in absolute terms), while that of average hours worked was marginally negative (0.0pp; -0.3pp in absolute terms). As for demographic components, the contribution of the working-age population was negative (-0.2pp; -0.3pp in absolute terms), while there was a strong migration contribution (0.2pp; 0.7pp in absolute terms).

The above results should be viewed in the context of Italy's economic changes over the same years. First, the decline in both total factor productivity and the number of hours worked partly reflects positive developments in the labour market. The extensive use of part-time and – to a lesser extent – temporary work caused a reduction in the number of hours worked per worker. Greater flexibility achieved in the labour market, following the introduction of new types of employment contracts, allowed a net decrease in unemployment as a result of more workers being hired. However, low-skill jobs accounted for the lion's share of employment gains and the productivity of the marginal worker tends to be lower than that of the average worker. This may have partly contributed to depress total factor productivity growth. Reduced growth in productivity may indeed be a side effect of sweeping reforms in the labour market, with an employment-productivity trade-off emerging over time. Moreover, regularisation of illegal immigrant work (due for instance to Law 189/2002, the so-called Bossi-Fini

[3] 2006 is the latest figure that is currently available.

[4] 'Quadro strategico nazionale per la politica regionale di sviluppo 2007-2013' and 'Documento Strategico Preliminare Nazionale. Continuità, discontinuità, priorità per la politica regionale 2007-2013', Ministry of Economic Development.

Law), may have contributed to bringing to light irregular employment which had not previously been included in estimates, and have therefore contributed to depress productivity growth. A significant correlation can be observed between employment increase and productivity decrease since 1997. This suggests that the decrease in total factor productivity up to 2005 may have partly been explained by a surge in labour utilisation which may well be a transient phenomenon. For instance, the sharp increases in 'atypical' employment and the sizeable regularisation of immigrant workers are unlikely to repeat themselves in the future. In fact, the trend decline in hours worked slowed substantially in 2006 already. The explanation of the possible causes underlying the productivity decline can be also found in Robert Gordon and Ian Dew-Becker (2008) and Bandiera, Guiso, Prat and Sadun (2008). In the first paper authors show the way some of the policy reforms implemented in Europe may raise employment per capita but also reduce productivity in the short run. Their idea is that if labour demand does not shift when labour market reform occurs, then labour supply shifts to the right along a given labour demand curve so productivity declines as a result. This could have been the case in Italy as well following the changes in labour market legislation in favour of more flexibility. Instead, in the long run, employment rises as well as policy reforms may enhance investments; in particular, promoting liberalisation and encouraging competition should give large long-run benefits. In the second paper the authors suggest that Italy's disappointing productivity growth may also depend on the way most of Italian firms select and develop managerial talent, that is on the base of a fidelity model instead of a performance one; in fact those models provide significantly different outcomes in terms of quality and performance of both the manager and the firm itself.

Growth accounting shows the existence of a gap in the level of 'quality of labour'. Quality of labour is estimated by using the proxy of the initial level of education of the work force. To some extent, the low result according to this metric is associated with Italy's specialisation in low- and medium-technology products, even though specific policy actions may also play a role. In terms of level, the quality of labour is substantially below most other European countries despite some progress in recent years. For instance, the number of university graduates rose between 2001 and 2007 (their number almost doubled since 1999, although the result is probably affected by recent changes in Italy's university system), while school drop-out rates fell. Nevertheless, the overall negative gap with the EU15 improved only marginally. Despite moderate progress, structural indicators are negative across the board for the policy areas that intend to address this underperformance (see next chapter). Negative indicators include those that cover investment in physical and human capital in high-technology sectors (R&D spending, number of researchers and patents) and those related to the vocational training of workers. According to the OECD's PISA surveys, the quality of Italy's education system is below that of most industrialised countries.

The decrease in total factor productivity in absolute terms is the most difficult component to analyse, due both to the economic significance of this variable (which incorporates aspects of technological progress and the organisation of production) and the existence of a vast set of microeconomic policies that can influence the behaviour of this component. Over and above the direct impact, some policies are crucial in shaping the economic environment in which businesses operate. Some pro-business policies are not sufficiently developed in Italy relative to Europe, but a word of caution is needed. Apparently a case in point is telecommunications and energy prices, which are on average much higher in Italy than in Europe. However, policies that favour competition do not show negative values. Higher prices are explained by specific factors. For instance, telecommunications prices do not include the price of telephone calls when roaming charges apply and the higher price of

energy is mostly the result of higher production costs. This highlights that any policy or performance indicator needs to be complemented by specific qualitative analysis. It is also worth mentioning that sectoral indicators related to promoting competition do not currently cover some very important sectors (e.g. retailing).

The business environment and the establishment of companies remain a critical area despite past reform efforts. Italy's gap versus the EU15 average relates mostly to legal and administrative procedures for the day-to-day running of business activity (the time required to register property, obtain a license and enforce a contract) and the starting or closing of businesses. As for prospects for international trade and international investment, Italy's market integration is still impeded, mostly by the large amount of time and high costs associated with customs transactions.

The decline in total factor productivity may be attributed to negative sector-based dynamics. However, a more detailed sector-based approach (Daveri, Jona Lasinio, 2005) shows that the decline in productivity is broad-based. Besides, the re-composition of employment from sectors with higher productivity (typically manufacturing) to sectors with lower productivity (typically services) is not large enough to justify a sizeable impact for the whole economy.

The contribution of capital to growth remained stable in 2001-2007 compared to previous years, although there was a net decrease with respect to the early 1990s. Nevertheless, the decrease in the relative cost of labour accounted for only some moderation in the accumulation of capital, whereas the relative intensity of capital compared to labour continued to grow. The fact that investment flows have continued to grow despite economic stagnation and the decrease in the relative cost of labour can be explained by higher profitability of capital relative to labour, especially in the services sector (Torrini, 2005). However, contrary to other European countries, the positive contribution of both employment and capital deepening was accompanied by an abrupt decline in total factor productivity.

4 PERFORMANCE ASSESSMENT IN EACH POLICY AREA

This section presents the main findings on Italy's relative performance with respect to quantitative policy indicators. Table 2 presents the aggregate continuous score for each policy area (labour market, product and capital market regulations, innovation and knowledge, and the macro economy) in terms of the current position (level) and progress (growth rate) relative to the EU15 average. In the Annex there are detailed tables with policy and performance indicators for each policy area. The overall score for each area is based only on a narrow list of indicators as other indicators are either perceived as not being sufficiently reliable or there are specific problems with the series. The broader list is nevertheless useful in drawing an overall assessment of the policy area.

4.1 LABOUR MARKET

Starting with the labour market, the reforms introduced in Italy in the second half of the 1990s seem to have been effective in aligning Italy's labour market conditions with those prevailing in the

EU15. Most policy indicators are close to zero, with a few slightly negative and one positive. Negative indicators refer to specific labour supply measures for older workers and women, market segmentation/dualisation and excessive job protection, and the insufficient scope of active labour market policies. Active labour market policies improved markedly in 2001-2007, even though they still lagged behind the EU15 in terms of 2007 level. There was some improvement in the field of wage bargaining and wage-setting policies and labour taxation, along with a marginal relative progress in the area of increasing working time. By contrast, three policy areas suffered relative deterioration vis-à-vis the EU15: making-work-pay policies, job protection and labour market segmentation/dualisation and immigration and integration policies and labour mobility policies.

Table 2. An overview of performance in each policy area at aggregate level

	Indicator-based assessment		Number of underperforming indicators (<-4)		Number of indicators in the narrow list
Policy areas – Aggregate scores for IT	**Level**	**Change**	**Level**	**Change**	
Labour market					
Active labour market policies**	-3	10	3	0	6
Making work-pay: interplay of tax and benefit system***	0	-5	2	7	10
Labour taxation to stimulate labour demand ***	-4	8	1	0	4
Job protection and labour market segmentation/dualisation**	-5	-3	3	3	5
Policies increasing working time***	13	3	0	1	3
Specific labour supply measures for women***	-3	-1	7	4	12
Specific labour supply measures for older workers***	-5	2	6	4	8
Wage bargaining and wage-setting policies**	0	6	1	0	4
Immigration and integration policies***	-2	-7	3	3	6
Labour market mismatch and labour mobility**	-6	2	2	1	4
Product and capital market regulations					
Competition policy framework*	-1	1	1	0	5
Sector specific regulation (telecoms, energy)**	-2	3	4	4	10
Market integration - Openness to trade and investment**	-2	2	2	1	5
Business environment, Regulatory barriers to entrepreneurship**	-8	3	5	2	8
Business Dynamics – Start-up conditions***	-11	-5	3	2	4
Financial markets and access to finance**	-4	0	8	0	20
Innovation and knowledge					
R&D and Innovation***	-8	9	3	0	4
ICT**	-1	1	2	1	5
Education and life-long learning***	-8	2	9	2	11
Macroeconomy					
Orientation and sustainability of public finances ***	-4	-1	2	0	6

Note: For each policy area the overall quality of coverage by narrow list indicators is signalled: *** stands for broad coverage, ** medium coverage and * narrow coverage.
This table presents the aggregate continuous score for each policy area, which is a weighted average of the values of the indicators in the narrow list. The scores for individual indicators are computed as follows: score = 10 * (indicator-EU15average)/standard deviation EU15. The results indicate the levels for the latest available year and progress made (change). Consequently, a score of 10 means that the value of the indicators is 1 standard deviation above EU-15 average. The policy area is considered as underperforming if the aggregate score is below -4. The table also shows the number of underperforming indicators (their scores are less than -4) in the narrow list (both in terms of level and growth) as well the total number of indicators in the narrow list.

Active Labour Market Policies (ALMP) refer to all initiatives aimed at encouraging and supporting employment, such as job placement services and job agencies, workers and unemployed continuing education, policies for young workers and in general all public expenditure assigned to an 'active' support of labour (i.e. 'active' expenditure, as opposed to 'passive expenditure', such as unemployment benefits). Active labour market policies aim at increasing employment and reducing unemployment through continuing education and training for unemployed workers, the reduction of recruitment costs for firms, and a more efficient supply and demand matching process. ALMP policies are more effective if they are supported by policies to attract workforce, and by 'making-work-pay' policies, i.e. state incentives and tax concessions in favour of employment.

Making job search and employment more profitable than unemployment benefits also requires modernisation in direct taxation and the social security contributions system. These policies impact both labour supply (choice between work and leisure) and demand (tax and social costs reduction). Policies affect the participation rate, education choices, choice between work and retirement, and cost-benefits analyses of unemployment. In particular, taxes and unemployment benefits inevitably create a disincentive to work, by reducing labour supply, in terms of participation as well as hours worked (in particular for low-level professional careers with lower expectations). In general taxes create a difference between gross wages, and their effective purchasing power. They increase labour cost (especially social security contributions), thereby causing a decline in demand, whereas direct taxation of wages reduces net income and affects the choice between the marginal utility of labour and leisure. The final impact of taxation depends on whether firms can pass these additional costs on to wages. If additional costs are partly or totally passed on, wages are reduced, and labour supply consequently diminishes. By contrast, if these costs are not passed on to wages, they are borne by firms, and there is a consequent reduction in labour demand. In both cases though, high taxation tends to favour informal work. Finally, inadequate taxation also influences employed workers, causing a decline in the annual number of worked hours.

According to LAF, Italy made substantial progress in ALMP in 2001-2007, with indicators being one standard deviation above the EU average. In terms of levels, Italy remains slightly below the EU15 average. The positive growth performance was mainly due to performance rather than policy indicators, and especially youth and long-term unemployment. The improvement in youth unemployment may be ambiguous to interpret as it is linked to a poor growth accounting performance in youth participation and may have been affected by changes in the university system (the introduction of a two-tier system of university degrees). The sharp improvement in long-term unemployment is instead unambiguously positive. A number of other indicators not included in the short list show a negative performance in terms of level relative to the EU15, especially policy indicators related to expenditure as a percentage of GDP and per person wanting to work, and the number of participants in LMP. The proportion of the unemployed in education and training and that of the inactive in education and training are also below the EU15 average. This suggests insufficient spending and policy effort in training, although it also raises the issue of the efficiency and effectiveness of ALMP expenditure. The overall score may thus be considered overstated as it is unduly affected by those indicators that are included in the narrow list.

Moving to making work-pay, policy indicators show a poor growth performance related to the unemployment and inactivity traps both for single persons and couples, while in level terms the message that comes from the unemployment trap is mixed and that for the inactivity trap

unambiguously positive. Performance indicators are mixed. Overall, and taking into account indicators that are not included in the narrow list, the situation is broadly in line with the EU15 average.

Labour taxation to stimulate labour demand show a positive growth performance, mainly due to the reduction in the tax wedge on labour.

Employment Protection Legislation (EPL) plays an important role in delivering efficiency and flexibility to firms. Regulatory rigidity risks preventing firms from adapting to changing market conditions, on the other hand employment law is nevertheless desirable. Fighting against labour market segmentation, while seeking greater business efficiency, is a prerequisite for bridging Italy's efficiency and productivity gap, and a strong incentive to employment and continuing education. Working time organisation can also have relevant effects on key growth factors, such as labour flexibility and the number of hours worked. Average hours worked have declined steadily over the past 15 years, which has caused a reduction in labour input relative to capital. This decline is partially explained by the emerging of flexible working arrangements, such as part-time work. However, hours worked and workers are not perfectly fungible due to the difference between fixed and variable costs. As opposed to variable costs, a reduction in fixed costs gives firms an incentive to substitute hours worked for workers. As a consequence, demand for workers and demand for hours worked often diverge. A decline in hours worked thus has an ambiguous effect: if the optimal number is equal to the contractual number of hours worked, a decrease in the latter would result in a reduction in the former. However, if the optimal number of hours worked is greater than the contractual number, a reduction in the latter will result in an increase in overtime work as variable costs decline relative to unchanged fixed costs. Eventually, working time is strictly related to labour organisation flexibility: modifying working time is a key element for labour organisation in order to adapt and secure benefits from technological progress (many studies have shown that ICT investment generates productivity growth only if it is accompanied by industrial restructuring). How does Italy score in job protection and labour market segmentation/dualisation and policies increasing working time? In the former area the level and change scores are slightly negative relative to the EU15, while in the latter they are both positive. The broad set of EPL indicators are mixed in terms of level. As for job protection, the positive contribution to the overall growth score comes from the youth unemployment ratio and from an indicator of fluidity in the labour market such as the proportion of the long-term unemployed over total unemployment. Negative are instead indicators related to involuntary temporary unemployment and in-work poverty risk. In terms of level the picture is less clear and scores are mixed.

Policies increasing work time show a performance broadly in line with the EU15 in terms of change, while in level terms the relative situation is favourable, with low-wage poverty trap not being a major issue. This seems also to be consistent with growth accounting as average hours worked represented a drag on GDP growth in 2001-2007 both in Italy and the EU15. By contrast, in terms of level, average hours worked gave a substantial contribution to per capita GDP relative to the EU15, which is consistent with the positive structural indicator score in level.

Measures promoting female employment aim at increasing GDP growth through three of its components: female labour participation rate, women average number of hours worked, and decrease in female unemployment. Five potential policy channels can be identified to promote female employment: 1) pursuing child care policies aimed at helping women reconcile their professional and family lives; 2) scrapping tax disincentives that discourage potential second earners to seek employment; 3) opposing job discrimination and ensuring equal opportunities for men and women; 4)

increasing investment in female continuing education; 5) improving working conditions. Indicators for Italy are mixed and broadly in line with the EU15 both in terms of level and change. It is worth mentioning the deeply negative score related to low-wage trap for second-earner income, which is negative even in level. Female employment rate and activity rate show substantial negative scores. Childcare indicators are mixed, with widely shifting scores among them. Gender segregation in occupations and sectors highlights positive results in level but negative in change.

As for older workers, four transmission channels can be identified in order to increase participation and employment rates: 1) scrapping early retirement schemes; 2) encouraging older workers to remain active by reforming pension systems and extending the working life through incentive schemes; 3) favouring a gradual approach to retirement by strengthening part-time work and supporting careers of older workers; 4) improving working conditions. Measures in favour of older workers could increase labour productivity through greater investment in human capital as a result of a longer working life. Indicators show a negative performance in level terms versus the EU15, with the employment and activity rates of older workers being clearly a problem. This is matched by poor participation rates of the population aged 55-64 as indicated by growth accounting. In terms of change the message is more ambiguous.

Employment regulation and wages are also key variables. As wages are the price of the labour factor, they directly impact employment. They also have an indirect effect on the economy through their impact on inflation and investment. Along with productivity growth, wage developments determine unit labour costs, and thus the competitiveness of the economy. For a given labour productivity growth, a larger increase in wages would result in decreased profits and thus have a negative impact on investment and exports. Equally, higher disposable income means more household consumption, which supports aggregate demand. Labour productivity is another channel: when there is equilibrium in the labour market, real wages have to equal the marginal productivity of labour. Unsustainable wage agreements can thus widen the spread between wages and productivity, with a resulting decline in employment, at least in the short term. Wage moderation indicators show a marginally better performance than the EU15 average both in level and change. Wage differentiation indicators show a wide dispersion in regional unemployment, which is a long standing issue in Italy and also a relative small gap between skilled and unskilled unemployment. In terms of growth, both indicators show a decent performance relative to the EU15.

Immigration and integration policies and labour mobility have an impact on growth through the reduction of the unemployment rate and the increase in male and female participation rates. Increasing regional mobility reduces unemployment by improving the match between supply and demand. Regulation of migration flows and integration policies have a direct effect on net migration, labour quality, the labour force participation rate of the working-age population, and the unemployment rate. Indicators of immigration and integration policies show a marginal negative performance in level and a more pronounced negative performance in terms of change. This latter is mainly driven by a negative score in the employment gap between non-EU and EU nationals and the employment rate gap between non-EU born and EU born. The same indicators are in positive territory in terms of level, suggesting that while the level of integration of non-native workers is broadly in line with the EU15 it deteriorated between 2001 and 2007. It is worth noting that the indicator of proportion of foreign-born

population with tertiary education as a percentage of total foreign-born population is in negative territory. Italy's regional divide shows up in the indicator of dispersion of regional unemployment and this in turn (together with the change in the sectoral employment shares) pushes down the overall indicator of labour market mismatch and labour mobility in terms of level. The same dispersion indicators highlight progress in the period considered.

This brief overview suggests that there are clear interconnections among labour market indicators and it would be overly ambitious to encompass the complexities of the labour market by simply looking at a relatively small set of structural indicators. Yet, taken together, these indicators can provide a reliable, albeit complex, picture of Italy's position relative to other countries. Italy has implemented major labour market reforms, especially since the mid-1990s. They have brought noticeable improvement, which slowed down somewhat in the 2001-2007 period. Nevertheless, indicators suggest that at 2007 levels Italy's labour market is still slightly worse off than the EU15 average, with the exception of policies increasing working time. In terms of progress it is on average slightly above the EU15, although with several indicators in negative territory.

4.2 PRODUCT AND CAPITAL MARKET REGULATIONS

Moving on to product market indicators, Table 2 shows that they are in negative territory across the board in terms of level, with financial markets and access to finance and business dynamics. However, most policy areas show also moderate relative progress. Several initiatives have been undertaken in Italy on market liberalisation and openness over the past few years. They have apparently been effective in improving Italy's relative position although not enough to completely close the gap with the EU15 in 2007.

Structural reforms in the product market have implications for the economy that are not just limited to price reductions through lower mark-ups. All policies that foster competition raise pressure on existing firms, yielding beneficial effects at the economy-wide level. Indeed, an increased degree of competition generates the correct incentives to innovate and encourages companies to engage in innovative activities. In turn, this is likely to have a favourable impact on productivity growth.

Deregulation in services faces major difficulties and policies do not have an immediate positive effect on employment, investment and prices. Nevertheless, the benefits of competition outweigh any transition cost on two key arguments: 1) well-designed product market reforms can play a key role in boosting productivity and 2) many labour market rigidities are closely linked to product market distortions. More specifically, inefficient regulation typically generates economic rents that in turn foster additional labour market rigidities (Blanchard, Giavazzi 2003). Hence, reforming product markets may facilitate structural changes in labour markets as well. The empirical evidence, while not fully uncontroversial, generally suggests that more competition raises productivity, although it often fails to take into account the comprehensive sets of factors that may affect the relationship between deregulation and productivity. Besides, there are three additional considerations. First, regulatory issues and their effects are industry specific, namely the problems faced by network industries, such as energy or communications, differ from those of business services, such as accountants or lawyers, or those faced by other sectors, including wholesaling and retailing as well as professional services. Second, usually the debate on services focuses on their effects on final consumption, while input-output linkages are rarely considered, even though they are very important. Services account for an

important share of total output of other economic activities, such as manufacturing and agriculture. In this respect, the efficiency of the tertiary sector has important implications for the efficiency of the whole economic system. Third, the service sector remains remarkably less open than manufacturing, which implies both that most services are not exposed to international competition (and thus national regulation is the only effective channel to raise competition) and that those activities that use services as inputs cannot turn to cheaper imported alternatives. This also implies that widespread rigidities in the supply of key, largely non tradable, inputs from the service sector discourage foreign direct investment (FDI), depriving therefore the host country from a number of beneficial externalities, such as gains in wages and productivity. Indeed, FDI has important effects on productivity and growth. It is a component of gross capital formation, partly additional to domestic investment. Moreover, the activities of multinational enterprises in a host country are generally more efficient than those of national firms. Consequently, everything else being equal, the higher the inflows of FDI the stronger the growth of average productivity, even if FDI flows were to fully crowd out domestic investment. Although service sector reforms are difficult to implement and do not always deliver the expected gains, especially in the short term, deregulation of services is found to be associated with faster productivity growth and competitiveness both in the service sector and in the rest of the economy. Even when gains from reforms in the tertiary sector itself are small, they are magnified when indirect effects on the rest of the economy are also taken into account.

Action in favour of liberalisation and more open trade and investment policies is at the root of the Lisbon principles. The removal of barriers to free trade and the abolition of national protectionist measures are key for productivity growth. Several channels can have a direct effect on productivity: 1) optimal use of comparative advantages, by taking advantage of specialisations and different factor endowments; 2) increasing investments by introducing incentives to investment flows from foreign countries; 3) encouraging more virtuous macroeconomic policies, and improving internal regulation; 4) developing growth and employment through increased competitiveness. Indirect channels can also be identified. They mainly consist of benefits from larger economies of scale (more open markets), and incentives for innovation and absorption of knowledge, which is a factor of endogenous growth.

The positive association between measures of product market competition and economic performance has been documented in a large number of studies. These include, among others, Nickell (1996), Nickell, Nicolitsas, and Dryden (1997) and Salgado (2002). This area of investigation has received renewed attention after the launch of the OECD research programme on growth (Scarpetta, Bassanini, Pilat, and Schreyer, 2000). In particular, productivity differentials have been related to measures of product market regulation developed specifically for the purpose (Nicoletti, Scarpetta, and Boylaud, 1999). The authors find that the stringency of product market regulations is negatively associated with productivity, with the effect being amplified the farther away a country is from the technological frontier (Scarpetta and Tressel, 2002).

A number of actions have been taken to reform Italy's product markets, including: 1) introducing some specific liberalisation measures, 2) strengthening market forces, 3) reducing the administrative burden and 4) improving product market regulation.

Most measures introduced in the past aim at increasing competition in specific areas of the service sector, especially by increasing competitive pressure on incumbents. In most cases the primary direct effect is a reduction of mark-ups. Over time consumers are expected to reap the benefit of the change and enjoy an increase in purchasing power and/or an improvement in the quality of

services. In retailing, provisions that constrain business operation and excessive administrative entry barriers are often an obstacle for the creation of high value added stores, they have restrained employment creation, as well as limited consumer choice. A review paper by Boylaud (2000) gathers some evidence on the impact of regulation easing on opening hours and other restrictions on large-scale stores. It concludes that these measures have an overall positive effect on the performance and efficiency of the sector. Most empirical studies are based on simulation techniques due to the difficulty in finding reliable data on both performance and regulatory regimes. Only a few studies take an econometric approach using cross-country and time series data on performance and/or regulation (Hoj et al. (1995), Pilat (1997). Both studies point unequivocally to potentially large welfare gains, more efficient distribution systems and higher employment.

Given the structure of the Italian retail sector, made up of a large group of small outlets, this intervention may have a multifaceted impact both on productivity and quality of supply. It can increase the pressure on small outlets from new larger competitors. On the other hand, the new regulatory framework can also be exploited by small, locally-rooted shops to enlarge their offer and become more productive. The aggregate impact on overall price levels and productivity might not be negligible as the value added of the retail sector is approximately 4% of the whole economy. This is an area were productivity growth in Italy lags behind the US and most of the other EU countries and thus there is room for improvement.

To what extent greater internal competition has a positive influence on economic growth is an open question. The existing theoretical work does not provide a clear-cut answer. However, the most influential paper (Aghion et. Al, 1991), argues that there could be a hump-shaped relationship. This occurs because increased competitive pressure from a low level, coupled with a desire to preserve rents, make companies more willing to invest in innovation. Most of the empirical literature on the subject refers to the interaction between internal competition and regulation as a whole. The approach followed by Dutz and Hayri (1999) directly addresses the issue of the effectiveness of the Competition Authority. In their empirical work, the authors develop three types of indicators related to 'policy', 'economic structure' and 'firms' mobility' respectively. First, they introduce several cross country comparable policy indicators to capture the quality of the microeconomic incentive regime that puts in place a legal and regulatory framework in areas that directly promote competition. Variables are based on company-level surveys and are indirect measures of the level of competition in the sense that they reflect relevant policy inputs rather than any direct results of the degree of competition. The authors find that a 1 point increase in the perceived effectiveness of antitrust regulations enforcement is associated with an increase of about 0.4 percentage points in GDP growth. They report a 3.86 (range between 1 and 7) value of the 'antitrust' variable for Italy. The highest score achieved by major countries is approximately 5. Accordingly, if the Italian competition authority were to reach the same level of effectiveness, Italy's GDP growth could rise by almost 0.5 percentage points.

Economic literature generally predicts that product market reforms and, especially improved product market regulation, directly affect firms' entry and exit rates. Increased competition causes internal restructuring of already existing firms, such as organisational changes, the adoption of new technologies, increased R&D activities, or a change in the labour and capital mix. There is also an external restructuring effect, whereby the process of market selection leads to a reallocation of resources among individual firms. This is done in two ways. First, there is a process of creative destruction through which low productivity firms exit the market and are replaced by new entrants that are themselves heterogeneous. Second, there is a change in market shares among incumbents (in

favour of the most productive ones), which will also have an impact on aggregate productivity growth. The idea to approach product market regulation reforms from the perspective of their favourable impact on entry and exit of firms, and thus on productivity, is utilised by Cincera and Galgau (2005). In this paper the effect on productivity is conveyed through three channels. At first, product market reforms are expected to lead to a gain in allocation efficiency by reducing the market power of incumbent firms and by increasing market contestability. The increase in the level of competition in the market will lead to a reduction in price mark-up and to a better allocation of resources as less efficient firms exit the market and are replaced by more productive new entrants. The second transmission channel is through an increase in productive efficiency achieved by raising the incentives for managers and workers to organise their work more efficiently, trim fat and reduce slack, thereby minimising the under-utilisation of production factors. The third channel operates by increasing the incentives of firms to carry out research and innovate, hence allowing them to embrace the technology frontier more rapidly. While the allocation and productive efficiency gains are expected to take place rapidly and only once, the dynamic efficiency gains are expected to take place over a longer period of time, but to have a larger impact on productivity. The deregulation of product markets will also have a positive effect on capital accumulation if it leads to a reduction in the mark-up or lowers the costs of adjusting the capital stock. One possible way to assess the impact of reforms in product market regulation on entry-exit rates, and hence on growth, is suggested by Cincera and Galgau (2005). Controlling for variables deemed to capture, among other factors, technology (e.g capital intensity) and cyclical conditions (e.g. demand conditions), the authors explain entry and exit rates with two variables proxying product market regulation. Those variables were obtained applying principal components analysis to a selected list of indicators. The following step sets out the impact of both entry and exit rate on output, employment and productivity growth rates. The authors find that a 1% increase in the entry rate leads to an increase of the above variables of 2.2%, 2.7% and 0.6% respectively. A -0.8% impact of exit rate is found on GDP growth. The potential gain from improving regulation in Italy is deemed to be high as Italy is characterised by the lowest entry rate of all the countries examined. The average value for the main EU countries is 5%, for Italy 3.5%.

Business environment policies, which aim at favouring entrepreneurship and entry or exit of firms on the market, have a direct impact on productivity through the reduction of enterprise costs. The abolition of barriers to entry for new firms allows increasing investment and trade, facilitates innovation and the natural selection of the most efficient firms, to the detriment of the less efficient, which can however exit the market with limited costs. Even in terms of mark-up, such policies tend to favour reduced prices, and a more efficient cost recovery. Market opening policies necessarily have to be coupled with greater government control and intervention, in order to ensure competition, impose discipline in the various production sectors, liberalise monopolistic or oligopolistic sector, and reduce public contributions and subsidies. Greater competitiveness in the business environment can thus reduce inflation, by reducing prices through the elimination of monopolistic rents.

Another source of additional growth is represented by the reduction in administrative burdens (not included in LAF). Policy can reduce the administrative burden by improving regulation (eliminating redundant requirements) and by making the administrative process more efficient. Tang and Verweij (2004) provide useful insight on the possible impact of reforms. In their approach, costs are largely made up of wages for workers that firms need to hire to comply with administrative requirements.

Reducing this cost implies that more workers can contribute to production. This prompts an increase in labour efficiency: fewer workers are needed. While production is not affected directly, the increase in productivity boosts profitability and therefore investment. The authors feed in a 25% reduction of the administrative costs in the EU. The ensuing increase in efficiency generates a direct impact on real GDP of around 1.0% in the first year. This follows from a (modest) influx of capital. The higher labour efficiency leads to a higher return on investment, thus inducing investors to reallocate funds towards the European Union. The effect is even greater over the long term. A higher income implies higher savings, more investment and extra capital. When taking into account the link between R&D (spillover effects) and productivity, the extra positive effect on productivity leads to an additional increase in real GDP, driving up the total long-term effect on real GDP to 1.7%. Knowing the impact on GDP of a reduction of administrative costs and using the definition of administrative burden costs documented in Kox (2005), we can extrapolate the likely impact of reforms on the Italian economy. The above authors consider the administrative burden for companies that stems from mandatory information requirements. This measure is consistent with the so-called 'standard cost model' as approved by the EU Commission. They have estimated that for Italy, costs for total administrative requirements are in the range of 3.6-4.6% of GDP (48.5 – 61.9 billions of US dollars). Thus, a reform that reduces Italian administrative costs by 8.5 billion US dollars, equivalent to 0.5% of GDP, would ensure a GDP gain of 0.6-0.7 percentage points.

An efficient and accessible financial market favours productivity growth and investments. The reduction of capital cost, along with the possibility of investment diversification, facilitates the transformation of savings into investments. Increased outcomes, portfolio diversification, participation in industrial capital allow financing long-term productive growth and improving investment quality. Beside financial investment, investment in R&D and innovation also plays a crucial role. Investment in innovation is fundamental for technological progress, which influences growth via TFP. New knowledge, technologies and processes allow a more efficient use of productive factors, by pushing ahead the production frontier. At the same time, progress modifies the relative prices of production factors, and thus their volumes of use; it actually tends to favour a more intense use of capital factor. Moreover, technological investment is strictly correlated to labour quality growth. The introduction of more sophisticated productive techniques, along with transfers of knowledge and experience, are accompanied by knowledge diffusion and formation of human capital.

What are LAF indicators suggesting in the area of product and capital market regulations? The overall picture shows an improvement over the period under consideration. Yet, in level terms Italy still stands slightly below the EU15 average at the end of the period. What is puzzling is that, despite progress, the productivity performance has been dismal as indicated by the growth accounting exercise.

More in detail, the competition policy framework displays a broadly average performance versus the EU15, with low dispersion. With only a few exceptions, indicators are within one standard deviation from the EU15 average. In terms of level, the exceptions are related to the competition law and policy indicator on the positive side, while on the negative side are the average impact of regulation in non-manufacturing sectors, comparative price levels of final consumption by households and average mark-up for total industry (which is deeply negative).

Sector specific regulation shows a slightly negative relative performance in terms of level and a modest improvement in terms of change. This latter, however, is mainly driven down by the indicator of price of telecommunication, which as previously mentioned does not include the price of telephone calls when roaming charges apply. In the energy sector the negative performance in level is equally affected by prices indicators on electricity, which is mostly the result of higher production costs and not an indicator of performance. In terms of change, the market performance is on average positive.

Moving to market integration, the openness to trade and investment, indicators are broadly in line with the EU15, although some indicators are deeply negative. Among the most negative in level are: 1) trading across border, time and cost for import, 2) ownership barriers, 3) number of infringements cases open for misapplication of internal market rules, and 4) the export performance. Some of these indicators would deserve some qualification. In particular, the trading across border indicators (in the narrow list) are probably affected by Italy's geographical and logistic structure rather than related to openness to trade and investment. Therefore the overall level indicator, which is slightly negative, may unduly be affected by the selection of sub-indicators. Some of these same indicators turn positive if look at changes. It is worth noting the progress in the cost of import indicator and the number of infringements, as a result of substantial effort over the past few years to reduce infringements.

The business environment was still unfriendly relative to the EU15 in 2007, although there was some progress. The overall score is strongly affected by some indicators related to dealing of licences and enforcing contracts, which are on average about two standard deviations below the EU15 average. This is partly related to inefficiencies of the judicial system and the public administration. Many of these indicators show, however, some progress over the period under exam.

The indicators of business dynamics and start-up conditions are also sizably negative in level, especially as for the cost of closing and starting a business. The same indicators show some progress, with the exception of the time needed to close a business.

The indicator of financial markets and access to finance records a slightly negative performance in level and is flat in change. Some level indicators are nevertheless deeply negative such as the legal rights in getting credit or the access to financial services.

4.3 INNOVATION, KNOWLEDGE AND MACROECONOMY

Economic theory establishes a positive link between technological change, productivity and economic growth. Process innovation provides opportunities for cost reduction. Product innovation enhances either the range of available intermediate inputs for the production process, increasing real output, or increases the availability of consumer products with corresponding welfare gains. Indeed, the inputs of capital and labour alone cannot account for a large part of output growth in modern economies. The concept of TFP has been widely used as a measure to explain this residual. The total factor productivity residual has been related to the accumulation of a 'knowledge stock', which is not accounted for in the measurement of the conventional capital stock, but increases output via innovation and technological change. R&D expenditures have been suggested as a way of measuring this knowledge stock, and this has led to a range of works relating R&D expenditure to total factor productivity growth. This is consistent with the notion in 'new growth theory' of non-convexities of R&D and knowledge in output, which results in self-sustaining growth. The work of Griliches (1979, 1992) accounts for the notion that R&D not only provides productivity benefits for the firms that undertake it,

but also for other firms in similar or somehow related lines of business. This is the notion of R&D spillovers, indicating that the impact of innovation and technology is felt widely rather than being a private pay-off. A paper by Meister and Verspagen (2004) models the above notion by introducing an augmented Cobb-Douglas production function that includes, in addition to labour and capital, a variable that captures the stock of R&D expenditure. A similar approach is adopted in defining the production function in a study prepared by the European Commission (2004) to illustrate the impact of an increase in R&D expenditure. A particular feature of R&D policies is that their main effects take place over long time periods. These time periods represent the time taken for R&D investment to produce innovations and for these innovations to pervade the market. In the first years, GDP growth is mostly induced by increases in expenditure and employment linked to research. During this period, very little supply effects show up; private sector deficit increases (as the Lisbon strategy is mainly based on the private financing to research contribution) and the external balance worsens. In the long run, R&D investment foster innovations that substantially modify supply and demand conditions: process innovations enable a decrease in the prices of goods and services; product innovations increase the quality of goods and services. This enables a period of growth based on strong internal demand, competitiveness and the restructuring of economic activities towards knowledge-based productive sectors. All these effects are accounted for by the European Commission (2004) paper. The paper evaluates the impact of increasing total EU R&D spending to 3% of GDP in 2010 when compared to a status quo situation – i.e. no increase in R&D spending, thus remaining at 1.9% of GDP. In this study, GDP level would increase by 1.7 percentage points by 2010 (0.25 percentage points per year). TFP, employment and real income levels would increase by 0.8, 1.4 and 3.0 percentage points respectively. In the long run, the GDP level increases by 4.2, 7.5 and 12.1 percentage points in 2015, 2020 and 2030 respectively.

Griffith, R, Redding, S and Van Reenen, J (2000) give evidence on R&D effects on both rates of innovation and technology transfer, providing two potential fonts of productivity growth for countries behind the technological frontier (more is the distance from the frontier and greater is the increase in TFP growth).

By analysing the strong correlation between IT capital accumulation and labour productivity, Stiroh (2002) supports the idea that aggregate productivity' acceleration is a real event and not only a cyclical one; this implies a deeper relationship (as much as IT investment is widespread) between IT investment and productivity growth.

Other studies place more emphasis on the quality of R&D spending. Meister and Verspagen (2006), for instance, say that there should be more attention to the institutional context in which innovation and technological development take place. The effect of R&D spending depends on the structure of the economy. A word of caution is thus needed. Different technological specialisations among countries imply different needs for innovation, and thus, for R&D. Moreover, not all countries are at the leading edge of the technological frontier and Italy is probably in some sectors but not in others; a sudden boost in R&D spending might remain without effect in some countries, as their development is still based on catching-up and not yet on innovation. Spending on R&D, as well as in other inputs, should not be decided according to its marginal return.

Italy allocates 1.1% of GDP to R&D[5], one of the lowest levels in the EU. Moreover, the source of R&D financing comes more from the public sector in Italy than in the EU15. In the area of innovation and knowledge, Italy lags behind the rest of the EU15, despite good progress in 2001-2007. Growth in

[5] Source: ISTAT, latest data refers to 2005.

indicators has been supported by measures to: 1) expand venture capital markets by better integrating existing financial instruments to facilitate all forms of innovation, 2) enhance the functionality of the national patent system, 3) increase funds to support activities of companies based abroad and optimise the support for SMEs, 4) promote private spending on R&D, 5) implement the system of portals to facilitate the spread and effective use of ICT, and 6) increase synergies between universities and companies and promote technology transfer.

Progress was significant in the area of R&D and innovation in 2001-2007, although it was not enough to close the gap with EU15 countries. In ICT the score is average both in terms of level and growth, while for education and life-long learning the relative progress is modest and the negative level gap is still wide. More in detail, the indicator of science and technology graduates as a percentage of the population is significantly below the EU15 average, although there is significant progress. Venture capital activity is still underdeveloped, high-tech exports are a smaller share of total relative to the EU15. ICT expenditure is pretty low, household internet access is equally low, e-commerce is underdeveloped and the e-government usage by individuals is deeply below the EU15 average. Education and life-long learning show modest public and private expenditure on education per student relative to per capita GDP. The share of tertiary-educated employment over total employment is low and the PISA score is below the EU15 average. Yet, again, for most of these indicators the progress is substantial.

Taking into account all the above considerations and looking at the indicators of Table 2, we can conclude that there was substantial progress in 2001-2007, which in time may lead to enhanced economic growth, but this progress was not enough to lift Italy's level score and bring it into line with the EU15 average.

5 ASSESSMENT OF PRIORITIES

By applying the LAF methodology this section helps identify policy priorities and areas that need to be tackled to improve Italy's relative position vis-à-vis the EU15. It combines the assessments on GDP components with that on policy areas to highlight the most important reform priorities and policy challenges.

The link between GDP components and policy areas is based on the analysis of the relevant literature. For example, a survey of the economic literature establishes a theoretical link between older-worker participation and the following policy areas: ALMPs, making work-pay, job protection, specific labour supply measures for older workers and women. Grey areas in Table 3 represent the relationship between policies and components of growth as suggested by the economic literature. For instance, Table 3 shows that low labour-market participation can be reduced through policies intended to make work pay; these policies would also support TFP. In addition, the latter is supported by R&D spending and innovation, which improves labour quality and capital deepening. Education and life-long learning are important both for labour market participation and productivity.

Bringing together the results of the analysis of GDP components and that of policy and performance indicators, we can infer that the performance in the determinant of GDP could be attributed to a wide array of policy issues (see Table 4). More specifically, the analysis shows that the low participation rate could be accounted for by a set of specific underperforming policies, such as implementing active labour market policies, making work-pay, relaxing job protection, introducing specific labour supply measures for women and older-workers, increasing labour mobility and enhancing education and life-long learning. These policy indicators show mixed results for Italy. There is no significant relative improvement, with the exception of active labour market policies, and levels are in line or slightly below the EU15 average. Yet, with the exception of youth participation, there is overall progress in participation in 2001-2007, although not enough to bring it into line with the EU15 average. This may be explained by either lack of progress in other EU15 countries not properly reflected in negative policy indicators or with the lag effect of policies implemented in Italy in the second half of the 1990s.

As to labour quality, policy indicators more directly linked to this GDP component are market integration, in terms of openness to trade and investment, R&D and innovation, education and life-long learning. In level terms, these policy indicators all show negative signs, while there is some progress in all cases. This is in line with the GDP component that shows serious underperformance in terms of level, but also a modest improvement over the years.

R&D and innovation, education and life-long learning and business dynamics indicators show the most negative outcome in terms of level. These policy areas are linked to TFP where Italy significantly underperforms the EU15 both in level and growth. The performance in TFP is also affected by a number of other policies, notably a few labour market policies and all product and capital marker regulation policies as well as ICT. Not surprisingly, with the exception of policies that increase working time, these indicators are all negative or zero in terms of level. However, non-labour market indicators related to TFP also show some progress in 2001-2007. This may be explained by either some relative progress in TFP in other EU15 countries not properly reflected in positive policy indicators or with the lag effect of policies, especially regulatory changes, implemented before the period under observation.

Table 3. Link between GDP components and policy areas based on the economic literature

	Demographic components			Labour market components						Labour Productivity		
	Fertility / Native Population	Share of foreign population / Net Migration	Share of Working age Population	Youth Participation	25-54 Male Participation	25-54 Female Participation	55-64 Participation	Unemployment Rate	Average Hours Worked	Capital Deepening	Total Factor Productivity	Initial education of labour (Labour quality)
Active labour market policies				■	■	■	■	■				
Making work-pay: interplay of tax and benefit system				■	■	■	■	■			■	
Labour taxation to stimulate labour demand								■				
Job protection and labour market segmentation/dualisation				■	■	■	■	■			■	
Policies increasing working time									■		■	
Specific labour supply measures for women				■		■	■	■	■			
Specific labour supply measures for older-workers							■					
Wage bargaining and wage-setting policies								■				
Immigration and integration policies		■						■				
Labour market mismatch and labour mobility				■	■	■		■				
Competition policy framework								■		■	■	
Sector specific regulation (telecoms, energy)								■		■	■	
Business environment - Regulatory barriers to entrepreneurship								■		■	■	
Business Dynamics - Start-up conditions								■		■	■	
Financial markets and access to finance										■	■	
Market integration - Openness to trade and investment								■		■	■	■
R&D and Innovation										■	■	■
ICT										■	■	
Education and life-long learning				■	■	■	■	■			■	■
Orientation and sustainability of public finances										■		

Table 4. Policy areas likely responsible for GDP performance

Policy area	Level		Growth	
	(*)	GDP components involved	(*)	GDP components involved
Labour market				
Active labour market policies	S	Youth Participation 25-54 Female Participation 25-54 Male Participation 55-64 Participation		Youth Participation
Making work-pay: interplay of tax and benefit system	S	Youth Participation 25-54 Female Participation 25-54 Male Participation 55-64 Participation Total Factor Productivity	B	Youth Participation Total Factor Productivity
Labour taxation to stimulate labour demand	S			
Job protection and labour market segmentation/dualisation	B	Youth Participation 25-54 Female Participation 25-54 Male Participation 55-64 Participation Total Factor Productivity	S	Youth Participation Total Factor Productivity
Policies increasing working time		Total Factor Productivity		Total Factor Productivity
Specific labour supply measures for women	S	Youth Participation 25-54 Female Participation 55-64 Participation	S	Youth Participation
Specific labour supply measures for older workers	B	55-64 Participation		
Wage bargaining and wage-setting policies	S			
Immigration and integration policies	S	Net migration	B	
Labour market mismatch and labour mobility	B	Youth Participation 25-54 Female Participation 25-54 Male Participation		Youth Participation
Product and capital market regulations				
Competition policy framework	S	Total Factor Productivity Capital Deepening	S	Total Factor Productivity Capital Deepening
Sector specific regulation (telecoms, energy)	S	Total Factor Productivity Capital Deepening		Total Factor Productivity Capital Deepening
Market integration – Openness to trade and investment	S	Total Factor Productivity Capital Deepening Labour Quality		Total Factor Productivity Capital Deepening
Business environment – Regulatory barriers to entrepreneurship	B	Total Factor Productivity Capital Deepening		Total Factor Productivity Capital Deepening
Business Dynamics – Start-up conditions	B	Total Factor Productivity Capital Deepening	B	Total Factor Productivity Capital Deepening
Financial markets and access to finance	S	Total Factor Productivity Capital Deepening		Total Factor Productivity Capital Deepening
Innovation and Knowledge				
R&D and Innovation	B	Labour Quality		Total Factor Productivity Capital Deepening
ICT	S	Total Factor Productivity Capital Deepening		Total Factor Productivity Capital Deepening
Education and life-long learning	B	Youth Participation 25-54 Female Participation 25-54 Male Participation 55-64 Participation Labour Quality (Education) Total Factor Productivity	S	Youth Participation Total Factor Productivity
The macro economy				
Orientation and sustainability of public finances	S	Capital Deepening	S	Capital Deepening

(*) Existence of policy issue(s): B= 'Broad policy issue' means that the aggregate index shows underperformance (aggregate score is below -4 in Table 2), while S= 'Specific policy issue' indicates that only a set of sub-indicators shows underperformance.

6 MAPPING

Is there a match between the weaknesses highlighted by the LAF scores on the one hand, and Italy's own policy objectives and the EU and OECD policy recommendations on the other? This paragraph compares the LAF scores (level and growth) with Italy's own policy objectives as defined in the 'key challenges' of the National Reform Programme, the evaluation of policy areas by the European Commission, i.e. the 2007 Country Specific Recommendations (CSRs) and Points To Watch (PTW), as well as the 2007 OECD indicator-based and qualitative recommendations in 'Going for Growth'. In 2001-2007, Italy made progress mainly in those areas where the level scores show underperformance (Table 5). This seems to suggest that, broadly speaking, the right policy issues were addressed, but also that the progress achieved relative to the EU15 average was not enough to close the gap in terms of level. As a result, recent policy recommendations still insist on the weak areas where progress was most notable but also insufficient.

In particular, there are a Key Challenge, a Specific Recommendation and two Points to Watch in the labour market. The Key Challenge and the Specific Recommendation relate to labour taxation and mobility, in order to increase the efficiency of the labour market through added demand and a better match between supply and demand. Indicators show a broadly effective policy response and some relative underperformance in terms of growth accounting. Increased flexibility in wage determination, through stronger links between pay and productivity remains a priority according to the OECD.

The European Commission pays special attention to the regulation of product and capital markets, and recommends that Italy should pursue the implementation of structural reforms to ensure competitiveness and free access to goods and services markets. Policy indicators placing Italy in line with the European average confirm the small progress that was achieved and the results obtained in the areas of competition policies, sector-based regulation, market integration and regulatory barriers to entrepreneurship. The interest showed by the Commission – via a specific PTW – and the OECD in removing barriers to entry for new firms and encouraging start-ups is particularly relevant. On the whole, some progress was made in this macro area, but the reform process still needs to be strengthened.

Italy shows an innovation and knowledge deficit. More specifically, the progress in R&D made in 2001-2007, as suggested by the relative growth indicators, did not produce the desired effects in terms of productivity gains. It is thus not surprising that this area remains a key challenge for the country and is highlighted by a specific PTW. Education and training are also critical areas: here Italy posted only a minor relative improvement, which did not change significantly the underperformance in level highlighted by both structural indicators and growth accounting.

Table 5: Mapping the LAF scores with policy recommendations

	EU					OECD	
Policy areas	LAF scores in level	LAF scores in growth	Key challenges	CSR	PTW	Indicator-based	Qualitative
Labour market							
Active labour market policies	-3	10					
Making work-pay: interplay of tax and benefit system	0	-5					
Labour taxation to stimulate labour demand	-4	8		X		X	
Job protection and labour market segmentation/dualisation	-5	-3					
Policies increasing working time	13	3					
Specific labour supply measures for women	-3	-1			X		
Specific labour supply measures for older workers	-5	2			X		
Wage bargaining and wage-setting policies	0	6					X
Immigration and integration policies	-2	-7					
Labour market mismatch and labour mobility	-6	2	X				
Product and capital market regulations							
Competition policy framework	-1	1	X	X			X
Sector specific regulation (telecoms, energy)	-2	3	X	X			
Market integration - Openness to trade and investment	-2	2	X				
Business environment - Regulatory barriers to entrepreneurship	-8	3			X	X	
Business Dynamics - Start-up conditions	-11	-5					
Financial markets and access to finance	-4	0					
Innovation and knowledge							
R&D and Innovation	-8	9	X		X		
ICT	-1	1					
Education and life long learning	-8	2	X	X		X	
Macroeconomy							
Orientation and sustainability of public finances	-4	-1	X	X			
Environment and sustainable development			X		X		
Infrastructure			X		X		

7 SECTORAL PERFORMANCE

The above analysis considers the Italian economy as a whole; however, there is an important sectoral dimension. Could Italy's poor GDP and overall productivity performance be mostly attributed to unfavourable trends in one or more specific sectors?

A more detailed analysis carried out at (macro) sectoral level shows that the decline in productivity, with only a few exceptions, affects the whole Italian economy. Furthermore, changes in the mix of employment by sector, with employment shifting away from sectors with higher productivity to sectors with lower productivity (the typical employment outflow from the manufacturing to the services sector), had only a limited impact in relative terms.

With a view to highlighting sectoral trends at EU and international level, the European Commission sponsored a project for the development of a database known as EU KLEMS[6]. Various research centres were involved in the project. The version of the database published in March 2008 is very detailed in terms of its breakdown (up to 60 sectors) and covers almost 30 countries. However, thus far, the database contains only data through 2005 and these data are still subject to quality screening on the part of national statistical offices. Even bearing in mind this caveat, EU KLEMS data can help providing some preliminary indications on Italy's performance vis-à-vis the rest of Europe.

The EU KLEMS breakdown of growth is provided in Table 6. Italy's growth dynamics is measured with respect to the EU15ex aggregate[7] between 1995 and 2005. Estimates of growth components may differ with respect to those in the previous paragraph due to different time intervals and databases. The contribution of labour as a production factor is divided into a component based on the number of hours worked and another one based on labour quality (as determined by age and level of education). The contribution of the capital factor is represented by an ICT component and a non-ICT component. The contribution to growth due to changes in total factor productivity is proxied by the residual. A first level of analysis looks at the entire economy and six macro sectors: manufacturing, private services, financial services, distribution, electrical machinery and other industrial goods.

Results at the aggregate level are broadly consistent with the analysis in previous sections. In the period examined, Italy grew about 1 percentage point below the EU15ex (value added). This poor performance can be related to a productivity gap. The contribution of the capital factor to growth is broadly in line with the European average, i.e. there was no 'investment deficit'. Relative to the EU15ex, Italy shows a larger accumulation of the traditional capital goods component (non-ICT), in line with the country's production specialisation. The poor productivity performance is widespread, affecting all the macro sectors examined except financial services. The gap is particularly significant in manufacturing (-1.9 percentage points) and retailing (-1.5 percentage points). Repeating the analysis with a more detailed breakdown into 31 sectors gives some additional insight (Figure 2 and 3). The breakdown shows the shift in value added and contribution to growth of each production factor vis-à-

[6] The objective is to set up a database for analysing the sectoral productivity for the EU Member States, with a breakdown for contributions of capital (K), labour (L), energy (E), material (M) and service inputs (S).

[7] These are the countries for which data on capital stock is available for breaking down growth. The group includes all of the EU15 countries, except for Ireland, Greece, Luxembourg, Portugal and Sweden.

vis the EU15ex. Italy's gap in value added growth can be attributed to four sectors: real estate services, retail sales, optical and electrical equipment, and financial intermediation. By contrast, in the construction sector the gap is in Italy's favour. Total factor productivity declines across the board vis-à-vis the European average in almost all sectors examined. Particularly negative are the real estate sector, wholesale, and retail sales. Instead, there are some gains in public administration, healthcare and rental of machinery and equipment, and services to businesses. As to the contribution of labour, healthcare, public administration and education, these sectors show lower growth than the EU15ex, whereas use of labour increases in the mechanical industry, services to businesses, and wholesaling. These sectors achieve the best performance vis-à-vis the EU15ex average in terms of labour contribution to growth almost exclusively due to a higher number of hours worked rather than a better qualitative mix of labour. Several segments of the manufacturing sector, wholesaling, construction and services to businesses show relative good performance. Public administration, healthcare, education, retailing and farming and fishing experience a relative decline both in terms of the number of hours worked and the change in the mix of labour. The only sectors that show a qualitative improvement in labour, albeit a very minor one, vis-à-vis the European average, are construction, chemicals, rubber and plastic, mining and transportation supply. As for the contribution of capital, the gap vis-à-vis the European average widens in two sectors: rental of machinery and equipment and financial intermediation. By contrast, the wholesaling and real estate sectors improve their performance. Capital is mostly concentrated in non-ICT investments, thus showing that Italy's technological investment is still weak when compared with other countries. The only exception seems to be real estate activity.

Overall, these results are broadly consistent with the analysis implemented by using the LAF framework, although there are some useful additional sectoral insights. Further analysis on sectoral developments (that goes beyond the purpose of this paper) may provide useful hints on the reasons behind the mismatch between GDP performance and the progress recorded by structural indicators.

Table 6. Gross value added, growth and contributions, 1995-2005 (annual growth rates)

(annual growth rates*, %)	VA	L	H	LC	K	KIT	KNIT	MFP
	(1)=(2)+(5)+(8)	(2)=(3)+(4)	(3)	(4)	(5)=(6)+(7)	(6)	(7)	(8)
ITALY								
Market economy*	1.2	0.8	0.7	0.2	1.0	0.3	0.8	-0.7
Electrical machinery, postal and tele-communications services	4.4	-0.2	-0.2	0.1	1.9	0.5	1.4	2.7
Manufacturing excluding electrical equipment	-0.7	-0.3	-0.4	0.1	0.7	0.2	0.6	-1.2
Other goods producing industries**	1.3	0.4	0.2	0.2	1.1	0.1	1.0	-0.1
Distribution services	1.2	0.8	0.4	0.3	1.3	0.3	1.1	-0.9
Financial and business services***	2.9	2.6	2.4	0.2	0.7	0.6	0.2	-0.4
Personal and social services***	0.9	1.7	1.6	0.1	1.2	0.3	1.0	-2.0
EU15								
Market economy**	2.2	0.6	0.4	0.2	1.2	0.6	0.6	0.4
Electrical machinery, postal and telecommunications services	5.5	-0.4	-0.6	0.2	1.7	1.2	0.5	4.1
Manufacturing excluding electrical equipment	0.8	-0.4	-0.7	0.3	0.6	0.3	0.3	0.7
Other goods producing industries**	1.1	0.0	-0.1	0.2	0.7	0.1	0.6	0.4
Distribution services	2.3	0.6	0.5	0.1	1.1	0.4	0.7	0.6
Financial and business services***	3.6	2.2	1.9	0.3	2.2	1.3	0.9	-0.8
Personal and social services***	1.7	1.5	1.4	0.1	1.0	0.3	0.7	-0.8

* Unmatching sums are due to rounding effects, ** excluding agriculture, *** excluding private households
VA= Gross Value Added growth
L= Contribution of Labour input growth
H= Contribution of Total hours worked
LC= Contribution of Labour composition
K= Contribution of Capital input growth
KIT= Contribution of ICT capital
KNIT= Contribution of Non-ICT capital
MFP= Contribution of Multi factor productivity growth

Figure 2a. Contributions to value added growth

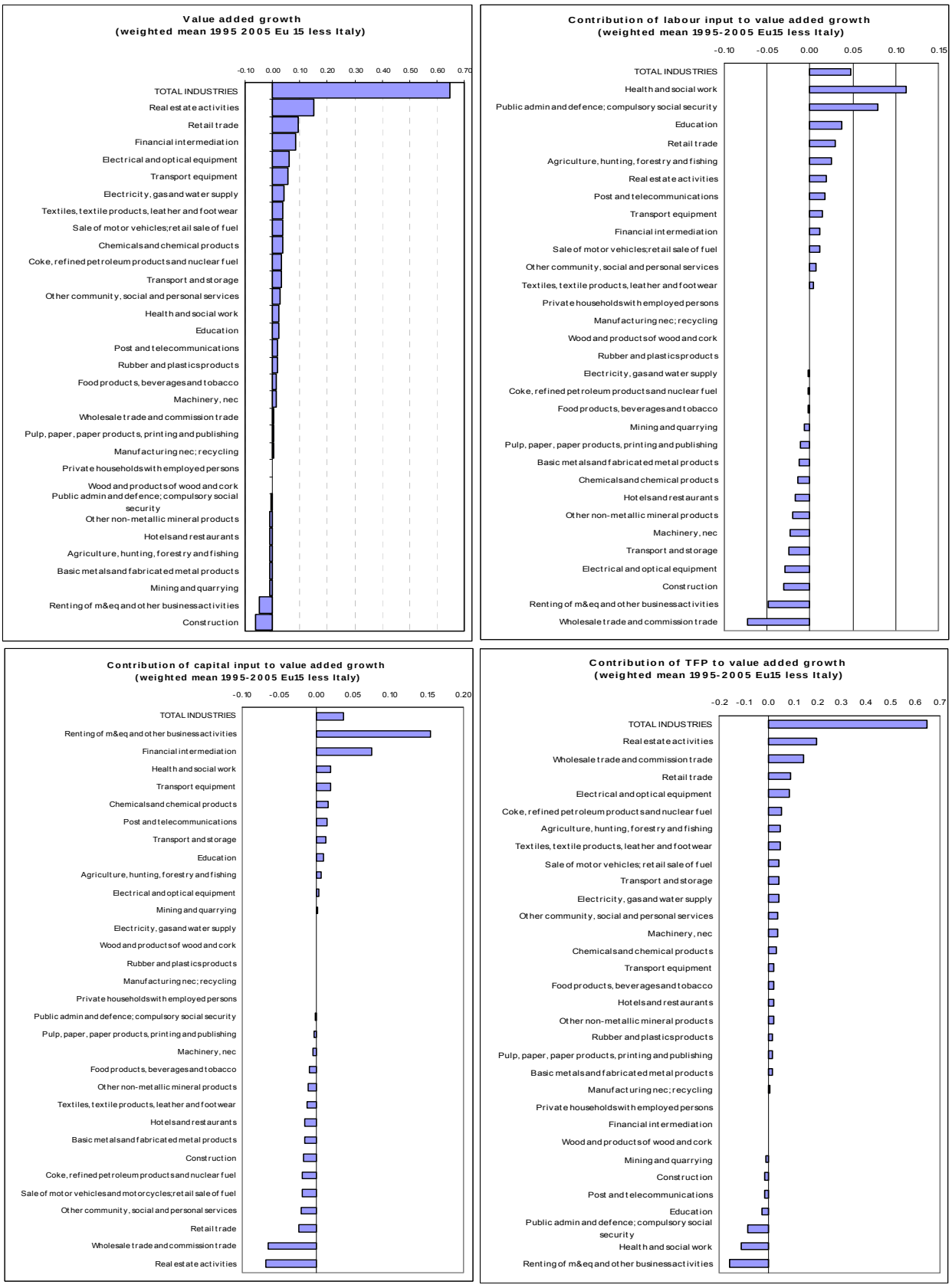
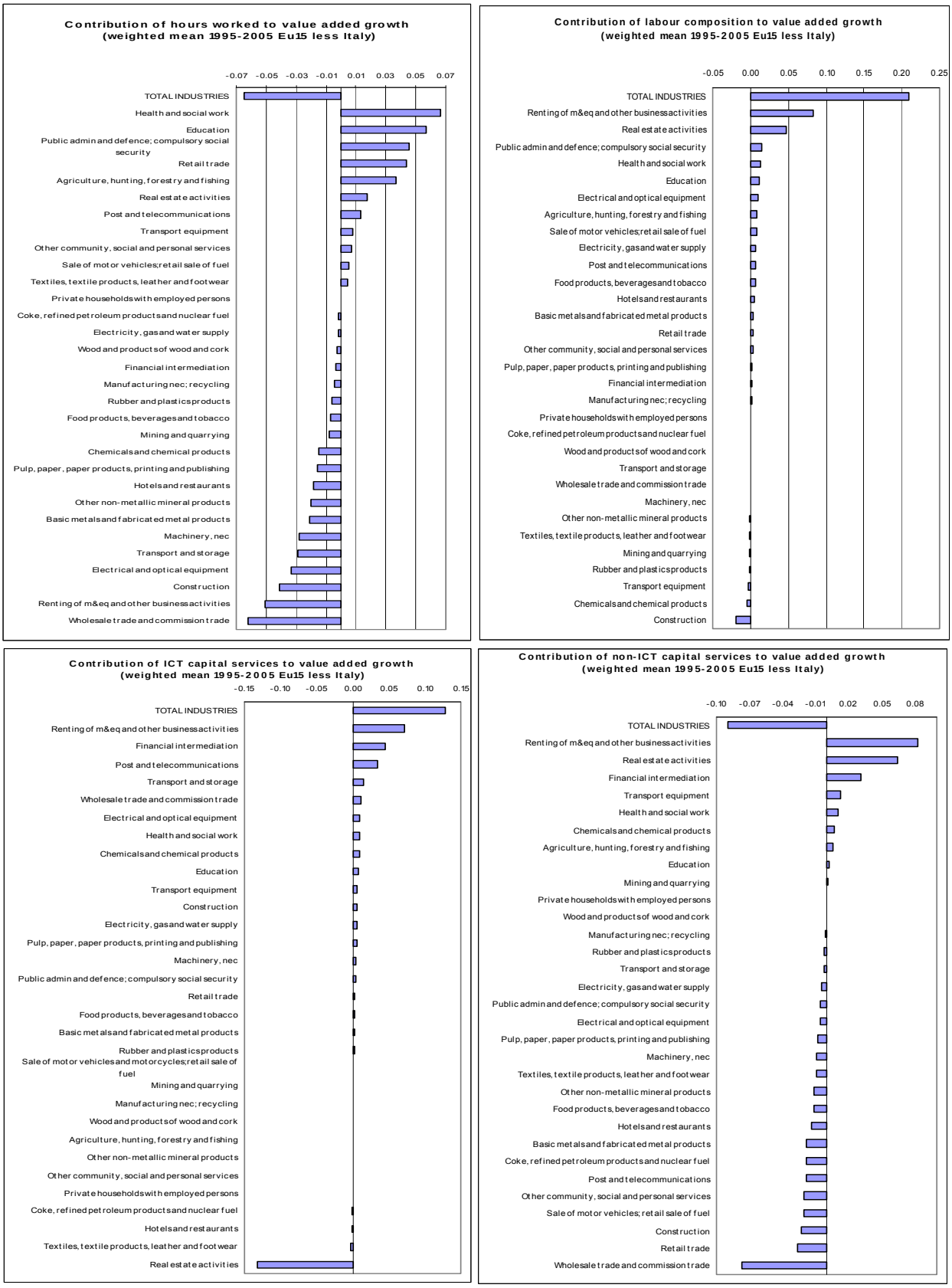


Figure 2b. Contributions to value added growth



8 CONCLUSIONS

Italy's GDP growth significantly underperformed that of the EU15 in 2001-2007, notwithstanding greater progress in reforms. This appears to be the main message from the analysis of growth accounting and structural indicators.

Growth accounting shows that modest GDP growth, with a gap of almost 1 percentage point versus the EU15, was explained by dismal productivity performance. This performance was accompanied by low, even negative, changes in total factor productivity. Besides, the contribution of employment was positive as was that of the participation and unemployment rates. Also the contribution of the working-age population turned positive due to intense migration flows, while GDP growth was slightly dragged down by the number of hours worked.

The decline in both total factor productivity and the number of hours worked may partly reflect positive developments in the labour market, which appear to be the most relevant phenomenon in the period considered. Following major changes in the second half of the 1990s, the reform process continued in 2001-2007. The increase in labour flexibility and cheaper labour relative to capital as a factor of production prompted substantial hiring, probably at the expense of lower marginal productivity, suggesting a possible trade-off between these two components. This factor, however, would only partly explain the developments that occurred. Leaving aside the performance of the labour market, sectoral and regional differences also provide some hints on possible reasons behind Italy's poor GDP growth performance.

The analysis of structural indicators show that there was progress in reforms in 2001-2007 as against the EU15, although this appears to have had little impact on economic growth or on its components in relative terms. Relative progress was moderate in labour market indicators, following notable improvement in previous years, and in product and capital market regulations and innovation and knowledge. In both areas, the relative performance in level is unsatisfactory.

According to LAF, Italy made a slightly bigger effort than other countries on the reform side. Yet its economic performance was relatively dismal. Comparative analysis of GDP components and structural indicators cancel cyclical and structural phenomena that are common to EU15 countries. Leaving aside some possible asynchrony, relative performance should thus highlight only country-specific factors. This leaves few possible answers. First, the reform process in Italy started later than in other EU15 countries, and thus the effects may have yet to come. Second, it could be that reforms are not as effective in stimulating economic activity as the economic literature suggests, and this may be especially true for Italy due to country-specific reasons. Reforms take place in a particularly difficult environment in Italy, which make them less effective. This would mean that a lot more needs to be done for reforms to produce visible results. Third, this may suggest that, despite the analytical work done in selecting structural indicators and the effort of statistical offices in recording economic phenomena, there are still measurement problems to be solved. Finally, it may be a combination of the above. More research is needed into Italy's reform process.

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ANNEX

DETAILED ANALYSIS OF EACH POLICY AREAS ACCORDING TO LIME METHODOLOGY

These tables break down each overall aggregate score in Table 2 into its policy and performance component scores. The grey area highlights indicators that are included in the narrow list . All other indicators in the wider list are excluded from the aggregate scores for statistical inaccuracies or breaks in the series. Some indicators may be missing for some countries and particular care should be paid to breaks in the series (for example, some LFS series were affected by methodological changes, thereby reducing the comparability of these series). So the symbols "+" and "-" signal the level of statistical accuracy of the indicators (good or limited). Finally, we report the time coverage of the series and the weight used in the calculation of aggregate score (used to avoid indicator redundancy and high correlation between some indicators).

Active labour market policies

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
ALMP expenditure as % of GDP (+)	pol	2000-2006		-3	↓	9
Number of participants in LMP (categories from 2-7) measures divided by the number of persons wanting to work (+)	pol	2004-2006	1/3	-5		
Active LMP expenditure per person wanting to work (+)	pol	2004-2006	1/3	-5	↓	4
Passive LMP expenditures as % of GDP (-)	pol	2000-2006		7	↓	-6
Passive LMP expenditures per person wanting to work (-)	pol	2004-2006		9	↓	-9
Employment service expenditure per person wanting to work (+)	pol	2004-2006		-11	↓	-3
Proportion of the unemployed in education and training (+)	pol	2000-2007		-4	↑	-4
Proportion of the inactive in education and training (+)	pol	2000-2007		-3	↓	-8
Long-term unemployment rate (-)	perf	1999-2007	1/3	-1	↑	16
Youth unemployment ratio (-)	perf	2000-2007	1/3	6	↑	19
Employment rate - 15-64 age group-Pre-primary, primary and lower secondary education - levels 0-2 (ISCED 1997) (LFS) (%) (+)	perf	1999-2007	1/3	-8	↑	2
Ratio of active to passive LMP expenditures (+)	pol	2000-2006		7	↓	-5
Regular activation in training (EMCO 19M2) (+)	pol	2006	1/3			
Aggregate score (based on the Narrow list)				**-3**		**10**

Making work-pay: interplay of tax and benefit system

	Characteristics of indicator			Results		
	Type	Time period	Aggr weights	Level relative to EU15	Change	
					Abs	Relative EU15
Unemployment benefit duration, months (-median of the min-max range) (-)	pol	2004		9		
Unemployment benefit duration, months (Taxing Wages Report (2006) and MISSOC database 2004 -max range) (-)	pol	2004		11		
Average unemployment benefit duration (years) (OECD) (-)	pol	2003		8		
Job availability requirement index (Søren Hasselpflug, "Availability criteria in 25 countries", Danish Finance Ministry Working Paper n°12/2005) (+)	pol	2004		-2		
Unemployment trap (low wage-earner): Marginal effective tax rate for an unemployed person (67% AW, single person) (-)	pol	2001-2007	1/8	5	↓	-23
Unemployment trap (average wage-earner): Marginal effective tax rate for an unemployed person (100% AW, single person) (-)	pol	2001-2007	1/8	-5	↓	-14
Inactivity trap (low wage-earner): Marginal effective tax rate when moving from social assistance to work (67% AW, single person) (-)	pol	2001-2007	1/8	17	↓	-6
Inactivity trap (average wage-earner): Marginal effective tax rate when moving from social assistance to work (100% AW, single person) (-)	pol	2001-2007	1/8	16	↓	-5
Net Replacement Rates for unemployed persons (67% AW, single person) (-)	pol	2001-2007		2	↓	-22
Net Replacement Rates for unemployed persons (100% AW, single person, after 7 months) (-)	pol	2001-2007		2	↓	-23
Average unemployment benefit replacement rate (%) (OECD) (-)	pol	2003		-2		
Long-term unemployment rate (-)	perf	1999-2007	1/2	-1	↑	16
Unemployment rate - 15-64 age group- Pre-primary, primary and lower secondary education - levels 0-2 (ISCED 1997) (%) (-)	perf	1999-2007		8	↑	9
Employment rate - 15-64 age group-Pre-primary, primary and lower secondary education - levels 0-2 (ISCED 1997) (LFS) (%) (+)	perf	1999-2007		-8	↑	2
Labour reserve (total) EMCO19A9 (-)	perf	2005-2007	1/2	-22	↓	-20
Net Replacement Rates for unemployed persons (100% AW, single person, after 13 months) (-)	pol	2001-2007		21	=	-12
Unemployment trap (low wage-earner): Marginal effective tax rate for an unemployed person (67% AW, one-earner couple with 2 children) (-)	pol	2001-2007	1/8	14	↓	-10
Unemployment trap (average wage-earner): Marginal effective tax rate for an unemployed person (100% AW, one-earner couple with 2 children) (-)	pol	2001-2007	1/8	-1	↓	-12
Inactivity trap (low wage-earner): Marginal effective tax rate when moving from social assistance to work (67% AW, one-earner couple with 2 children) (-)	pol	2001-2007	1/8	22	↑	-1
Inactivity trap (average wage-earner): Marginal effective tax rate when moving from social assistance to work (100% AW, one-earner couple with 2 children) (-)	pol	2001-2007	1/8	20	↑	-1
Aggregate score (based on the Narrow list)				**0**		**-5**

Labour taxation to stimulate labour demand

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Tax rate on low wage earners: Tax wedge on labour cost (single earner) (-)	pol	1999-2007	1/4	-2	↑	14
Implicit tax rate on employed labour (-)	pol	1999-2006	1/4	-10	↑	4
Social security paid by employer as a % of total labour costs . Industry and services (excluding public administration) (-)	pol	1999-2006				
Undeclared work (national sources-early 2000s) (-)	perf	2003		-6		
Unemployment rate - 15-64 age group- Pre-primary, primary and lower secondary education - levels 0-2 (ISCED 1997) (%) (-)	perf	1999-2007		8	↑	9
Youth unemployment ratio (-)	perf	2000-2007		6	↑	19
Long-term unemployment rate (-)	pol	1999-2007		-1	↑	16
Tax rate on average wage earners: Tax wedge on labour cost (single earner) (-)	pol	2001-2007	1/4	-2	↑	2
Total tax wedge (including employers SSC) Married couple with 2 children, 100% and 67% of AW (OECD) (-)	pol	2001-2007	1/4	-1	↑	10
Aggregate score (based on the Narrow list)				**-4**		**8**

Job protection and labour market segmentation/dualisation

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Regular EPL (Overall strictness of protection against dismissals) (-)	pol	2006		7		
Temporary EPL (Overall strictness of regulation) (-)	pol	2006		-2		
Youth unemployment ratio (-)	perf	2000-2007	1/2	6	↑	19
Indicator of fluidity in the labour market : Proportion of the Long term unemployed over total unemployment (-)	perf	2000-2007	1/2	-6	↑	12
Unemployment rate - 15-64 age group- Pre-primary, primary and lower secondary education - levels 0-2 (ISCED 1997) (%) (-)	perf	1999-2007		8	↑	9
Share of employees with a contract of limited duration (annual average) (-)	perf	1999-2007		2	↓	-9
Involuntary temporary employment (who could not find permanent job) as % of total employment (LFS) (-)	perf	1999-2007	1	0	↓	-8
Involuntary Part-Time employment as % of total employment (LFS) (-)	perf	1999-2007	1	-6	↓	-12
Transition from fixed-term employment to permanent employment (2001) (%) (-)	perf	2001		-4		
In-work-poverty risk (-)	perf	2003-2007	1	-12	↓	-9
Undeclared work (national sources-early 2000s) (-)	perf	2003		-6		
Aggregate score (based on the Narrow list)				**-5**		**-3**

Policies increasing working time

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Low-wage (poverty) trap : disincentives to work longer or earn more (One earner couple with two children) (EMCO 19M6, STRIND) 2001-2007 (-)	pol	2001-2007	1/2	21	↑	13
Low-wage trap : disincentives to work longer or earn more (Single person with no children) (EMCO 19M6, STRIND) 2001-2007 (-)	pol	2001-2007		11	↓	-7
Low-wage trap for second-earner income (first earner: 67% APW; second earner: 33% to 67%) (-)	pol	2001-2007	1/2	-10	↓	-21
Weekly usual working time (men) (+)	perf	1999-2007		-5	↑	10
Weekly usual working time (women) (+)	perf	1999-2007		-18	↑	13
Annual average working time (+)	perf	2000-2007		10	↓	3
Share of overtime workers (men) (+)	perf	2000-2007		-8	↑	1
Share of overtime workers (women) (+)	perf	2000-2007	1	-8	↑	5
Serious accidents at work (-)	perf	1999-2005		4	↑	7
Fatal accidents at work (-)	perf	1999-2005		11	↑	0
Aggregate score (based on the Narrow list)				**13**		**3**

Specific labour supply measures for women

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Childcare (0-2 years) for less than 30 hours (+)	pol	2004-2006	1/4	-7	↑	3
Childcare (0-2 years) for 30 hours and more (+)	pol	2004-2006	1/4	3	=	0
Childcare (3 years to compulsory school age) for less than 30 hours (+)	pol	2004-2006		-14	↓	-1
Childcare (3 years to compulsory school age) for 30 hours and more (+)	pol	2004-2006	1/4	14	↓	-7
Childcare (compulsory school age up to 12 years) for less than 30 hours (+)	pol	2005-2006		-11	↑	8
Childcare (compulsory school age up to 12 years) for 30 hours and more (+)	pol	2005-2006	1/4	13	↓	0
Number of months of maternity/paternity/parental leave with benefits replacing at least 2/3 of salary (+)	pol	2005		4		
Inactivity trap for the second member of a couple (first earner: 67% APW; second earner: social assistance to 33%) (-)	pol	2001-2007	1/2	1	↑	1
Low-wage trap for second-earner income (first earner: 67% APW; second earner: 33% to 67%) (-)	pol	2001-2007	1/2	-10	↓	-21
Life-long learning. For women (+)	pol	1999-2007	1	-6	↑	-7
Female employment rate (%) (+)	perf	1999-2007	1/3	-18	↑	4
Gender pay gap in unadjusted form (-)	perf	1999-2006	1	11		
Gender segregation in occupations (-)	perf	2000-2007		17	↓	-13
Gender segregation in sectors (-)	perf	2000-2007		8	↓	-17
Unemployment gender gap (-)	perf	2000-2007		-8	↑	13
Employment impact of parenthood for women (-)	perf	2000-2007		9	↓	-5
Employment gender gap in full-time equivalent (-)	perf	2000-2007	1/3	-11	↑	-7
Female part-time workers in % of total female employment (+)	perf	1999-2007	1	-8	↑	15
Involuntary female part-time employment as a percentage of female part-time employment (-)	perf	1999-2007		-14	↓	-2
Female Activity rate (15 to 64 years) (Eurostat) 1999-2007 (+)	perf	1999-2007		-20	↑	-1
The difference in employment rates between men and women in % (-)	perf	2000-2007	1/3	-16	↑	0
Aggregate score (based on the Narrow list)				**-3**		**-1**

Specific labour supply measures for older-workers

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Implicit tax on continued work(+)	pol	2006	1	-3		
Coverage of early retirement (-)	pol	1999-2006	1	0	=	10
Life-long learning: Participation of the population aged 55-64 in education and training(+)	pol	2000-2007	1/2	-5	↑	-6
Life-long learning: Participation of the population aged 45-54 in education and training (EMCO 23M4)(+)	pol	2000-2007	1/4	-6	↑	4
Difference between employment rate of older workers aged 55 to 64 and total 15-64- Men (+)	perf	1999-2007	1/4	-11	↑	-11
Difference between employment rate of older workers aged 55 to 64 and total 15-64- Women (+)	perf	1999-2007	1/4	-7	↓	-7
Average exit age from the labour force- total(+)	perf	2001-2007	1/2	-8	↑	14
Activity rate (55 to 64 years) (Eurostat) 1999-2006 (+)	perf	1999-2007		-15	↑	-9
Employment rate of older workers aged 55 to 64- Total (+)	perf	1999-2007	1/4	-14	↑	-10
Aggregate score (based on the Narrow list)				**-5**		**2**

Wage bargaining and wage-setting policies

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Wage moderation						
Real unit labour cost growth (%) (-)	perf	2000-2007	1/2	2	↑	0
Nominal unit labour cost growth (-)	perf	2000-2007	1/2	3	↑	5
Wage differentiation						
Relative minimum-wage levels (-)	pol	2000-2006				
Full-time employees on the minimum wage - (%) (Proportion of full-time employees earning the minimum wage)-Eurostat- Earning-Newcronos 1999-2007 (-)	pol	1999-2007				
Nominal unit wage cost gap between services and manufacturing industry (-)	perf	2006		14		
Low-skilled unemployment gap relative to the high-skilled unemployment rate (-)	perf	1999-2007	1/2	12	↑	8
Dispersion of regional unemployment rates (-)	perf	2000-2007	1/2	-16	↑	11
Aggregate score (based on the Narrow list)				**0**		**6**
Sub aggregate I				**2**		**2**
Sub aggregate II				**-2**		**10**

Immigration and integration policies

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Share of employed foreign-born population over total population (+) (OECD-Eurostat-2008)	perf	2005-2006	1	-18	↑	-8
Share of foreign population over total population (Citizenship criterion) (+)	perf	1999-2007		-7	↑	4
Share of foreign-born population over total population (Birth Place criterion) (+)	perf	1999-2007				
Employment rate gap between non EU and EU nationals (EMCO 19.M5)(-)	perf	2005-2007	1/2	14	↓	-14
Difference between unemployment rates of nationals and non-EU nationals (-)	perf	2005-2007		9	↓	-6
Difference between nationals and non-EU25 nationals participation rates(+)	perf	2005-2007		13	↑	4
Difference between foreigners and nationals in the share of those with less than upper secondary education(+)	perf	2003				
Employment rate gap between EU born and non-EU born (EMCO19.M5) (-)	perf	2005-2007	1/2	14	↓	-11
Employment rate of foreign-born (% foreign-born population) (OECD, 2008) (+)	perf	2005-2006	1/2	6	↑	5
Proportion of foreign-born population with primary education (% total foreign-born population) (OECD 2008) (-)	perf	2005	1/4	-8		
Proportion of foreign-born population with tertiary education (% total foreign-born population) (OECD 2008) (+)	perf	2005	1/4	-10		
Crude rate of net migration (including corrections)(+)	perf	1999-2007		8	↑	14
Difference between native-borns and foreign-born of the share of those with primary education (-)	perf	2005		10		
Aggregate score (based on the Narrow list)				**-2**		**-7**

Labour market mismatch and labour mobility

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Change in the sectoral employment shares (Shift-share indicator based on 10 sectors: half the sum of the absolute changes of the employment shares across all sectors). (+)	perf	2000-2007	1	-8	↑	-7
Mismatch by education (Variance of relative unemployment rate by educational attainment - ISCED decomposition)(-)	perf	1999-2007	1	6	↑	3
Dispersion of regional employment rates, male 15-64, NUTS2 (-)	perf	2000-2007		-20	↑	-3
Dispersion of regional employment rates, female 15-64, NUTS2 (-)	perf	2000-2007		-23	↑	12
Dispersion of regional (NUTS level 2) unemployment rates of age group 15-64 (%) (-)	perf	2000-2007		-16	↑	12
Dispersion of regional (NUTS level 3) unemployment rates of age group 15-64 (%) (-)	perf	2000-2007	1	-16	↑	11
Vacancies per 1000 unemployed (EMCO 20A2)(-)	perf	2001-2007	1			
Change in sectoral composition of unemployment (shift share) between 2007 and 2000 - Men (Eurostat, 3 sectors: services, industry and agriculture)	perf	2007		-5		
Change in sectoral composition of unemployment (shift share) between 2007 and 2000 - Women (Eurostat, 3 sectors services: industry and agriculture)	perf	2007		12		
Aggregate score (based on the Narrow list)				**-6**		**2**

Competition policy framework

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Total State aid - as a percentage of GDP (STRIND tsier100) (-)	pol	1999-2006	1/2	7	↑	6
Sectoral and ad hoc State aid - as a percentage of GDP (STRIND tsier100) (-)	pol	1999-2006	1/2	4	↑	-2
Public procurement - Value of public procurement which is openly advertised, % GDP (STRIND tsier090) (+)	pol	1999-2006	1/2	-1	↑	1
Public procurement - Value of public procurement which is openly advertised, as a percentage of total public procurement (+)	pol	1999-2006	1/2	2	↑	1
Barriers to competition - Legal barriers (OECD) (-)	pol	2003		-8		
Barriers to competition - antitrust exemptions (OECD) (-)	pol	2003		5		
State control - Involvement in business operation (OECD) (-)	pol	2003		-8		
Regulation impact - average impact of regulation in non-manufacturing sectors (post and telecom ; energy, finance, transport, distribution, business services) on other industries (OECD) (-)	pol	1999-2003		-11		
The competition law and policy indicator - Indicator scale of 0-6 with 6 designating an overall framework least conducive to competition.(OECD: Høj et al., 2007) (-)	pol	2003		12		
Comparative price levels - comparative price levels of final consumption by private households including indirect taxes (EU-27=100) (STRIND tsier010) corrected for wealth effect (-)	perf	1999-2007	1	-10		
Average Mark up - Total industry based on Euklems data (DG ECFIN) (-)	perf	2004		-21		
Aggregate score (based on the Narrow list)				**-1**		**1**

Sector specific regulation (telecom, energy)

	Characteristics of indicator			Results		
	Type	Time period	Aggr weights	Level relative to EU15	Change	
					Abs	Relative EU15
Telecom						
Market share of the incumbent in fixed telecommunications - local calls (including calls to the Internet) - as a percentage of the total market (STRIND tsier070) (-)	perf	2001-2005		-2		
Market share of the incumbent in fixed telecommunications - long distance calls - as a percentage of the total market (STRIND tsier070) (-)	perf	2001-2005		-11		
Market share of the incumbent in fixed telecommunications - international calls - as a percentage of the total market (STRIND tsier070) (-)	perf	2001-2005		4		
Average of the market share of the incumbent in fixed telecom (local, national, international) own calculations using STRIND indicators (-)	perf	2001-2005	1	-2		
Market share of the leading operator in mobile telecommunication - as a percentage of the total market (STRIND tsier080) (-)	perf	2001-2005	1	-2		
Price of telecommunications - local calls - Price level and evolution in the telecommunications market (in Euro per 10 min call) (STRIND tsier030) (-)	perf	1999-2006	1/3	12	↑	-4
Price of telecommunications - national calls - Price level and evolution in the telecommunications market (in Euro per 10 min call) (STRIND tsier030) (-)	perf	1999-2006	1/3	-17	↑	-14
Price of telecommunications - calls to USA - Price level and evolution in the telecommunications market (in Euro per 10 min call) (STRIND tsier030) (-)	perf	1999-2006	1/3	-4	↑	-4
Energy						
Market share of the largest generator in the electricity market - as a percentage of the total generation (STRIND tsier060) (-)	perf	1999-2006	1	4	↑	15
Electricity prices - industrial users - Price level and evolution in the electricity market (in Euro per kWh) (STRIND tsier040) (-)	perf	1999-2007	1/2	-11	↓	-9
Electricity prices - households - Price level and evolution in the electricity market (in Euro per kWh) (STRIND tsier040) (-)	perf	1999-2007	1/2	-17	↓	4
Gas prices - industrial users - Price level and evolution in the gas market (in Euro per Gigajoule) (STRIND tsier050)(-)	perf	1999-2007	1/2	3	↓	2
Gas prices - households - Price level and evolution in the gas market (in Euro per Gigajoule) (STRIND tsier050)(-)	perf	1999-2007	1/2	3	↓	9
Other						
Indicator of regulatory conditions in retail distribution - Barriers to entry - (OECD) (-)	pol	2003		3		
Indicator of regulatory conditions in retail distribution - Operational restrictions - (OECD) (-)	pol	2003		8		
Indicator of regulatory conditions in retail distribution - Price controls - (OECD) (-)	pol	2003		-2		
Regulatory conditions in professional services sectors (Accounting, Architect, Engineer, Legal) (OECD) (-)	pol	2003		-15		
Aggregate score (based on the Narrow list)				**-2**		**3**
Sub aggregate I				**-2**		**-7**
Sub aggregate II				**-2**		**6**
Sub aggregate II						

Market integration - Openness to trade and investment

	Characteristics of indicator			Results		
	Type	Time period	Aggr weights	Level relative to EU15	Change	
					Abs	Relative EU15
Barriers to trade and investment indicators - Ownership barriers (OECD) (-)	pol	2003		-17		
Barriers to trade and investment indicators - Discriminatory procedures (OECD) (-)	pol	2003		-5		
Barriers to trade and investment indicators - Regulatory barriers (OECD) (-)	pol	2003		8		
Barriers to trade and investment indicators - Tariffs (OECD) (-)	pol	2003		0		
Foreign direct investment restrictiveness indicator - Indicator scale of 0-1 from least to most restrictive (OECD) (-)	pol	2006		5		
Number of infringements cases open - Open infringement cases for misapplication of Internal Market rules (DG MARKT, IM Scoreboard) (-)	pol	2005-2007		-18	↑	13
Average transposition delay in months for overdue directives - in months (DG MARKT, IM Scoreboard) (-)	pol	2005-2007		1	↑	-3
Single market directives - % implemented (DG MARKT, IM Scoreboard) (+)	pol	1999-2007		-3	↑	4
Number of 2 years overdue directives (DG MARKT, IM Scoreboard) (-)	pol	2002-2007		-7	↓	-15
Trading Across Borders - Documents for import (number) (World Bank Doing Business) (-)	pol	2005-2008		-2	=	-4
Trading Across Borders - Cost to import (US$ per container) (World Bank Doing Business) (-)	pol	2005-2008	1/2	-8	↓	10
Trading Across Borders - Time for import (days) (World Bank Doing Business) (-)	pol	2005-2008	1/2	-16	=	-6
Protecting Investors - Disclosure Index (World Bank Doing Business) (+)	pol	2005-2008		0	=	-2
Protecting Investors - Director Liability Index (World Bank Doing Business) (+)	pol	2005-2008		-3	=	-2
Protecting Investors - Shareholder Suits Index (World Bank Doing Business) (+)	pol	2005-2008		3		
Protecting Investors - Investor Protection Index (World Bank Doing Business) (+)	pol	2005-2008		0	=	-2
Market integration - trade integration of goods - Average value of imports and exports of goods divided by GDP, multiplied by 100 (STRIND tsier120) (+)	perf	1999-2007	1/2	6	↑	4
Market integration - Trade integration of services - Average value of imports and exports of services divided by GDP, multiplied by 100 (STRIND tsier120) (+)	perf	1999-2007	1/2	2	↑	0
Market integration - Foreign Direct Investment intensity - Average value of inward and outward Foreign Direct Investment flows divided by GDP, multiplied by 100 (STRIND tsier130) (+)	perf	1999-2006	1	0	↑	1
Exports of goods and services at 2000 prices - National currency; annual percentage change (AMECO) (+)	perf	1999-2008		-18	↑	12
Growth of direct investment inward stocks by main origin of investment, (million ECU/EUR), partner: All countries of the world (Eurostat) (+)	perf	2000-2006		9	↑	9
Aggregate score (based on the Narrow list)				**-2**		**2**

Business environment - Regulatory barriers to entrepreneurship

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Registering Property - Procedures (number) (World bank doing business) (-)	pol	2004-2008	1/3	-10	=	-2
Registering Property - Time (days) (World bank doing business) (-)	pol	2004-2008	1/3	4	=	-7
Registering Property - Cost (% of property value) (World bank doing business) (-)	pol	2004-2008	1/3	17	↑	2
Paying Taxes - Payments (number) (World bank doing business) (-)	pol	2005-2008		-8	=	-4
Paying Taxes - Time (hours) (World bank doing business) (-)	pol	2005-2008		-19	↑	3
Paying Taxes -Total tax rate (% profit) (World bank doing business) (-)	pol	2005-2008		-15	↑	9
Dealing with Licenses - Procedures (number) (World bank doing business) (-)	pol	2005-2008	1/2	0	=	1
Dealing with Licenses - Time (days) (World bank doing business) (-)	pol	2005-2008		-14	=	-8
Dealing with Licenses - Cost (% of income per capita) (World bank doing business) (-)	pol	2005-2008	1/2	-19	↑	9
Enforcing Contracts - Procedures (number) (World bank doing business) (-)	pol	2003-2008	1/3	-17	=	-4
Enforcing Contracts - Time (days) (World bank doing business) (-)	pol	2003-2008	1/3	-24	↑	22
Enforcing Contracts - Cost (% of debt) (World bank doing business) (-)	pol	2003-2008	1/3	-17	=	4
Regulatory and administrative opacity (OECD) (-)	pol	2003		13		
Regulation impact - average impact of regulation in non-manufacturing sectors (post and telecom ; energy, finance, transport, distribution, business services) on other industries (OECD) (-)	pol	1999-2003		-11		
Propensity towards entrepreneurship - Total population considering self-employment (in %) (European Commission, Flash Eurobarometer) (+)	perf	2004-2007		16		
Business demography - Survival rate - The percentage of all real enterprise births of year n which are still active in year n+2 (STRINDer082) (+)	perf	2000-2006		-2		
Aggregate score (based on the Narrow list)				**-8**		**3**

Business Dynamics - Start-up conditions

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Starting a Business - Reported time (minimum in days) (DG ENTR) (-)	pol	2006-2007	1	4	=	-2
Starting a Business - Cost (minimum - Eur) (DG ENTR) (-)	pol	2006-2007	1	-23	=	2
Closing a Business Time (years) (World bank doing business) (-)	pol	2003-2008	1/2	-10	↓	-22
Closing a Business Cost (% of estate) (World bank doing business) (-)	pol	2003-2008	1/2	-21	↓	-6
Closing a Business Recovery rate (cents on the dollar) (World bank doing business) (+)	pol	2003-2008		-5	↑	20
Administrative burdens on startups (OECD) (-)	pol	2003		-10		
Business demography - Birth rate - Number of real enterprise births of year n, divided by the population of active enterprises of year n (STRIND tsier150) (+)	perf	1999-2005		-12		
Business demography - Death rate - Number of real enterprise deaths of year n, divided by the population of active enterprises of year n (STRIND tsier150) (-)	perf	1999-2005		5		
Prevalence Rates of Entrepreneurial Activity - Early –stage Entrepreneurial Activity -(% of adult population between 18-64 years) GEM (+)	perf	2007		-1		
Aggregate score (based on the Narrow list)				**-11**		**-5**

Financial markets and access to finance

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Competition - efficiency						
Financial market size (ECB, Eurostat) (+)	perf	2007	1	-12		
Value added in the financial sector (National accounts) (+)	perf	2007		-4		
Stock market liquidity (Eurostat) (+)	perf	2007	1	11		
Efficiency of the banking system: Cost to income ratio (ECB) (-)	perf	2006	1	-4		
Venture capital investments - early stage - relative to GDP, breakdown by investment stages (STRIND tsiir080) (+)	perf	1999-2007	1	-12	↓	2
Getting Credit - Legal Rights Index (World bank doing business) (+)	pol	2004-2008	1	-18	=	-2
Financial market integration						
Activity of foreign bank (ECB) (+)	perf	2007	1	-3		
Interest rate spreads: Retail spreads (ECB) (-)	perf	2007	1	3		
Share of foreign listed companies on equity exchanges (World Federation of Exchanges) (+)	perf	2007	1	-15		
Financial openness: out and inflowing portfolio capital (Eurostat) (+)	perf	2007	1/2	-3		
Financial openness: stock of portfolio investments (IMF) (+)	perf	2006	1/2	-2		
Competition on financial retail markets						
Market concentration in the banking system: highest 5 (ECB) (-)	perf	2007	1	6		
Market concentration in the banking system: Herfindahl index (ECB) (-)	perf	2007	1	6		
Tying of retail banking products (DG COMP) (+)	perf	2006		-5		
Access to financial services: density of banks' branch network (ECB) (-)	perf	2006	1	6		
Access to financial services: financial inclusion (Eurobarameter survey 2008) (-)	perf	2006	1	-16		
Access to financial services: penetration with ATMs (ECB) (-)	perf	2007	1	-2		
The use of technical advances: cashless transactions (ECB) (+)	perf	2006	1	-7		
The use of technical advances: internet banking (Eurostat) (+)	perf	2007	1	-11		
Aggregate score (based on the Narrow list)				**-4**		**0**
Sub aggregate I				**-7**		**0**
Sub aggregate II				**-4**		
Sub aggregate II				**0**		

R&D and Innovation

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Summary Innovation Index (2007 scoreboard) (+)	perf	2002-2006		-12	↑	8
Gross domestic expenditure on R&D (GERD) - Percentage of GDP (STRIND tsiir 020)(+)	perf	1999-2007	1	-13		
Gross domestic expenditure on R&D (GERD) by source of funds - industry - Percentage of GDP (STRIND tsiir030)(+)	perf	1999-2007		-11		
Gross domestic expenditure on R&D (GERD) by source of funds - government - Percentage of GDP (STRIND tsiir030)(+)	pol	1999-2007		-6		
Gross domestic expenditure on R&D (GERD) by source of funds - abroad - Percentage of GDP (STRIND tsiir030) (+)	perf	1999-2007		-9		
Science and technology graduates - total - Tertiary graduates in science and technology per 1000 of population aged 20-29 (STRIND tsiir050)(+)	perf	1999-2006	1	-10	↑	9
Patent applications to the European Patent Office (EPO) - Number of applications per million inhabitants (STRIND tsiir060)(+)	perf	1999-2005	1	-7		
Patents granded by the United States Patent and Trademark Office (USPTO) - Number of patents per million inhabitants (STRIND tsiir070)(+)	perf	1999-2002				
Triadic patents - Patents all applied for at the EPO, USPTO and JPO - Number of patents per million inhabitants (+)	perf	1999-2005		-9		
Venture capital investments - early stage - Percentage of GDP (STRIND tsiir080)(+)	perf	1999-2007		-12	↓	2
High-tech exports - Exports of high technology products as a share of total exports (STRIND tsiir 160)(+)	perf	1999-2006		-11	↓	2
Scientific articles per million population (+)	perf	2003		-7		
Employment in High-tech sectors (high-tech manufacturing and knowledge-intensive high-technology services - % total employment) (+)	perf	1999-2007	1	-3	↑	9
SMEs innovating in-house (% total smes) (Eurostat CIS)(+)	perf	2004		-2		
Innovation expenditures (Eurostat CIS)(+)	perf	2004		-4		
Sales of new -to-market products (Eurostat CIS)(+)	perf	2004		1		
Sales of new -to-firm products (Eurostat CIS)(+)	perf	2004		-8		
Aggregate score (based on the Narrow list)				**-8**		**9**

ICT

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
ICT expenditure - IT - Expenditure on Information Technology as a percentage of GDP(+)	perf	2002-2006	1/2	-13	↓	3
ICT expenditure - Telecommunications - Expenditure on Telecommunications Technology as a percentage of GDP(+)	perf	2002-2006	1/2	6	↓	11
Level of Internet access - households - Percentage of households who have Internet access at home (+)	perf	2002-2008		-11	↑	-15
E-commerce via Internet - Percentage of enterprises' total turnover from e-commerce via Internet(+)	perf	2002-2007		-15	↑	-12
E-government on-line availability - Percentage of online availability of 20 basic public services(+)	pol	2002-2008	1/2	7	↑	6
E-government usage by enterprises - Percentage of enterprises which use the Internet for interaction with public authorities(+)	perf	2003-2008	1/2	14	↑	4
E-government usage by individuals - total - Percentage of individuals aged 16 to 74 using the Internet for interaction with public authorities (+)	perf	2002-2007		-14	↑	-8
Broadband penetration rate - Number of broadband lines subscribed in percentage of the population(+)	perf	2002-2007	1	-9	↑	-9
Aggregate score (based on the Narrow list)				**-1**		**1**

Education and life-long learning

	Characteristics of indicator			Results		
	Type	Time period	Aggr weights	Level relative to EU15	Change Abs	Change Relative EU15
Education						
Graduates (ISCED 5-6) aged 20-29 per 1000 of the corresponding age population(+)	pol	1999-2006		-3	↑	9
Annual expenditure on public and private educational institutions per student compared to GDP per capita, at tertiary level of education (ISCED 5-6), based on full-time equivalents(+)	pol	1999-2005		-17		
Spending on Human Resources - Total public expenditure on education as a percentage of GDP(+)	pol	1999-2005		-8		
Youth education attainment level - females - Percentage of the female population aged 20 to 24 having completed at least upper secondary education(+)	pol	1999-2007	1/2	3	↑	15
Youth education attainment level - males - Percentage of the male population aged 20 to 24 having completed at least upper secondary education(+)	pol	1999-2007	1/2	1	↑	15
Early school-leavers - females - Percentage of the female population aged 18-24 with at most lower secondary education and not in further education or training(-)	perf	1999-2007	1/2	-4	↑	10
Early school-leavers - males - Percentage of the male population aged 18-24 with at most lower secondary education and not in further education or training(-)	perf	1999-2007	1/2	-5	↑	11
Share of graduates over working age population (15-64) (+)	perf	1999-2006	1	-9	=	0
Share of tertiary-educated employment over total employment (LFS)(+)	perf	1999-2007	1	-18	↑	-3
PISA average score (reading, mathematics and science)(+)	perf	2003; 2006	1	-15	↓	-2
Life-Long Learning						
Life-long learning - females - Percentage of the female population aged 25-64 participating in education and training over the four weeks prior to the survey(+)	pol	1999-2007	1/2	-6	↑	-7
Life-long learning - males - Percentage of the male population aged 25-64 participating in education and training over the four weeks prior to the survey(+)	pol	1999-2007	1/2	-7	=	-10
LLL 25-34(+)	pol	2000-2007		-6	↑	-12
LLL 35-44(+)	pol	2000-2007		-7	↑	-5
LLL 45-54(+)	pol	2000-2007		-6	↑	-5
LLL 55-64(+)	pol	2000-2007		-5	↑	-6
LLL - Low educational attainment (+)	pol	2000-2007		-6	↓	-8
LLL - High educational attainment (+)	pol	2000-2007		-4	↑	10
LLL - Medium educational attainment(+)	perf	2000-2007		-3	↓	-11
Participation in continuous vocational training (EMCO 23.A2)(+)	perf	1999-2005	1/2	-7		
Investment by enterprises in training of adults - Direct costs and labour costs of participants divided by total labour costs (EMCO 23.A1)(+)	perf	1999-2005	1/2	-7		
Aggregate score (based on the Narrow list)				**-8**		**2**
Sub aggregate I				**-9**		**4**
Sub aggregate II				**-7**		**-9**

Orientation and sustainability of public finances

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
Consolidation of public finance						
General Government Gross Debt (% of GDP) (-)	pol	1999-2007	1	-20	↑	3
Distance Structural balance from SGP Medium Term Objective(+)	pol	1999-2007		-2	↑	13
Fiscal stance: change in Structural budget balance (AMECO)(+)	pol	2004-2008	1	-1	↓	-1
Cyclically Adjusted Balance (AMECO) (+)	perf	1999-2008	1/2	-2	↓	-1
Sustainability indicator: S2 component - the initial budgetary position (IBP)(-)	perf	2005-2007		1	↑	7
Nominal long-term interest rate (average, AMECO)(-)	perf	1999-2007		-1	↑	-1
Net lending (+) or net borrowing (-); general government - ESA 1995 (Percentage of gross domestic product at market prices) (+)	perf	1999-2008		-4	↓	0
Primary budget balance as percentage of GDP (Net lending excluding interest, general government - ESA 1995) (+) AMECO	perf	1999-2008	1/2	6	↓	-2
Sustainability						
Sustainability indicator: S2 component - long-term changes in the primary balance (LTC) (-)	perf	2005-2007	1	9	↓	-3
Projected change in Labour force between 2003 and 2050 (Budgetary projections: AWG variant scenario Year: 2005)(+)	perf	2006	1	-11		
Sustainability indicator: S2 (overall) (-)	perf	2005-2007		11	↑	6
Sustainability indicator: S1 (overall)(-)	perf	2005-2007		-1	↑	6
Sustainability indicator: Required Primary Balance (RPB)(-)	perf	2006-2007		4	↑	3
Projected old-age dependency ratio in 2025 = Population aged 65 and over as a percentage of the population aged 15-64 *) (AWG projection) (NOTE: the change is the change in the dependency ratio between 2003 to 2025) (-)	pol	2005-2006		-12	↓	0
Aggregate score (based on the Narrow list)				**-4**		**-1**
Sub aggregate I				**-6**		**0**
Sub aggregate II				**-1**		**-3**

Macroeconomic background information

	Characteristics of indicator			Results		
	Type	Time period	Aggregation weights	Level relative to EU15	Change	
					Absolute	Relative EU15
HICP (positive difference to the ECB target of 2% means a good performance) (+)	pol	1999-2007		4	↓	10
Real Effective Exchange Rate (unit labour costs) (-)	perf	1999-2008		-9	↓	-13
Average of absolute value of output gap 1999-2007 (-)	perf	2007		1		
Real long term interest rate, deflator GDP (AMECO) (-)	perf	1999-2007		-4	↑	-8
Business investment - Gross fixed capital formation by the private sector as a percentage of GDP (STRIND er070)) (+)	perf	1999-2007		0	↑	3
Trade deficit : Net exports of goods and services at current prices (National accounts) in % GDP at market prices.(+)	perf	1999-2008		-1	↓	-4
Balance on current transactions with the rest of the world (National accounts) in % GDP at market prices. (+)	perf	1999-2008		-3	↓	-5
Aggregate score (based on the Narrow list)				**not applicable**		

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