QUO VADIS EUROPE?

THE PERSISTENT ECONOMIC UNDERPERFORMANCE OF THE

EUROPEAN UNION RELATIVELY TO THE UNITED STATES

GUILLERMO DE LA DEHESA

INTRODUCTION

The long process of construction of the European Union (EU) had, from the start, a clear political objective: to consolidate, forever, the peace process in Europe, after having suffered two of the most bloody wars ever remembered. But with the time, and mainly after the fall of communism, another priority of the EU has become to create an economic power capable to counterbalance the growing weight of the US in the world economy. Not everybody agrees with this second priority. For some EU politicians and thinkers, the EU should, above all, try to consolidate a model of liberal democracy that combines economic efficiency and social cohesion and that becomes a model of reaching prosperity that will be imposing itself on the rest of the world as the most balanced and most inclusive way of living. Jacques Delors is a staunch defender of this outcome for the EU when he says: "Europeans should attempt to create a grand liberal democracy, which combines competition, as an element of fostering economic growth, cooperation, as an instrument of building political consensus, and solidarity, as a factor of achieving a more integrated union and a deeper social cohesion" (Delors 2002)

Nevertheless, the idea of creating the euro as a reserve currency that could compete with the dollar for world leadership and the decision of going ahead with enlargement to include twelve new members point clearly to the objective of creating an economic power that can have a say, on equal footing with the US, in all international issues, either political or economic.

Naturally, it is very difficult to compare the US and the EU when the latter has not achieved a political unity. Nevertheless, there is a growing conviction that the EU may end up, in a not very distant future, becoming some kind of federation or confederation of states, but, in any case, closer to the present federal political system of the US. This seemed to be one of the long-term objectives underlying the European Convention debate and its project of European Constitution, which was trying to make another modest step towards deepening the Political Union before embarking in the ambitious process of Enlargement. Unfortunately, the Member States cannot find yet an agreement over the New Constitution because all of them want to improve its relative individual political power at the Council and the Parliament now that decision making by unanimity, in most important issues, is slowly disappearing. The small countries are already overrepresented but they want more relative decision weight, the medium size countries want to have a voting weight similar to the large ones and these want to keep a large combined majority in all future decisions.

The expansion of the EU towards the east is also based on a political objective. The EU needs to achieve an area of stable peace and security further away from its eastern frontiers and made it easier for the newcomers to consolidate their rapid transition to full democracy and capitalism. Nevertheless, such an enlargement is going to give a larger economic and political weight to the EU in the world.

This little book is just a mere survey of the most recent literature on the relative economic performance of the EU and the US. Although its content is rather technical for a layman on economic issues, it is written in a very simple way aiming to a much wider readership.

With the aim of showing the EU probabilities of achieving its economic goals and becoming an economic power comparable to the US, the book is just a compilation of the issues and the available official data about the relative economic underperformance of the EU relative the US, in the last decades, at present, in the medium to long term and in the very long term. It

also tries to analyze the causes of such slower growth pace of the EU, and finally, considers the reforms that the EU needs to implement in order to improve its rate of growth in the medium to long term. The first chapter deals with the past and present economic underperformance of the EU relatively to the US, especially, since 1995. The second looks at the underlying causes of its slower growth rate, decomposing its main factor inputs, using a traditional growth accounting model. The third deals with other causes of economic underperformance and with the causes for improvement in the nineties of the EU growth rate. The fourth analyses the prospects for the EU economy at the medium to long term. The fifth looks at the future prospects in the very long term for growth in the EU and the US and, especially, at the impact of ageing populations on public expenditures and the fiscal sustainability of EU and US public finances. The sixth looks at the issue of pension provisions, its sustainability and the available policy options. Finally, the seventh chapter looks at ways to improve the future EU relative economic performance and to the necessary reforms to be implemented.

The main conclusions of the book are the following:

During the 1960s and early 1970s, the pattern of growth between the EU member countries and the US was broadly consistent with the conventional view that countries lagging in terms of labour productivity and GDP per capita will tend gradually to close the gap with the country with the higher level, namely the US. After stalling this catch up process for most of the EU member countries, from the mid-1970s and through the 1980s, this convergence process appears to have reversed during the 1990s, with trend GDP per capita growing faster in the US than in the EU as a whole. From 1995 to 2002, the US GDP per capita grew at an annual average of 2.3% while the EU grew at 2.0%. Only some EU small and medium size countries, with stagnant or slowly growing populations, have been able to outperform the US during that period. This is the case of Ireland, Spain, Portugal and Greece, which are catching up from much lower initial levels of GDP per capita and of Sweden and Finland, although these two coming from high levels.

The US has been able to grow, in terms of GDP, almost 0.9 percentage points a year, on average, faster than the EU for the last 30 years, enough to be able to increase the relative gap of its GDP per capita level, in spite its average annual population growth rate being much higher than that of the EU, over the 30 year period (1.2% versus 0.5%) Only in 2001 and 2002, the GDP per capita growth of the EU was larger than that of the US. Considering that the level of GDP per capita in the EU remains still today around 29% behind that in the US, this pause and the subsequent reversal in the convergence process should be a very important cause of worry for European policy makers and they show the urgent need for changing the economic micro and macro economic policies of the EU so as to stimulate its future growth.

When breaking down the causes of this increasing gap, the EU shows today both relatively lower participation and employment levels (measured as active and employed persons as a percentage of the population at working age, that is, 15 to 64) of around 7 and 9 percentage points, respectively, than the US. As regards labour productivity the situation is also worrying. Measured as GDP per person employed, the EU is behind the US by around 22 percentage points and measured by GDP per hour worked is lagging by around 11 percentage points. The real problem, besides the present lower EU relative levels of labour utilization and labour productivity is that, since 1995, not only its annual growth trend in employment is only increasing slightly faster than that of the US (1.2% versus 1.05%) while its number of hours worked are falling in relation to those of the US, but also its labour productivity annual growth trend is persistently lower, both in terms of GDP per person employed (0.99% versus 2.16%) and in terms of productivity per hour worked (1.27% versus 1.86%) Moreover, in 2002 and 2003

these US-EU productivity growth trend gaps have kept widening, being three times higher in GPD per worker and twice higher in terms of GDP per hour.

The end relative result is that, at present, the US has between 8 and 9 more people employed for every 100 persons at working age, who work around 211 more hours every year, who have 11 percentage points of higher productivity per hour worked and that these trends appear to be widening. A simple calculation shows that, if the employment rate of the EU could match that of the US, the EU would have 18 million more jobs.

By contrast, in terms of capital deepening (that is, the average percentage contribution of capital to labour productivity growth or, what is the same, the substitution of capital for labour) the growth trend rate of the EU has been much higher than that of the US over the 30 years period (0.7% versus only 0.32%) but in the last seven years the trend has reversed as well, and the US has taking the lead. Still today, the US level of capital deepening continues to be around 6 to 7 percentage points higher than that in the EU.

The EU has also shown an average total factor productivity, TFP, growth trend slightly higher than that of the US in the last 30 years (1.25% versus 1.075%), but again, in the period 1995-2002, the trend has reversed being the US average growth rate of 1.5% versus only 0.5% in the EU. Consequently, the US level continues to be today around 12 percentage points higher than that in the EU.

A summary of the breakdown of the present EU-US GDP per capita gap of around 29 percentage points shows that around two thirds of this gap is explained by lower labour utilization, of which, around one third is due to a lower employment rate, around another third is due to lower effective working hours worked and the remainder third can be attributed to lower labour productivity. While part of the lower labour utilization reflects shorter working hours in the EU and may be considered as a matter of social choice of more leisure versus more work, the much lower participation and employment rates as well as the much higher rate of unemployment are not, but reflect important structural rigidities and they should be a matter of great concern for the EU policy makers.

The medium to long term does not look yet to be changing this process of divergence between the US and the EU. According to most official forecasts (OECD, the IMF and the European Commission) the US will grow at a higher speed than the EU for the next ten years, with an average differential growth rate per annum, of around 1 percentage point, therefore, the very ambitious targets designed at the Lisbon Summit, in 2000, for the EU to become the most dynamic economy in the world are already totally out of reach, even if the expected reforms were going to be implemented now.

The longer term is even more complicated for the EU. The impact of its fast ageing population on public expenditure in pensions, health and long-term care is going to be much more costly, in terms of GDP than in the US and will be a very serious challenge for the sustainability of the EU public finances.

CHAPTER 1

The persistent relative economic underperformance of the EU

In order to measure the economic performance of the EU in respect of the US, in the last 28 years, this book is using mainly the statistics provided by the European Commission, in the different official documents published by the Directorate General for Economic and Financial Affairs and EUROSTAT. OECD statistics are used as well when EU statistical sources are not available or to complement them. There are a few but very important reports and papers, which deal with the issue of the relative economic performance of the EU and the US and the structural factors underlying EU growth, all of them produced after the Lisbon European Council, in the Spring of 2000 and which are the key sources of this book:

The first one is the result of a EU Commission seminar organized by the Directorate General of Economic and Financial Affairs in September 2000, on the forces driving EU growth, which has been published in European Economy, number 1, 2001 (European Economy, 2001) The second are the annual European Competitiveness Reports, published by the European Commission (European Competitiveness Report 2001, 2002 and 2003) The third one is the paper by Mary O'Mahony on "Productivity in the EU, 1979-1999", written for the National Institute of Economic and Social Research and published by the UK Treasury in February 2002 (H.M The Treasury, 2002) The fourth is the number 33 of the review "Economic Studies", published by the OECD, which deals with the driving forcers of economic growth in the OECD countries (OECD, 2001D) The fifth source are the annual reports "The European Union Economy Review" published by European Economy and produced by the Directorate General for Economic and Financial Affairs of the European Commission (The EU Economy 2001, 2002 and 2003 Review) The sixth is the report by the OECD on the "Sources of Economic Growth in OECD countries" (OECD, 2003) Finally, it is also of high importance the recent publication of the report of the Independent High-Level Study Group, established on the initiative of the President of the European Commission and chaired by André Sapir, titled "An agenda for a growing Europe: Making the EU economic system deliver" (Independent Group Report, 2003) All these important reports are extensively used and quoted all along the book.

One persistent critique usually made when comparing the EU average economic performance to that of the US is that, although in most comparable ratios the EU average is performing worse than the US, there are always some EU member countries, which have better ratios than the US one. This critique is not valid, since also in the US there are also some States or Regions that are doing much better than the US average. The idea is to compare the average performance of the two economies, not individual member states or countries. Nevertheless, to please the national pride of the different readers, although the following analysis measures only averages, it tries to single out, in the case of the EU, some member countries that are much above or much below these averages.

The average real GDP growth in the EU and the US over the past 28 years, that is, between 1975 and 2002, is shown at Table 1. (EU Competitiveness Report, 2002 and 2003) The US economy has been growing, on average, at the faster rate than the EU economy over the whole period. Between 1975 and 1985, the average annual real GDP growth in the US was 3.4%, while in the EU was 2.3%. In the next five years, 1985 to1990, both economies grew at the same average annual rate, 3.2%. But the US grew again, between 1990 and 1995, at a

higher rate, 2.4% versus only 1.6% in the EU. Finally, the growth gap widened, during the period 1995 and 2002, and the US annual growth rate reached 3.3% versus a EU growth of 2.3%. This differential rate seems to have kept growing in 2003, were the estimated growth of the US has been 2.8% while in the EU reached only 0.8%, and, in 2004 and 2005, the forecast is that the US will grow at an annual rate of 3.8% and 3.3% respectively, while the EU will grow at 2.0% and 2.4% respectively (European Economy 2003 Review, 2004)

In sum, the US has had an average annual real growth in the last 28 years, between 1975 and 2002, of 3.2% versus 2.3% in the EU, that is, 0.9 percentages points higher than the EU. Both rates could also represent the long-term potential growth of the two economies, with the US one being 0.9 percentage points higher on average than in the EU. But the most important issue to worry about is that such a potential growth gap has kept increasing faster in the US in the last decade, to 1 percentage point between 1990 and 1995 and to 1.3 percentage points between 1995 and 2002, and that it continues to widen as of today, when the US potential growth gap is estimated to be around 1.5 percentage points higher than that of the EU. Thanks to this higher growth differential the US has been able to multiply its GDP, in PPP terms, over the same period, by 7.6 times and the EU only by 6.6 times.

The most accurate way to compare the size of countries, through its total GDP, is by measuring the exchange rates to convert their GDP to a single currency, not in market price terms, but in terms of Purchasing Power Parities, that is, deflating them by their relative price levels, which make possible to now the exact purchasing power of each unit of GDP. According to the statistics published by the European Commission in its annual report "The EU Economy, 2003 Review (European Economy 2004) the total GDP of the EU, measured in terms of billion of euros at purchasing power parities (PPP) was, in 1991, exactly 103 billion larger than the US GDP. The EU had reached 5,779 billion euros (thanks to the reunification of Germany which added the GDP of its eastern part) and the US, which was suffering a recession, was only 5,676 billion euros. Twelve years later, in 2003, the US GDP was estimated to be 622 billion larger than the one of the EU. The US GDP reached 9,904 billion versus 9,282 billion of that of the EU. That means that the US, in only twelve years, has taken an advantage, in terms of PPP GDP, of 725 billion euros, or 7.7% of the total EU GDP, that is, around 85% of the size of Spain.

However, the twelve new eastern European countries, that will become members, 10 in May 2004 and the other 2 in the next few years, will add more GDP to the EU. In PPP terms, they will add, collectively, around 100 billion euros. Therefore, if the twelve new countries were today members, the size of the EU GDP would be again larger than that of the US. If we take into account only the first 10 new members, the size of the EU, in 2003, would be 10,150 billion, that is, 2.5% larger than that of the US.

Although, in the period 1991-2002, the annual growth rate of the US has been 1.2 percentage points higher than in the EU, this quicker growth seems to be explained, in large part, by a much higher growth in the US population, at an average annual rate of 1%, than in the EU, where the average growth rate of population has been only of 0.25%. Therefore, a more meaningful comparison, then, should take into account this differential demographic growth impact by concentrating mainly in GDP per capita, which is the measure is that it is normally used to compare the standard of living among countries. In terms of GDP per capita, the annual rates of growth, since 1991, have been more similar (European Competitiveness Report, 2003). Between 1991 and 1995, the EU average GDP per capita grew at 1.5% annually and that of the US at 1.96%. Between 1996 and 2002, the EU average GDP per capita grew annually at 2% and the US one at 1.93%. The average annual growth of GDP per capita for the whole period, between 1991 and 2002, has been of 1.75% for the EU and of 1.9% in the US.

The evolution of both levels of GDP per head of population, in PPP terms, between 1970 and 2002, even with this demographic constraint, are compared in Graph 1, which shows that the levels have widened slightly (EU Competitiveness Report, 2002) Being the US=100, the EU GDP per capita, was, in 1970, 69; in 1982, 71, in 1991 70.5 and, twelve years later, in 2002, came down to 69; that is, the same starting level and 1.5 percentage points lower than in 1991. The biggest difference was achieved in 2000, with 65.5. This increasing gap has been obtained in spite of the US population growth increasing by 35.3 million people in the twelve years 1991-2002, while the EU population growth has been only of 14.1 million people. Table 2 shows that most of the large EU countries GDP per head of population levels, in 2001, were close to the EU average: France was at 68, Italy at 70, UK at 70 and Germany at 72, only Spain which was at 57 was much below the average. The small countries had, on average, higher levels: Denmark and Ireland had a level of 83, the Netherlands of 79, Belgium of 73 and Austria of 75.

But, in this comparative exercise, the EU enlargement towards Eastern Europe is going to reduce, even further, its present level of 69% of the US average. In 2002, the ten new member countries had a population of 74.7 million and a weighted average GDP per capita, in PPP terms, of around 11,200 euros, while the present EU population is of 383 million and their PPP GDP per capita level is of around 24,000 euros, almost the double. As a result, the total EU average PPP-GDP per capita, if the ten new countries were today full members and the total population of the EU-27 were 456.4 million, will come down to 21,900 euros, that is, 65% of the US average, that amounts to 34,300 euros.

It is interesting to outline the statistical differences of GDP per capita, in PPP terms, in the EU and the US between the 2001 and 2002 versions of the quoted European Commission Annual Economic Reviews. In the 2002 version, being the EU=100, the US GDP per capita was 139.3 in 2001 and 139.7 in 2002. In the 2003 version of the same document, it came down to 138.9 and 139.2, respectively.

What actually happened in 2001 and 2002 is that the US suffered a recession in 2001, with an annual growth of GDP of 0.25%, while the EU was able to grow at 1.63%. The contrary happened in 2002, where US GDP growth picked up to 2.3% and EU growth dropped to 0.95%. The US had an average GDP growth in both years of 1.3%. As population increased by 0.9%, GDP per capita growth was only 0.3%. In the EU the average growth in the two years combined was similar, 1.3%, but as population growth was negative (0.3%) the GDP per capita grew at 1%. In 2003, the present average estimates show a further decline in the EU growth rate to 0.65% and a further increase in the US growth to 2.9%, therefore, the growth gap is large enough to result in the GDP per capita growth of the US being, again, higher than in the EU. In sum, at the end of 2003, GDP per capita level, in PPP terms, is going to increase to 140.3, and at the end of 2005 to 142, according to the same report.

CHAPTER 2

Break down of the main causes of the past EU growth underperformance

2.1) The Determinants of Economic Growth

A nation's long-term economic growth is basically determined by the rate of accumulation and utilization of its factors of production, capital and labour, and the efficiency of their use, that is, their combined productivity. Until very recently, economic growth was analyzed in a production function that, essentially, linked output to factor inputs. Recent research on the determinants of growth has not only refined that framework of analysis but has also extended it and has considered a broader set of factors seen as contributing to growth. It looks now clearer that, apart from the quantity and quality of factor inputs, other factors play a crucial role in enhancing economic growth such as creativity, innovation, scientific research, technology development, entrepreneurship and dynamism. This is the reason why the role of policy makers becomes more important in creating an institutional framework conducive to enhance these factors, especially, research and technology, innovation and human knowledge and skills. Today, the main controversy in contemporary growth theory is focusing on the relative importance of factor accumulation and utilization versus technical progress in driving economic growth. Especially, the role of investment in physical and human capital is one of the most disputed subjects.

In standard neoclassical growth theory (Solow, 1956) (Swan, 1956) output is produced by capital and labour. Economic growth is compatible with labour-augmenting technical progress, which acts as if it were increasing the available amount of labour. In the long-term, output per capita and labour productivity grow at an exogenously give rate of technical progress, but the latter is entirely exogenous to these models. An increase in the investment rate tends to have decreasing returns to scale and raises the rate of growth only during the transition to a higher level of economic activity, that is, a balanced growth path with the capital stock growing in line with GDP in the so-called "steady state". Given that some of its determinants, such as capital productivity, the saving ratio and the time preference, are quite sticky over time, the investment / output ratio is deemed to be constant in the medium to long run.

Therefore, with investment being endogenously determined, there is not great leeway for economic policy to raise labour productivity growth through capital deepening on a sustained base. In line with this limited role of capital accumulation in the long term, most early growth accounting exercises identified a large "Solow residual" or, what is the same, a high total factor productivity growth, TFP, attributing the main role in explaining growth to technical progress, which is regarded as exogenously determined (Denison, 1974). Under these circumstances, richer countries tend to grow at a slower rate than poorer countries adjusted for demographic differences. However, evidence of this process of "unconditional" convergence has weakened, at least amongst OECD countries, in the most recent decades. Thus, the concept of convergence can only be reconciled with the data if one moves to "conditional" convergence, that is, the relation between the growth rate and the initial conditions after controlling for other political, institutional and geographical variables.

Later, empirical studies in the 1990's, based on the neoclassical tradition, set out to reconcile the Solow-Swan model with international empirical evidence on convergence. Mankiw, Romer and Weill (1992) augmented the aggregate production function with human capital proxied by educational attainment. They found out that the Solow model performs well in explaining cross-country differences in income levels when human capital is taken into account, but only assuming that the level of productivity and the rate of technical change are the same across nations.

This standard neoclassical theory has been challenged, in the 1980's, by new so-called "endogenous growth" models (Romer, 1986) (Lucas, 1988) (Aghion and Howitt, 1998), which explain long-term growth endogenously by relaxing the assumption of diminishing returns to capital and by rendering technological progress endogenous to the model. Some authors add human capital to physical capital to derive a concept of "broad capital" characterized by constant or even increasing returns to scale (Lucas, 1988 and Rebelo, 1991) Others introduce externalities to the accumulation of capital whereby private returns to scale may be diminishing but social returns can be constant or increasing, due either to "learning by doing" (Romer, 1986 and Young, 1991) or by R&D (Romer, 1990, Grossman and Helpman, 1991 and Aghion and Howitt, 1992) With constant or increasing returns to "broad capital", the long term rate of growth becomes endogenous, in the sense that it depends on investment decisions which, in turn, could be influence by policy and institutions. Some of these endogenous growth models imply "conditional convergence", while others do not, depending on the assumptions about the specification of the production function and the evolution of broad capital accumulation (Barro and Sala i Martin, 1995 and Durlauf and Quah, 1999)

A firm's production function is defined by firm specific variables (capital, labour and R&D inputs) and a shift term called "index of technology" which is a function of the stock of knowledge available to all firms. That is, the knowledge generating activities, such as R&D, become a public good. The shift term reflects a "learning by doing" process or the influence of the stock of human capital. They consider innovation and specially the accumulation and diffusion of technical knowledge as the driving force of long-term growth and they try to shed some light on the factors behind technical progress, their modeling and their interaction with factor accumulation. These theories find that knowledge accumulation becomes, through investment, the key mechanism for achieving technical progress. The main reason is that knowledge and technical advances have to be embodied in the capital stock in order to raise productivity. Therefore, without more investment in human and physical capital, knowledge, and R&D, technical progress would not necessarily conduce to higher rates of growth. As a result, capital accumulation becomes a fundamental element to achieve higher growth.

New empirical evidence by the OCDE and the European Commission, find out that the investment share is significant in cross-country growth regressions and that the age of capital accumulation is a main determinant of TPF growth, although the evidence is not yet fully conclusive (Bassanini, Scarpetta and Visco (2000) There are a few elements that make it difficult to improve such ambiguous evidence.

The first one is the definition and measurement of the capital stock. Since TFP is the residual in growth accounting exercises, it is distorted by any inaccuracy in measuring the input factors, not only in the physical capital but also in the human capital stocks, given that, introducing in these exercises the improvement of the quality of capital and labour, the share of growth driven by exogenous technical progress tends to be lower. The second one is that the composition of investment matters. Investment cannot be treated as a homogeneous factor. On the one hand, Investment in equipment, in construction and public capital all have different

productivity-enhancing properties. On the other hand, the evidence of vintage models suggests that, in order to measure correctly the size of the capital stock, the productivity of new capital tends to be higher than of ancient capital. Furthermore, technical progress shows up in declining prices, and this fact needs to be properly reflected when capital stock series are calculated in real terms, given that a failure to capture quality improvements in falling prices tends to underestimate the capital stock and overestimate the importance of technical progress. The construction and use of hedonic price indices to measure this effect is not yet applied in most EU countries.

Finally, it is very important to measure properly what it is meant by factor accumulation and utilization. Very often, when some countries consider a low investment ratio as a main obstacle to achieve a higher output growth, it is because they are using a narrow definition of capital, not including education, R&D and military-capital formation and they are not elaborating the properly capital deflators. If these are taken into account the results will show an investment ratio considerably more in line with growth trends.

2.2) A Growth Accounting Exercise

In order to explain the causes underlying the different economic performance of the EU and the US, it is necessary to make a decomposition of the different inputs that are conducive to growth and this is achieved through a methodology called "growth accounting". The standard frameworks of growth accounting break down GDP growth into labour and capital accumulation and utilization and their combined productivity, measured as the average output per employed person or per hour worked and the average output per worker per unit of capital invested. The rest, that is, the growth of output that cannot be explained by the previous production factors, is considered as "technical progress" and treated as a residual measured by Total Factor Productivity or TFP (Denison, 1974) With this framework as a basic tool it is possible to breakdown the growth components both in the EU and the US:

2.2.1) Employment growth

The simplest, though least recommended, measure of labour as an input is a head count of jobs or employees. Such a measure fails to reflect changes in average work time for employee, multiple job holding, self-employment and the quality of labour. A first refinement is its extension to total employment, comprising both wage and salary earners and the self-employed. A second refinement is to estimate total hours "actually" worked, instead of "contractual" hours, to capture shifts towards shorter "normal" hours, longer paid vacations and a greater use of part-time work (OCDE 2001 D)

The employment growth, between 1975 and 2002, in the EU and the US, as well as the employment rate in 2002, are shown in table 3 (European Competitiveness Report, 2003) The first conclusion coming out of the table is that the US has had a higher annual average rate of labour accumulation and utilization, during the whole period, than the EU. The US annual average rate of growth of employment, in the last 28 years, has been 1.62% and in the EU it

has been only 0.55%, nearly three times higher in the US than in the EU. This is probably the main factor behind the growth gap between the two economies. The second conclusion is that, in 2002, the level of the US employment (that is, the so called "employment rate" or the number of people employed, as a percentage of the population at working age, i.e. aged 15 to 64) was much higher than in the EU. In the US, 75% of the population at working age had a job, while, in the EU, only 66% were employed, 9 percentage points less or what is the same, 9 people less for every hundred at working age. Only the Netherlands, Sweden and Denmark had comparable employment rates to the US while Italy, Spain and Greece had employment rates below 60%.

Table 4 shows how the employment rates are distributed according to age and sex. The average gap between the EU and the US employment rates is much larger in the case of females: 11.5 percentage points and of older workers: 13.5 percentage points. This lower rate is due, in large part, to the differences in the average level of the "participation rate", that is, the number of people looking actively for a job, or active population, as a percentage of the population at working age, which is also shown in the same table. The participation rate was also larger in the US, with 77.5%, than in the EU, with only 70%, that is, 7.5 percentage points less. Only Denmark and Sweden had higher rates of labour utilization than the US. Female participation rates have an even wider gap: 10 percentage points. The same happens with the participation rate of older workers, where the difference in favour of the US is of 11.5 percentage points (EUROSTAT, 2002). A simple calculation shows that if the EU had the same employment rate than the US, it would had created 18 million more jobs than it has today!

Part of this large gap in the participation rates is the result of a larger internal population growth and immigration rates in the US than in the EU. While the EU population grew at only 0.4% per year, between 1991 and 2000, the US population increased at an annual rate of 1.2%, three times higher. At the same time, during the said period, the US employment rate grew 5 percentage points while the EU one only 1 point. Moreover, demographic trends cannot be considered as fully exogenous to growth, given that the probability of finding an employment tends to be highly correlated with the birth rate (Independent Group Report, 2003)

It is striking to see, as shown by Graph 2, that the EU employment rate, in 2002, was still lower than in 1975, when it reached 67%, although it has been growing steadily since 1994 when it was at its through with 62%. On the contrary, the US rate, which started in 1975 at a lower level than the EU has been growing steadily, except a drop at the beginning of the 80's, reaching the peak in 1999 and dropping slightly in 2000 and 2001(EU Competitiveness Report, 2001) Probably, the other main reason for the higher employment rate of the US has to do with labour costs. From the standpoint of economic efficiency, real wage restraint is desirable only if real wages have risen faster than productivity in the past, otherwise excessive wage levels can become a barrier to job creation. Graph 3 (OECD Employment Outlook, 2003) shows how total real labour costs outpaced gains in labour productivity in the EU during the 1970s, but that productivity growth caught up with labour costs during the 1980s and even move ahead of labour costs in the 1990s. By contrast, labour productivity growth outpaced the growth of total labour costs in the US throughout the past two decades, perhaps contributing to the relatively stronger employment growth in that country, but also to the relative stagnation in compensation levels (Mishel et al. 2003) Nevertheless, labour costs and wages growth accelerated markedly in the US after 1995, in marked contrast to the deceleration observed in the EU.

Another important measure of labour accumulation is the number of hours worked annually per average person employed or engaged, which is also a way of knowing the level of part time employment and the level of total working time per year of the full time employed. Part time employment is 13.9% of total employment in the EU and 13% in the US.

There is a high dispersion of rates in the EU, given that on the upper side, the Netherlands level is 33%, the UK one is 23% and on the lower side, the levels for Spain and Greece are only 7.9% and 4.8% respectively (OECD Employment Outlook, 2003). Although females have a lower employment rate in the EU than in the US, EU females have a higher percentage weight in part time employment, with 76.7%, than in the US, with 67.5%.

The basic ways of comparing the average annual hours worked in every country are two: one through the contractual working time and another, more realistic, through hours actually worked per year. The latter measure shows that, in the US, the average person employed works effectively around 211 hours more, per year, than the average weighted employed person in the EU. Table 5 shows the average effective working time per year, in 1990 and in 2002 (weighted by the total employed population in the case of the EU) In the US, they were, 1,837 hours per year in 1990, and 1,815 hours per year, in 2002, with a reduction of 22 hours. In the EU, they were 1,676 hours per year in 1990, and only 1,604 hours per year, in 2002, with a reduction of 72 hours. Austria and Luxembourg are excluded for lack of data (OECD Employment Outlook 2003). The Netherlands, with 1,340 hours; Germany, with 1,444; Denmark, with 1,499 and France, with 1,545 hours were the countries of the EU with lower effective worked time per year. By contrast, Greece, with 1,934 hours, was the only EU country with a higher annual working time than the US, and Spain, with 1,807 was the closest to the US. The biggest reduction in the annual number of hours, since 1990, have been in Ireland with 252, in Portugal with 162, in Belgium with 118, in France with 112 and in Germany and the Netherlands with 97 hours.

This working time gap is the result both of shorter working weeks (approximately 35,6 hours per week in the EU, versus 40,3 hours in the US) and/or longer paid holidays achieved by the workers in the EU countries. For instance, the American workers have an average holiday entitlement of 16 days per year, but most employees take only 14 days. In the EU, by contrast, at least a month of paid vacation is viewed as an inalienable right. The Italians get 42 days of holiday a year; the French 37; the Germans 35, the Spanish 30. Even the British, although much closer to the so-called "American business culture", get only an average of 28 days. This performance shows a very clear entrenched social preference among EU citizens for more leisure and less working time, while in the US is not so obvious.

Social choices such as working less number of hours must be respected, not only because they are the will of majorities and are well being improving, but because it seems natural for people to demand more leisure as their real income levels increase. Moreover, an increasing use of labour potential both in terms of employment and hours worked does not necessary always imply a welfare improvement. Nevertheless, working less hours can be economically inefficient unless higher productivity and/or higher employment are able to fill the productive gap that emanates from a lower number of working hours and this does not seem to be the case in the EU. According to Blanchard (2003) the EU has simply used some of the improvement in labour productivity to increase leisure rather than income, while the US has done the opposite. The issue is that employment rate and labour productivity gap levels have been stagnant or slowly growing in favour of the US in the last seven years and this should be a major cause of concern for the EU policy makers.

Another important social preference that it is increasingly perceived in the EU, which could be also damaging in the long term, is the larger social rejection of immigrants, especially when immigrants reach the threshold of a certain percentage of the total population. A persistently declining fertility rate that is not compensated with larger immigration, can lead to a less innovative, less entrepreneurial and less productive economy, which can face an

insurmountable fiscal problem ahead for the generations to come. Both social choices are clear issues of intergenerational solidarity.

There are a number of institutional factor that affect labour utilization. The first one is the level of competition. The more regulated and less flexible are the factor and product markets, the less competition and the less investment and employment creation. A product market regulation index, developed by Nicoletti, Scarpetta and Baylaud (2002), shows, in table 6, that the EU average reaches 160 being the US only 100. The index dispersion among EU members is very high. There are countries like Italy and France that have 230 and 210 respectively, while others, like the UK is at a very low of 50.

In terms of factor market regulation, there are a number of indexes that show how inflexible are labour markets in the EU in relation to the US. The first one is labour mobility. With the increased importance of innovation and the need for restructuring, the importance of labour mobility also increases and comes at a premium. Flexibility allows firms to match employment with output levels more closely, facilitating as well the matching of skills and abilities of the labour force with specific tasks, by enabling firms to redeploy (internal flexibility) or to change skill composition of the workforce through hiring and firing (external flexibility) more easily. An index of inter-regional mobility, developed by Obstfeld and Peri (2002), shows that inter-regional mobility is much higher in the US than in Germany, Italy or even the UK. Another index of inter-company mobility, developed by Auer and Cazes (2001), through the looking at the average job tenure, measured by the number of years working for the same company, shows that is 10.5 years in the EU versus 6.8 years in the US. Job tenure of less than one year is 27.8% in the US versus 15.8% in the EU and job tenure of more than 10 years is 42% in the EU versus 25.8 in the US.

Another way of measuring labour mobility is through the rate of immigration, measured by the percentage of foreign labour force within the total. According to the OECD Employment Outlook (2001) the US reached 12% in 1998 versus only 5 % in the EU. There is a high dispersion within the large EU countries, where Germany reached 9%, France 5.6% and Italy and Spain only 2% and 1.5% respectively. Today, these percentages have grown much more, with Italy and Spain at more than 3% and Germany more than 10% and France more than 7%, but the US immigration rate has also reach a higher level. Finally, another indirect index to measure labour market mobility is the percentage of public sector employment in both economies. In the US is 15% of total employment while in the EU is 19.3% of total employment. Some EU countries, such as France and some Nordic countries have percentages over 25% (Algan, Cahuc and Zyleberberg, 2002)

Labour market regulation can be measured as well by the employment protection indexes produced by the OECD. Such indices measure both the restrictions to dismissals of regular and temporary employees as well as of collective dismissals. Table 7 shows that the US protection index is 3.5 times lower than the EU average one. Some EU countries have indices that are 5 times higher, like Italy or 4 times higher, like France. There is another indirect measure of labour market regulation through the indices of Trade Union density and Trade Union coverage, developed by Nickell and Nunziata (2000). These indices show that the proportion of wage earners who are members of a Trade Union is 40% in the EU versus only 15% in the US and that the proportion of wage earners covered by collective agreements is 80% in the EU versus only 20% in the US. Some countries such as France and Spain have, paradoxically, a lower density than the US and a very high coverage.

Finally, another factor affecting negatively the use of labour is its level of taxation on low wage labour, including social contributions to the Social Security System. The higher the tax rate, the lower the incentive of the wage earner to work and the lower the incentive of the employer to hire. According to the OECD (Joumard, 2002), the tax rate on low-wage earners in 2000 was 37% in the EU and only 28% in the US. The highest three countries in the EU had rates of 46%. A similar trend appears in total taxes on total labour. In 2002, the EU average implicit tax rate on total labour was 40% and only 24% in the US. In 2001, the EU tax wedge for a single worker with no children at the average production wage was 43.1% against 30% in the US and 33% in the OECD average. The entire difference was accounted for by social security contributions. The interaction between social protection and economic performance has turned at the EU into a negative spiral. With the decline in the employment rates, lower productivity growth and growing number of dependants, higher social contribution charges have been required to maintain the same level of social benefits, increasing the tax wedge.

2.2.2) Labour productivity.

Labour productivity is measured using two different ratios. The first one is the average GDP produced by every employed person, which is the result of dividing the total annual GDP by the number of people employed during the same year. The second is the average GDP per hour worked, the result of dividing the annual GDP by the number of hours worked during the same year. Both ratios can be measured by their average annual rate of growth or by their average level in a specific year. Table 8 shows the evolution of the annual average rate of growth of labour productivity, measured as the average annual growth of GDP per person employed, in the EU and the US, during the last 28 years, as well as the level of labour productivity per employed person in 2002 (European Competitiveness Report, 2003) Over the whole period, the average annual rate of labour productivity growth in the EU has been slightly higher than in the US: 1.79% versus 1.51%, that is, 0.28 percentage points more per year, on average, over the 28 years. But, again, between 1995 and 2002, the US annual rate has been much higher than in the EU: 2.2% versus 1.0%, more than double. It seems now more clear that part of this average higher productivity growth of EU workers over the period has allow them to trade it off for leisure instead that for income (Blanchard, 2003), but in the last 7 years the trend has reversed.

Nevertheless, in spite of this EU higher annual growth in labour productivity, the level of labour productivity, in 2002, that is, the average output per employed or engaged person, keeps still being much higher in the US than in the EU, as shown also in table 8. Being the US labour productivity=100, the EU level is only 73, 27 percentage points lower. Luxembourg is the only EU country with a higher level than the US, but it is not representative, given its tiny size. Belgium, with 92, Spain, with 91 and Italy and Ireland, with 82 and 87 respectively, are the countries with the second highest levels. Of the large EU countries, after Italy, France is the second highest with 78, followed by the UK with 72 and Germany with 71.

The EU productivity level has been growing steadily from 66% of the US average, in 1975, to 78%, in 1993, when it reached the peak, dropping, since then, until reaching 73%, in 2001 and 2002. Therefore, the gap has been widening in the last eight years and it has continued to widen in 2003. According to the European Competitiveness Report (2003), labour productivity increased in 2002 by 2.81% in the US and by 0.32% in the EU.

The measurement of labour productivity by GDP per person employed should be complemented with the productivity per hour worked, given that, having the EU a much lower employment rate, its productivity per person employed tends to be higher. Such a measure avoids also the large differences in part time employment between countries that makes those with the higher levels to have a lower productivity per person employed. The annual average rate of growth of GDP per hour worked, between 1990 and 2002 has been of 1.8% in the EU and 1.5% in the US, although, between 1996 and 2002, the trend has reversed and it has been higher in the US, with 1.86% versus the EU, with 1.27% (European Competitiveness Report, 2003). Graph 4 shows the evolution of the levels of labour productivity per hour in both economies from 1985 to 2002, being 1995=100. It is clear that there was a convergence until 1995 and a divergence ever since. The two economies started with a gap of 10 percentage points and today the gap is only 6 percentage points, therefore, levels are still higher in the US. According to the report by O'Mahony (2002), shown in table 9, the level of output per hour worked in the US was, in 1999, 115% being the EU=100, that is, a 15 percentage points gap, much higher than the previously calculated. The dispersion of levels in the UE is very high. Luxembourg, Belgium, and Netherlands have higher levels than the US, while Italy and France have levels of 113% very close to the US average, and by contrast Greece and Portugal have only 74% and 63%, respectively.

A very important fact to underline is that does not seem to be a clear correlation between the employment rates and the labour productivity levels, as shown in Graph 5. The US has a high employment rate and a high labour productivity level and Italy, Spain and Greece have low levels in both, this fact can be extrapolated to the EU as a whole. The same can be said about the low correlation between average annual hours worked and output per employed person. The US has a lower productivity per employed person than Japan, although the average employed person, from Japan, works approximately the same number of hours than in the US. Italy, France and Germany have a higher labour productivity than the UK working less number of hours. The reasons for that lack of correlation could be, on the one hand, different rates of labour flexibility, different levels of education in the labour force and, on the other hand, different capital / labour ratios, as it will be shown in the next section.

Contrary to the US trend, the Independent Group Report (2003) finds out that, for the EU countries with similar levels of development, there is a negative correlation between labour productivity and labour inputs, measured as the number of hours per capita. This implies a trade-off, with low productivity countries compensating by working longer hours and/or achieving higher employment rates. The result is that member countries of the EU have been incapable of improving employment performance without reducing labour productivity and vice-versa. Such a situation seems to point to an overall limit on the EU potential growth rate at a time when it is still trying to catch up with the US and when fast technological change should provide a fillip to growth potential.

The sum up of all the different measures of labour inputs and labour productivity applied to the EU and the US, the results are the following: In 2002, for every 100 people at working age, in the US there are 9 people more who are employed than in the EU. Every average person employed in the US works around 211 hours more, per year, than the weighted EU average per person employed. The GDP per employed person in the US is around 27 percentage points higher than in the EU. Finally, the output per hour worked in the US is 15 percentage points higher than in the EU average. Therefore, both the levels of labour accumulation and utilization and of labour productivity are still today higher in the US than in the EU, although the EU has been showing, until 1996 and again in 2001, a better performance than the US in the rate of growth of productivity per hour worked. But this EU over-performance

seems to be only temporary, as it was shown in previous Graph . Both the US and the EU levels of GDP per hour have been converging, since 1985 until being equal in 1995, since then, they are diverging and the US level is showing an increasing advantage.

Table 10 is a good summary of the respective situations of the US and the EU (European Competitiveness Report, 2003) showing the relative levels, for 2002, of the different components of the standards of living of both economies, according to three alternative sources: OECD, EUROSTAT (structural indicators) and GGDC (University of Groningen). The EU levels of GDP per capita, being the US=100, oscillate between 71.2 and 72.4. The EU levels of GDP per hour worked range between 77.1 and 82.6 and the EU levels of GDP per hour worked go from 86.8 to 91.5. The major differences are that the Structural Indicators of EUROSTAT gives a higher level of GDP per employed person for the EU that is compensated by a lower rate of GDP per hour worked. There are as well some differences in the purchasing power parities used to convert output in national currency units into a common currency, different methods to calculate hours worked and different methods to adjust for the informal economy.

2.2.3) Capital Deepening

Labour productivity is also determined by capital deepening, that is, the growth in the stock of capital per employed person or per hour worked. Capital deepening is a long-term process determined primarily by investment. But, in the short run, changes in employment can have a great impact on the capital / labour ratio. For instance, an increasing capital / labour ratio in the EU helped it to catch up with the US in terms of labour productivity up to the mid-1990's, but it was due more to a declining employment rate rather than to an increasing capital deepening, although the rate of growth of capital intensity has been higher in the EU than in the US until the period 1995-2001.

Capital deepening, measured as how much, in percentage points, the degree of capital intensity or the substitution of capital for labour have contributed to overall labour productivity growth, shows that the average annual contribution to labour productivity, in the period 1975-2002, as shown in table 11, it was 0.68 percentage points in the EU and only 0.32 in the US, almost half. The EU has been leading the US through most of the period, except in the last 7 years, where the capital deepening in the US has been very faster, 0.7% versus 0.4% in the EU, thanks to an investment boom, associated to the quality of information and communication technology (ITC) products, combined with a steep decline in their relative price, which decisively boosted ITC investment.

Nevertheless, although having higher annual rates of growth of capital deepening for many years, the EU has not being able to match the US level of capital per hour worked. In 1999, for the US was 107, being the EU average = 100 (O'Mahony, 2002). Table 12 shows the distribution of the levels of capital per hour worked in the EU. As a general rule, the dispersion is extremely high. There are five EU countries with much higher levels than the US: Belgium, 145; France, 124; Finland, 120; Netherlands, 115 and Italy, 111. Austria has the same level 107, but for Spain is 90 and the UK has only 81. But it is very important to point out that, without the UK, the average EU level would be 104, much closer to that of the US (European Competitiveness Report, 2003)

2.2.4) Total Factor Productivity (TFP)

TFP is another very important factor behind labour productivity and it is an estimate of underlying residual productivity. Growth in TFP is measured by the difference between output growth and the growth of factor inputs, that is, the weighted average growth of labour and capital. An increase in TFP means that more output can be produced with a given level of labour and capital inputs. As a residual, TFP growth incorporates the effects of changes in the degree of factor intensity and of proper organization, the level of innovation, of research and development and of technological progress, as well as measurement errors. Furthermore, as the present method of calculating labour productivity growth does not take into account changes in the quality of inputs, such as better capital goods or an improvement in the educational attainment and skills of the labour force, such changes are also reflected in TFP growth. One of the key factors enhancing TPF in recent years has been investment in new ITC capital goods, which tend to have a higher marginal product than many other capital goods. Finally, cyclical factors are also likely to have an impact on TFP growth. In periods of rapid growth, the degree of factor utilization and intensity tends to be higher and vice versa.

TFP annual growth rate in the EU and the US in the last 28 years shows that the average TFP growth in the EU has also been slightly higher than in the US in the whole period, except in the last 5 years, exactly the same that happened with capital deepening. As shown in table 13, the average annual growth rate of TFP for the period has been of 1.3% in the EU versus 1.05% in the US. Only in the period 1995 –2002, the US TFP annual growth rate, with 1.5%, was 0.5 percentage points higher than in the EU. Ireland, with 4.0%; Finland, with 3.3%; Greece and Sweden, with 1.9% and Portugal, with 1.8% were the only European countries that had a higher average annual growth rate than the US, in that period.

In spite of being the EU TFP annual growth higher than in the US, its present level is lower (O'Mahony, 2002) Table 14 shows that being the EU level in 1999 =100, the US level was 12 percentage points higher. The dispersion in the EU levels was smaller than in capital intensity.

There is considerably greater variability across EU countries in capital per hour worked and in TFP than in labour productivity. In the case of capital intensity, the large EU countries, except the UK, had capital levels higher than or close to the US. So for these countries the TFP gap with the US is greater than for labour productivity. As a result, the labour productivity gap with the US for the EU large countries is largely explained by TFP. TFP levels are considerably closer to the US levels than was the case for labour productivity. The net effect is that the variation amongst EU countries in TFP levels is relatively small, if Luxembourg is excluded given its size.

As a conclusion of this exercise, it can be said that an estimated two thirds of the EU gap with the US GDP per capita levels results from lower levels of labour utilization, that is one third due to lower employment rates and another third due to lower effective working hours, while the remainder third is due to lower labour productivity in the EU. While part of the lower utilization of labour reflects shorter working hours in the EU and may be considered as a matter of social choice of more leisure versus more work, the much lower participation and employment rates as well as the much higher rate of unemployment are not and should be a matter of great concern for the EU in the years to come due to its much faster rate of population ageing (Independent Group Report, 2003)

Both labour productivity and TFP growth rates have been slowly declining in the EU over the four decades, although maintaining reasonable rates, and employment has been growing at a very low pace, increasing the rate of unemployment quite rapidly. Therefore, the contributions of increases in labour productivity, albeit falling, have been far more important for economic growth than that of employment. The slow decline in labour productivity growth reflects the combine impact of a diminishing rate of increase in the capital / labour ratio and a declining rate of growth of TFP. The most recent past has been characterized by a divergence in output trends and productivity growth, as strong employment growth has contrasted with a further deceleration of labour productivity growth. Conversely, the US has experienced both a higher job creation and a marked acceleration of labour productivity growth.

Using standard growth accounting, the European Commission has produced a decomposition of real growth of GDP in the EU into labour utilization, that is, employment growth, into labour productivity growth and TFP growth. As shown in table15, during the last four decades, from 1966 to 2002, GDP growth has been falling, in every decade, from an average of 4.9% in the 1960s to 2.1% in the 1990s. While a pick-up of output growth is clearly visible since the mid-1990s, it remains open whether it is going to become a trend reversal. The growth rate figures for 2002 and 2003 do not reflect such a reversal given that the EU is back again to a very low rate of growth, of approximately one third of that of the US. There has been a certain convergence of labour utilization growth rates, although they are still lower in the EU. Labour productivity growth has also been converging with the US, except in the last seven years. The contribution of capital deepening has been converging as well, except in the last seven years and the same has been happening with the TFP contribution to labour productivity, where in this case the US has been catching up and overtaking the EU in the last few years (European Economy 2003 Review)

2.2.5) Factors enhancing TFP

Innovation has become today the key driver of economic growth (Independent Group Report, 2003) The long post-war expansion in the EU was built on the basis of the generalization of an already mature technology trajectory with well-known organizational implications and rapid diffusion of best practice. The EU was catching up with the US both through investment and factor accumulation and through imitation of leading-edge technologies. Standardized mass-market products that could be made with long production runs brought significant economies of scale, resulting in an industrial structure dominated by large firms. Assembly-line production proved able to absorb large quantities of unskilled labour coming off the land and off some intra-European migration from the Mediterranean. The innovation process was heavily incremental in nature. The welfare state favoured the establishment of long-term labour relations. Macroeconomic management was directed to aggregate demand while micro management was dealing with the unwanted side effects of the large concentration of production in very few firms, through the public ownership of enterprises operating in industries characterized as natural monopolies, through regulation and anti-trust actions. Public education systems concentrated on primary and secondary education, combined with extensive apprenticeship systems. Tertiary education often separated from research activities plaid the role of forming elites for top managers, high civil servants and the liberal professions.

The breakdown of such a system did not come suddenly and it remains today in significant areas. Nevertheless, the easy gains from assimilating existing technologies became

exhausted and demand became saturated for the output of leading industries. Some of these industries were susceptible to offshore production in middle-income newly industrialized countries with educated workforces and lower labour costs, given that the technologies were now widely available and the knowledge required largely codified, while others retreat into higher quality, higher margin segments, substituting capital for labour and increasing outsourcing. On the other side, both the patterns of consumption and production had shifted in favour of different types of products requiring a different form of industrial organization. Higher educational standards and changing consumer preferences led to a greater demand for less standardized and more customized products. Growth was not driven by volume but by composition.

Once European countries had to move to the technology frontier, innovation at the frontier rather than factor accumulation and imitation became the engine of growth. This in turn called for new organizational forms, less vertically integrated firms, greater mobility both intra and inter-firm, greater flexibility of labour markets, a greater reliance on market finance and a higher demand for both R&D and higher education. However, these necessary changes in economic institutions and organizations are not taking place on a large scale in Europe and it is this delay in adjusting the complex EU institutional system that accounts to a large extent for its growth gap with the US (Independent Group Report, 2003)

There are some key factors that enhance innovation and, therefore, TFP:

a) The first factor is knowledge and therefore the level of education of the labour force. Human capital formation may also have a permanent impact on output growth If a higher level of skills and knowledge facilitates the adoption of new technologies and-or the process of innovation, leading to an acceleration of technical progress. The closer the economy gets to the technology frontier the greater the importance of higher education. While the basic requirement for the post-war industrially driven economy was secondary education, that of an innovation driven economy is higher education. Table 16 shows the average years of schooling of the adult population between 1960 and 2002 (de la Fuente and Domenech, 2001) and (European Commission, 2003). The difference between the EU and the US has narrowed from 2.8 years in 1960 to 2.2 years in 2002. Only Germany, with 13 years, had a similar number of years of schooling than the US, with 13.3. Nevertheless, when looking at the quality of education using the proxy of performance in reading, scientific and numeric literacy, the US performs below the OECD average except in reading, while some European countries far exceed such an average, such as Finland, Ireland, Netherlands, Sweden and the UK. Of the other large European countries, Germany, Italy and Spain are worse performers than the US, being France a better performer.

Another measure of the level of education of the labour force is shown in table 17 (O'Mahony and De Boer, 2002) The US has both a much higher proportion of the labour force with higher education than France, Germany or the UK and also a much higher percentage of the labour force with lower qualification, except for the UK. On the contrary, Germany and France have a much higher percentage of the labour force with secondary education. The percentage of the population, aged 25 to 34, that has attained at least tertiary education was, in 2000, 40% in the US versus only 18% in France, 25% in the UK and in Germany, 16% in Spain and 12% in Italy. For population aged 45 to 54 the level in the US was 41%, in 35% in Spain, 33% in France, 30% in the UK, 22% in Germany and 12% in Italy (OECD, 2003) Another way of looking at these differences is through the level of expenditure on tertiary education. The US expenditure on tertiary education is 3% of GDP, of which 1.4% public and the rest private. In the EU is 1.4% of GDP of which 1.1% public and only 0.4% private, less than half than in the US. In

the year 2000, the enrolment in tertiary education, as a share of the population aged 20-29, was of 37% versus 24.8% in the EU (UNESCO, OECD and EU Commission, 2002) In 1999,

A recent paper by Krueger and Kumar (2003) shows that education explains a large part of the differential growth rate of the US over the EU. While general education allows workers to work in high-tech firms that adopt new technologies, a less costly skill-specific education allows them to work only in low-tech firms that use established production methods. The higher firing and regulation costs of the EU causes firms to accept inferior productivity draws, lowering wages and reducing the incentives to acquire general education. As a result, expected growth rates decline. Recent empirical work suggests that one extra year of average education (roughly equivalent to a 10% rise in human capital) has in the past raised the output per capita in the long-run by around 4% to 7% on average across OECD countries (Basanini and Scarpetta, 2001) Therefore, a EU educational reform, in the form of higher flexibility in educational choices at the upper secondary level and tertiary level and a greater focus on general education might be an important element to reduce the US-EU growth gap in the future.

b) The second factor is the amount of investment in R&D. According to EUROSTAT, total expenditure in R&D averaged 2.7% of GDP in the US in 2001 and keeps growing every year, while the EU average is 1.9% of GDP and keeps stagnant. The gap is even higher in R&D expenditure by private business, where the US average is 2% and growing and the EU average is 1.2% of GDP and falling. In both cases intra EU variability is very high since the difference between the three highest (Finland, Sweden and Germany) and the three lowest (Spain, Greece and Portugal) is striking and widening. Naturally, part of the difference in expenditure may just reflect the different sector weights within each economy, some sectors such as chemicals and pharmaceuticals are much more R&D intensive than others. Nevertheless, when comparing the same sectors in both economies, most of the times the US research intensity is higher, both in low and high R&D sectors. The only way to enhance private business R&D expenditure is when markets offer sufficient rewards and information and when Governments offer adequate incentives.

Another important measure of R&D is patent activity. According to the OECD (2002) patent applications per 10,000 inhabitants in the US are 4.5 and growing year by year, and in the EU the average is only 2 and falling. Germany is the only European country with a higher patent rate than the US. There is a clear evidence that both R&D expenditure and patent activity are positively correlated with productivity growth in manufacturing and that both have social returns that exceed the private returns due to spillover effects that accrue to other firms by way of new and improved products, processes, services and know-how.

c) The third factor is ITC investment. The US has enjoyed a remarkable economic performance in the second half of the 1990s. In addition to strong employment creation, labour productivity growth did accelerated considerably to rates higher than in the EU. This example has led some researchers and policy makers to ask whether the EU could eventually benefited of the same experience and to see whether the so called "new economy" could play a similar role in the EU.

The attention about the "new economy" has focused, essentially, on the high investment on ITC. This general-purpose technology has increased the optimism about the possibility of entering a new industrial revolution, which could transform the economic landscape of the developed countries. Recent empirical studies have revealed a sizable impact of ITC investment on productivity growth, calculating that it accounts for up to three-quarters of the estimated one per cent rise in US productivity growth witnessed in the second half of the 1990s

(Oliner and Sichel, 2000) (Jorgensen and Stiroh, 2000) The evidence for the EU is decidedly smaller. The European Commission calculations point to a contribution of ITC to economic growth in the EU, in the second half of the 1990s similar to the US in the first half of the 1990s. This gap of half a decade is consistent with the gap in ITC expenditure per capita between the US and the EU (European Economy, 2001 A)

Nevertheless, while these estimates are encouraging, the evidence is not supporting the main virtue of the general-purpose technology, namely, productivity gains from the application of ITC all over the economy. What is an established fact is that technical progress has caused a huge acceleration of productivity growth in the production of ITC technologies. Moore's Law, which quantifies the technical progress in the ITC sector, demonstrates the economic significance of this technical progress. On the one hand, the number of transistors per every Intel microprocessor has gone up from 4,000 in 1971 to over 10 million in 2000. On the other hand, prices of processing power have declined noticeably over time, from 6,500 euros in 1994 to less than 1,500 euros in 2001, giving rise to incentives for ITC capital deepening in the production process. The decomposition of the contribution of ITC to economic growth in the EU, made by Roger (2001) finds evidence for capital deepening effects resulting from declining prices of ITC capital goods, but there is not yet confirmation of significant effects of technological progress outside the ITC sector (McMorrow and Roger, 2201)

Based on the growth accounting exercise in Roger (2201) the impact of ITC on growth in the EU was about one-fourth of a percentage point between 1996 and 2000. McMorrow and Roger (2001) made some simulations on the future impact of ITC on potential growth. Taking a very cautious view on the possible impact on potential growth, they calculate a medium to long-term growth effect of 0.5 percentage points. This compares with a long run effect of 1 percentage point in the US. The contribution gap between the two is due mainly to the larger costs of capital adjustment and of relative wage rigidity in the EU. Another important factor is the smaller share of ITC production in the EU relatively to the US, given that the main effect of ITC on aggregate TFP growth is exerted from TFP growth in the ITC sector itself (European Economy, 2001A)

Overall, the experience with ITC so far suggests that the emergence and use of new technologies might contribute to an acceleration of labour productivity growth in the EU. Over the medium-term, the increase in productivity in the US gives rise to potential catch-up growth, probably repeating the working of the forces prevalent in the 1950s and 1960s. The crucial question is whether the framework conditions supportive to the take-up of new technologies are in place in the EU economy.

ITC expenditure as a percentage of GDP is shown at table 18. In the US, it was, in 1998, 8.7% versus 6% in the EU and, for the period 1992-1999, it was 8.1% in the US versus 5.6% in the EU. Only Sweden and the UK have had larger or similar levels than the US. France is above the EU average, but Italy and Germany are below. Their respective shares of ITC in the business sector employment and value added are slightly larger (0.5 percentage points) in the EU in business employment but are much larger in the US in value added (2.3 percentage points) (European Competitiveness Report 2002)

The average annual rate of growth of ITC expenditure between 1992 and 2000, has been not only much larger in the US, with 7.8% than in the EU, with 4.7%, but also the acceleration in the second half of the 1990s versus the first half has been much larger in the US with 0.9% versus only 0.1% in the EU. When comparing both the annual growth of ITC investment and the level of ITC investment as a percentage of GDP. The US had not only a

higher level than the EU average but also a higher annual rate of growth than the EU average. Only the UK and Sweden had a higher level than the US but a lower rate of growth, especially Sweden, with the lowest rate of the EU, and only Greece and Portugal and Ireland and Finland had higher annual rates of growth but coming from much lower levels than the US. In the first case, because heavy investment in telecommunications in infrastructures in the first half of the 1990s and, in the second case, because of a deliberated policy to catch up (European Economy, 2001A)

Table 19 compares business ITC investment in the EU and the US as a percentage of GDP, the US not only has achieved a higher level both in 1992 and in 1999, but also has increased the gap by 1.33 percentage points in 1999. This result is even more impressive if we take into account the percentage of ITC investment as a percentage of total fixed business investment, where the gap has increased between 1992 and 1999 by 2.78 percentage points of GDP given that the level of total fixed business investment is almost 1 percentage point higher in the EU than in the US. It is important to underline that the EU business investment has been growing much faster in the EU than in the US in communication equipment while the contrary has happened in hardware and software.

The contribution to growth, both in the EU and the US, of ITC investment according to the most recent research available (Daveri (2001) and (European Commission, 2000) shows a larger contribution in the case of the US, between 1991 and 1999, and even a larger contribution between 1996 and 1999. In the first half of the 1990s the differences were small, 0.53 percentage points annually in the US versus 0.43 percentage points in the EU, but in the second half of the 1990s, the average annual contribution to growth in the US was almost three times higher in the first than in the second, 1.45 percentage points versus 0.57 percentage points, therefore the average annual contribution to growth in the US achieved 0.94 percentage points versus 0.48 percentage points in the EU. Only the UK, Sweden, Netherlands and Germany achieved higher annual contributions than the EU average but below the US ones (European Economy, 2001A)

Van Ark et al (2002) and Van Ark et al (2003) have done two extremely interesting measures of the impact of ITC on labour productivity performance by covering 49 industries in 16 OECD countries (2002) and by doing a "ITC growth accounting exercise" for the EU member countries (2003). In the first industry study, they show that between 1990 and 1995, the EU had a larger average productivity growth than the US (2.0% versus 1.2%) and the contrary happened between 1995 and 2000, were the US average productivity growth was 2.4% versus 1.3 in the EU. In the ITC sector, the increases in productivity growth were especially high in the ITC producing industries, especially in manufacturing, with 11.6% and 14.2% in the EU in the two respective periods, and with 14.5% and 20.3% in the US, because their larger share in output. By contrast, in ITC producing services the growth was higher in the EU, by 0.5 and 2.7 percentage points respectively in both periods, in spite of their share in output being smaller than in the US. On the contrary, in the ITC using industries the growth rate was the same for both in the first period, 1.3% but much larger in the US in the second, 4.4% versus 1.2% in the EU. The main difference was achieved in the ITC using services were the US rate of productivity growth was 0.9 and 4 percentages points higher respectively in both periods. Apparently, this gap was mainly concentrated in three services, namely retail and wholesale trade and securities, because their larger share in output and employment in the US and more restrictive opportunities for expansion in the EU. Their main conclusion is the EU patterns of ITC diffusion are following a similar pattern than in the US but at a considerably slower pace.

In their second "growth accounting" study about the contribution of ITC capital to output and labour productivity growth, for the period 1980-2000, they find that even though real investment and capital service flows in the EU increased as rapidly as in the US, the shares of ITC in total investment and capital service flows in the EU were half to two thirds of the US level across up to the mid 1990s. Since then, the relative contribution of ITC capital improved, but overall EU productivity collapsed, suggesting that other factors, such as regulations and structural impediments in labour and product markets, may be standing in the way of a rapid catch-up of the EU.

Similar findings are shown by Stiroh (2001) The US average labour productivity growth has been much higher in the period 1995-1999 than in the period 1973-1995. In the first period it has been around 2.5% and in the second it was around 1.41%, that is an acceleration of more than 1 percentage point. According to his research, the main sources of acceleration seem to have been the ITC related capital deepening, which oscillates between 0.38 and 0.50 percentage points, and total factor productivity, which oscillates between 0.31 and 0.90 percentage points. Nevertheless, the contribution of ITC related total factor productivity seems to have been smaller than other sources, except according to Robert Gordon (2000). The contribution of labour quality has been small but the cyclical effect seems to have been quite large, according to Gordon.

CHAPTER 3

Other factors behind the slow relative growth of productivity in the EU

What explains the continuous slowdown in productivity growth in the EU since the 1970s? The high labour productivity of the 1960's reflected a number of favourable but exceptional factors (Crafts and Tonilo, 1996) (Eichengreen, 1996) Among these factors, the large productivity gap of the European economies with the US induced a large potential for catching up. The productivity gap with the US had widened considerably between the early 1930's and 1950, which was not only due to war but also to the semi-autarkical policies followed in the 1930s. Furthermore, the reconstruction after the Second World War implied the establishment of a modern and highly productive capital stock. Investment ratios in the post-war era were much higher than the per-war ones, and contributed to high productivity and output growth. Moreover, the high trade barriers were lowered and the new international monetary system facilitated the pick-up of international trade. The removal of trade protection within the EU was very important and increased the size of the market, intensified competition, enhanced the exploitation of economies of scale and stimulated growth.

These favourable factors started to vanish after the external oil shock of the early 1970s. Oil prices increased by almost 400%, between 1972 and 1974, in dollar terms and more than 350% in euro terms, while oil imports in the EU amounted to one third of total imports, producing a strong negative external contribution to growth and a sharp deterioration of the terms of trade. Moreover, real stock prices came down and the system of fixed exchange rates proved to be unsustainable (European Economy, 2001A)

The deceleration of economic growth in the 1970s brought with it a strong slowdown in fixed capital formation. It fell by 1.3 percentage points between 1973 and 1975 and stabilized at a level marginally above 3% until 1980 before coming down to 2% in the mid - 1980s. Although the increases in the capital stock were higher than trend growth, the latter reached its lower level in 1981 with a lead to the investment cycle, which casts some doubts on the assumed causality from investment to growth. The investment slowdown was also attributable to the subsequent shock to factor prices provoked by the oil price hike. The oil shock was followed by a very large increase in labour costs, which increased the adjusted wage share in GDP by 3 percentage points between 1973 and 1975. This increase in the share was only reverted ten tears later, in 1984, when it returned to the pre-oil shock level. This persistent shift generated an important capital-labour substitution.

Furthermore, the reaction of the monetary authorities to the rapid increase in inflation, provoked by the oil shock, was a strong tightening of monetary policy that helped to contain labour costs but at the expense of a lift in real interest rates, that reflected in a further deceleration of investment, and which lasted until the mid -1980s. At the end of the 1980's, there was another tightening of monetary policy that contributed to a further increase in the

long-term real interest rates and in another fall in investment. Real interest rates remained high until 1992. Finally, all along the 1970s and 1980s there was a relaxation of budgetary policies that resulted in a rapid increase of public deficits and in public debt, contributing to maintain the high level of real interest rates. The increase of 5 percentage points of the debt to GDP ratio resulted in an increase of interest rates of between 100 and 150 basis points (Tanzi and Lutz, 1993) (Ford and Laxton, 1995)

Those shocks to factor prices induced substitution effects between capital and labour and helped to explain the fluctuations of the capital stock around trend growth. The important question is whether they also accounted for a decline in the rate of growth of GDP and of the capital stock. Blanchard (1998) and Blanchard and Wolfers (1999) argued that reduced capital profitability through high wages and high real interest rates led to a too large capital stock in comparison with equilibrium employment. Since labour market rigidities prevented wages from adjusting and high budget deficits kept real long-term interest rates high, profitability was restored through a slowdown of capital formation, yielding a new equilibrium with a lower level of employment, capital and economic activity. According to this explanation, the on going relative weakness of investment in the second half of the 1990s should in essence reflect unfavourable conditions of demand rather than adverse conditions of supply. Fitoussi et al. (2000) have estimated a less prominent role played by wage developments. They consider that changes in the real interest rates and productivity growth were as important determinants as labour markets and identify a quite close relationship between investment and the employment rate in the EU economies.

3.1) Sectoral Shifts

There is an alternative hypothesis, which argues that the 1970s saw the beginning of a period of slow technical progress. The deceleration of productivity growth is related to the structural break in the production mix of the industrial countries. Whereas the shift of production from agriculture towards industry inflated productivity estimates in the 1950s and 1960s, the change from manufacturing towards services could have depressed aggregate productivity growth. Nevertheless, the decline in the relative share of industrial employment, without construction, since the 1970s, had no strong impact on apparent labour productivity growth. If employment had been constant in the sectors, aggregate productivity would had even been lower, due to the low level of productivity in the agricultural sector. A constant share of employment in industry would have raised productivity growth only marginally.

3.2) R&D and Human Capital

There has been a recent and large literature trying to identify the determinants of technical progress following the endogenous growth approach, focusing not only on the vintage effect but on variables and indicators related to R & D and human capital, such as the R & D expenditure, the level of education of the manpower, the number of engineers and scientists and the level of patent activity (Keeley and Quah, 1998) (Cameron, 1998) Their research points to a significant and positive relation between these indicators and productivity growth. There is

also evidence of the catching up effect by which countries benefit from R & D produced abroad (Hanel and Niosi) and positive spillovers between firms and industries. Nevertheless, R & D features strong local roots and technology diffusion is fastest at local level and slower across borders. The distinction between public and private R & D shows that an efficient division of labour between basic research, applied research and marketing of research results not in crowding out of private research but in mutually reinforcing and welfare improving (Guellec and Van Pottelsberghe, 2001)

Recent empirical evidence reveals that R & D and education have a strong bearing on explaining cross-country differences in productivity growth, especially if it is conducted on a large set of developing countries (Jones, 1995) In the EU, Hers (1998) has reported a strong contribution of human capital to productivity growth in four country members states since 1973 compared with the period 1950 -1973. A recent study by the OECD confirms that the upgrading of human capital may have a notable impact on output. One additional year of schooling would represent on average an increase of GDP per capita by up to 6% (Bassani and Scarpetta, 2001) Another study by Temple (2001) shows the importance of education on labour productivity, on wage differentials and on changes in relative labour demand. He considers that the 1,550 billion of US dollars spent every year by the OECD countries is a well spent money and if any it should be increased given its private and social returns. Social capital, that is, the features of social organizations such as trust, participation, communication and networking, tend also to improve the efficiency of society by facilitating coordinated actions are also an important element for increasing growth.

However, technical progress does not automatically follow from higher investment in R & D and human capital. The adoption of technical progress follows much more complex patterns than previously thought. Engaging economically in R & D depends crucially on individual incentives such as the appropriation of profits, patent legislation, tax incentives, access to skills and knowledge, efficiency of public investment in research, entrepreneurship, venture capital availability and competitive pressures. Therefore, there are important institutional issues that need to be in place to make investment in human capital and research to produce efficient economic results. Human capital and entrepreneurship are distinct concepts following different incentive schemes.

3.3) Entrepreneurship

Government policies may have a strong impact on productivity growth given that they set the framework for private economic activity, which might either encourage entrepreneurship and innovation or induce bureaucratic attitudes or obstacles to economic activity (OECD, 2000) The effectiveness of taxation and public spending is an important feature. Taxation has an immediate impact on individual incentives since it might discourage risk-bearing among entrepreneurs. Excessive public spending and debt might crowd-out private spending, especially if spending goes mainly to consumption instead of to investment.

Capital markets are an important determinant of entrepreneurship as well. The bank dominated financial system of the EU has been for a long time regarded as supportive of industrial activity. The emerging of ITC technologies has changed this perception and the UK and US capital markets dominated financial systems have taken a very large advantage over the EU in developing them through venture capital and private equity activities. The need for

strong equity backing for start-ups in the risky business of radical innovation where future cash flows can only be uncertain is becoming an essential element of entrepreneurship. There are large differences in the size of the venture capital markets in the EU and the US. In 2000, venture capital funding, as a percentage of GDP, reached in the US 0.33% versus only 0.13% in the EU, and venture capital investment reached 0.52% of GDP in the US versus only 0.10% in the EU (de la Dehesa, 2002) Graph 6 shows a comparison of the levels of equity market capitalization as a percentage of GDP and the ratio of equity financing to bank borrowing, in the US and the EU. Although the EU has been catching up, since 1980, in 2000, the US equity market cap as a percentage of GDP was still more than double (110% versus 50%) than that of the EU and the ratio of equity financing to bank borrowing, was still in the EU 65% versus 87% in the US (World Bank, development indicators, 2002)

3. 4) Transition Effects

Some recent research argues that aggregate productivity growth declines during the transition phase towards a new technology. Therefore, some productivity slowdowns are heralding a new wave of technical progress and are not the result of structural rigidities or exogenous policy forces (Greenwood, 1999) (Hornstein, 1999) Large-scale technological changes in general purpose technologies, such as the steam engine, electricity and ITC had in common that their diffusion was powerful but slow (David, 1990) New ITC technologies, for instance, make the existing technology and well established forms of work organizations obsolete and, therefore, incumbent industries suffer from a loss of productivity. While losing market shares to new entrants, the incumbent firms will not immediately adjust their factor inputs, given that the change in technology has first to be realized and secondly work practices have to be changed and adjusted. Unless this occurs, the new technology is not optimally used, while the old technology remains in place, generating a lower productivity.

Empirical evidence of these arguments has been only very recent due to the lack of relevant statistical series. Although computers entered economic life in the 1970s, their effect on productivity growth did not appear until the mid-1990s. It has taken more than 20 years for computers to have a significant influence on productivity growth (Oliner and Sichel, 2000) (Jorgensen and Stiroh, 2000) (Whelan, 2000) Stock market prices tend to drop in anticipation of a new technological change, then to increase discounting a large growth of profits in the firms producing these new technologies and later to decline if the new technology takes more time then expected to diffuse throughout the economy (Jovanovic, 2000)

3. 5) Reasons for the improvement of EU Growth in the second half of the 1990s.

In the second half of the 1990s, the slowdown of economic growth in the EU seemed to have reverted, with an average real economic growth of 2.6% per annum, improving

the performance of the 1980s, but being overshadowed by the outstanding economic performance of the US. It has been a period of employment-driven growth. The main contribution to output growth was due to labour accumulation as evidenced by employment growth of 1.3% per annum. This left to labour productivity growth another 1.3% contribution, which was much lower than in the previous decade.

Although, in the long run, employment tends to grow in parallel with that of the working age population, in the case of the EU in recent years, it has not been the case, the employment growth in the EU since the mid–1990s has outpaced the growth of the population at working age. The latter has grown very slowly while participation and employment have increased considerably, based on the large pool of available labour, due to the high level of unemployment. The low participation and employment rates in the first half of the 1990s and their significant increase in the second half are mainly due to cyclical factors, although there has been some help from structural reforms. Over the cycle, participation tends to increase in line with declining rates of unemployment. Unemployed and new entrants into the labour market have an incentive to enter the labour force when they see a real chance of obtaining a job. This has been the case, in the EU, for some groups such as married women, the elderly and the youth. Structural reforms tending to lowering the reservation wage and reducing the tax wedge and to increase part time and fixed term contracts have also plaid a significant role.

Some small labour market reforms in the EU have made GDP growth more labour intensive. More flexible workplace arrangements, such as part time jobs and fixed term contracts have allowed firms to get around job-protection laws and to encourage more hiring. Some recent cuts in social security contributions for low-paid workers have priced some of the jobless back into the labour market. As a consequence, participation and employment rates have risen and unemployment has fallen. Over the second half of the 1990s, employment in the EU has increased at an annual rate of 1.4% even faster than in the US, with only 0.8%. One final interesting fact is that the large increase in the US employment rate from 1992 to 1999 did coincide with the highest rates of capital deepening in the history of the US, showing that there was not a capital for labour substitution process. Therefore, the employment growth together with a larger capital investment has contributed significantly to US economic growth over the past decades.

A study by the European Commission (European Economy, 2001A) looked at the contribution of labour inputs to growth, using a broader definition of inputs than just the employment rate, that is, working age people in total population, labour force participation, total employment as a proportion of labour force and average hours worked per person employed. In the first half of the 1990s the estimated contribution of labour inputs to growth of GDP per capita in the EU was negative, due to declining employment rates and reductions in working time. In the second half of the decade, the overall contribution of labour inputs to growth turned positive, although average hours worked continued to decline, because employment and participation rates rose enough to more than compensate the drop in working time. But such a contribution to growth of GDP per capita was only one third than in the US. Estimates for 1998 indicate that lower labour accumulation and utilization in the EU accounted for two thirds of the gap with the US level of GDP per capita, while the remaining third was due to lower labour productivity. Such a lower labour utilization in the EU versus the US was due to a higher rate of unemployment and a shorter working time. The conclusion of the study was that the UE had a huge potential of labour utilization. If it were to match the US employment rate it would create 18 million new jobs!

Some factors helped to increase labour demand. On the one side, continuous wage moderation has contributed to make labour utilisation in the production process more

profitable and to induce some labour-capital substitution, reverting the strong capital-labour substitution of the 1970s. Moreover, the secular change in demand towards labour-intensive services may have stimulated employment growth as well as the change in industry structure towards a larger share of regulated industries may have contributed, on average, to less binding labour market regulation and lower wage growth.

On the other side, technical progress and the strong increase in international trade, due to the development of the globalization process, have entailed additional demand for high-skilled labour at the expense of low-skilled labour. Owing to the lags involved in extending the skilled labour stock and in the presence of not fully flexible wage structures, this pattern might have increased employment growth with some delay, eventually, materializing only in the second half of the 1990s.

Nevertheless, output growth driven exclusively by employment creation is unsustainable over the long run because the expected deceleration in the increase of working-age population, excluding immigration, puts a natural brake on employment growth. There is still a considerable margin to increase employment further in the EU, given the still high rate of unemployment, but in the long run, increases in labour productivity will become key to a sustained output growth. Labour productivity growth is often seen as an immediate consequence of rising employment growth in the EU since low-skilled labour entered in employment, due partly to the reduction of social security contributions for unskilled labour, reducing the average productivity growth.

Graph 7 shows that countries with high productivity levels relative to the US tend to have a relatively lower utilization of labour and vice versa. However, the trend line displayed in the graph is not significant at the 5% level. It turns out significant once the extremes of Luxembourg, on the upper side and Greece and Portugal on the lower side are excluded. Without these observations, the trade-off between labour utilization and labour productivity is steeper, implying that high labour utilization has a less pronounced effect on labour productivity. Furthermore, the example of the US, characterized by a simultaneously strong growth in employment and labour productivity, demonstrate that there is not necessarily such a trade-off and that both can go hand in hand (Gordon, 1995).

Nevertheless, it is quite clear that large part of the relative out-performance of the US during the 1990s can be accounted for by the more rapid expansion of labour inputs. US employment grew a full percentage point faster than the EU employment, 1.6% versus 0.6%. Forty percent of the difference was due to relative changes in the employment rate over the said period. Part of this difference could be due to cyclical factors but the changes in the relative employment rates have a large structural component.

More important that the employment rate changes, however, have been the demographic trends. The US labour force grew by 1.3% on average, during the 1990s, versus only 0.6% in the EU accounting for over 50% of the difference in employment growth, due to the higher US birth rate and the higher US rate of immigration.

The second factor has been the decline in the EU effective average hours worked by the persons employed. Between 1991 and 2000, the number of hours worked by EU workers has fallen, on average, 0.6% per year, excluding the UK, while the number of hours worked in the US remained stable. The large increase in the number of holidays and the strong reduction of the weekly working time, have both contributed to this increasing working-time gap.

Finally, it is extremely important to point out, in favour of the EU, in this growth accounting exercise, that the different accounting treatment of ITC investment and the different pricing methodology in the US and in the EU makes the New Economy factor less relevant in order to explain the differences in productivity growth in both economies. First, computer software expenditure is accounted as investment in the US and only as a current expenditure in the EU, and so it is excluded from final output (Lequiller, 2001) Second, in most countries in the EU, statistics do not take a full allowance for the improvement in the quality and performance of computers. They simply count the number of computers as a measure of output of this sector, while in the US they use an "hedonic pricing" methodology by which is able to take into account, in the prices of computers and other capital equipment and adjust them accordingly, its increasing power and performance over time (Daly, 2003)

The first factor tends to reduce productivity growth in the EU and increase it in the US. Therefore, a better way to compare growth in both economies is to use GDP as a measure, to use Net Domestic Product (NDP), which deducts capital depreciation, to avoid accounting for the very large increase in capital depreciation, during the last decade in the US, due to the surge in investment in computers and software. Using NDP per hour worked, the productivity gap between both economies, in the last 5 years, has been much smaller than using GDP per hour worked. The average annual productivity gap between both economies, during the period 1996 and 2001, comes down to only 0.4 percentage points instead of 0.8.

The second factor tends to reduce the size of the ITC sector in the EU and its contribution to economic growth. A first estimation (Daly, 2003) concludes that the absence of "hedonic pricing" in the EU has tended to reduce its average annual growth by more than 0.1% during the 1990s. A recent paper by Sakellaris and Vijselaar (2003) shows the evidence of large biases in the official price indices of capital equipment in the EU. When adjusted for quality, productive capital stocks of equipment and software grow on average 3 percentage points more annually and that quality-adjusted output grows 0.46 percentage points faster annually, a 20% increase. Therefore, both factors tend to underestimate the impact of ITC investment and the use of capital equipment in the EU growth rate, reducing its gap with the US.

CHAPTER 4

The Medium to Long-Term Outlook

The next ten years do not look very bright either for the EU in terms of relative growth performance. EUROSTAT labour force projections suggest that the EU labour force will grow at an annual rate of 0.1% during the next ten years. There may be an upside to this estimate if there are substantial flows of labour from the Central Europe new members following their accession although, on the one side, some restrictions on labour mobility have been imposed during their first seven years of membership and, on the other side, these countries have an even lower fertility rates, 1.3 children per woman, than the present EU 15, 1.4 children per woman. Taking the following assumptions: that there will be a small positive contribution from an improvement in the employment rate, mainly in its female component, that average effective hours worked will continue declining by an annual rate of 0.2%, that is, at a slower rate than in the 1990s, and that output per hour worked will remain at a similar growth rate than in the 1990s, that is, around 2%, the overall potential or trend growth of the EU, in the next decade could be between 2% and 2.1%. This simple estimate is very similar to the one conducted by the OECD, inferred from its output-gap estimations, and by the IMF, both reaching an average of around 2% per year, as well as in line with the actual annual growth rates of the EU during the last decade. On the contrary, the same estimates for the US give a trend annual growth, for the next decade of around 3.0%, one full percentage higher than in the EU, which will continue to widen the growth gap between the two economies. Only in the short to medium term, it could be possible for the EU to grow at the same rate than the US or even higher, due to the US necessary adjustment period to reduce its large current account and fiscal deficits, but later, growth will turn again faster in the US (Daly, 2003)

4.1) The European Commission medium-term outlook

The European Commission medium-term outlook is not much different, the latest forecasts made by the European Economy 2003 Review, show that the EU growth for 2004 and 2005 is expected to be 2.0% and 2.4% respectively, while that of the US is estimated in 3.8% and 3.3% respectively, increasing the present gap. The same trend is expected in GDP per capita growth rates for the next two years, which are expected to be, 4% and 4.1% in the EU, and 4.8% and 4.4% in the US.

This report, acknowledges that, since the mid 1990s, there have been some important shifts in the underlying growth performances of the EU and the US economies, with a significant gap opening up in terms of GDP, and more importantly, GDP per capita, growth rates. From a situation over the period 1980-1995 when the EU and the US living standards were growing at roughly the equivalent rate, the second half of the 1990s has seen the emergence of a significant growth gap in favour of the US. These EU-US differences have also translated into the EU member countries level as well, with simple measures of dispersion indicating that individual country divergences relative to the EU average performance have grown by close to 50% in the 1990s compared with the 1980s. These extra and intra-EU divergences in economic

performances have been the subject of intense research efforts in recent years: Scarpetta et al (2000); Bassanini et al (2002); Colecchia and Scheyer (2002) and OECD (2003).

In order to contribute to this recent research with some more inputs and ideas, the EU Economy 2003 Review has produced a study of the sources of growth in general, with specific attention to productivity determinants, given their importance in shaping medium to long -term changes in living standards. This study is particularly interested in establishing whether a genuine break has occurred in the 1990s in the post World War II pattern of EU convergence to US living standards, with the previous rapid progress of the 1960s and 1970s, and the stabilization of the 1980s, now giving way to a further pulling ahead by the US over the second half of the 1990s and the beginning of the 21st century. The first question that is addressed is whether this break in the convergence pattern is likely to be permanent or transitory. The second is what role has been played by the information and telecommunication technologies (ITC) and by the increases in the employment content of growth. The third and final question is whether any policy lessons can be learned by the EU, and specially by continental EU member states from the growth pattern that has emerged in the US and also a small number of individual EU countries.

The first part of the study develops a growth accounting framework of the EU and US economies to present the basic stylised facts concerning the growth patterns of both economies over the last 40 years. It develops basic indicators of growth performance, using not only GDP, but also GDP per capita (which simply adjusts for population changes and represents the widest possible measure of living standards) and GDP per hour worked (which adjusts the GDP per capita measure for changes in employment and hours worked and constitutes the primary indicator to compare underlying productivity performance).

Table 20 shows how the first two indicators have evolved from 1961 to 2000. GDP annual growth rate in the EU has been declining from 3.9% between 1961 and 1980, to 2.4% between 1981 and 1990, to 1.6% in the period 1991-1995 and then has recovered to 2.7% in the period 1996-2000. The US annual growth rate has been also declining, but at a less rapid pace, from 3.7% to 3.2% to 2.4% in the first three periods and has bounce back to 4.1% in the last one, with more strength than in the EU. On average over the 40 years period, annual growth rate in the US has been 3.35% and the EU only 2.65%, 0.7% less, but in the last period the gap has amounted to 1.4%, the double than in the average. In terms of GDP per capita the average annual growth rates have been 2.25% for the EU and 2.15% for the US, but in the last period the US rate has been 0.4 percentage points higher, after being the same in the combined two previous periods, and 0.8 percentage points lower in the first. The difference with GDP lies in the higher annual growth of the US population, which has averaged 1.2%, while in the EU only 0.4%. In 2001 and 1002, this GDP per capita gap has continued increasing.

Table 21 makes a decomposition of average GDP growth, from 1966 to 2002, in the two economies into labour utilisation, in terms of employment and hours worked, and labour productivity measured by TFP and capital deepening. In terms of labour utilisation, the second half of the 1990s has witnessed a reversal of the US trend of strong contribution to growth from labour, which has been the main feature of US performance since the 1960s. By the mid 1990s still over 60% of US growth was emanating from labour, but, in 2002, only 46% was attributable to this factor of production. This is the result of the recent trend to "jobless" growth in the US and also to its high employment rate, which in 2002 was still 8 percentage points higher than in the EU. On the contrary, today, the labour component in the EU is contributing to almost as much as in the US, 40%, when in the mid 1990s its labour contribution was almost negative. Wage

moderation, structural labour reforms but also a marked decline in the capital-labour ratio have been the factors behind this surge in the labour contribution to the EU GDP.

Unfortunately for the EU, the strong recovery in the labour contribution has been accompanied by a corresponding negative trend in labour productivity, coming from 5.6% from 1966-1970, to 3.8% in the period 1971-1980, to 2.2% in the period 1981-1990, to 2.4 % between 1991-1995, to 1.6% in the period 1996-2000 and to 1.4 in the period 1996-2002. The EU has now a lower rate of productivity growth, of 0.3 percentage points than the US. Nevertheless, the US is still in a relatively unique position internationally of being able to combine a high employment rate and strong productivity performance. Not only has over-performed the EU, since the early 1970s, in terms of employment creation, but now it is outperforming the EU also in labour productivity growth.

Therefore, the EU is facing a difficult future since it is clear that the present recovery in labour utilisation is, by definition, a temporary phenomenon. It is only a matter of a few years before the negative effect of ageing populations really start to impact on the potential growth of a large number of EU member countries. The future growth of the EU is going to depend on the rate of growth of labour productivity that at present seems to be engaged in a structural downward trend. As this inverse relationship between labour utilisation and labour productivity contributions to growth has been very evident in the case of the EU and to a lesser extent in the US, the study does a further breakdown of both growth components to decipher their underlying determinants in terms of hours worked and employment. Such a breakdown is shown in graph 8. In the EU, the upward trend in the overall contribution from labour is driven by employment rather tan by an increase in hours worked. Although the fall in the number of hours worked is less than in previous decades, the average time spent at work continues falling. The situation in the US is very different to that of the EU, with average hours worked per worker starting to rise in the late 1980s and persisting up to 2000 with a slow decline after. At the same time, the US employment creation is on a downward trend, driven by the jobless growth pattern of the last 3 years, with the EU now in a historically unusual position of having an employment growth rate, which compares favourably with that f the US, matching the US growth rate in the last two years.

Capital deepening is another crucial factor for productivity and income growth. Although for over three decades the growth rate of the capital/labour ratio in the EU was at significantly higher levels than that of the US, in the second half of the 1990s a growing gap has emerged in favour of the US as shown in graph 8. While it can be questioned whether the US trend is sustainable given the bubble-like features over this period, what is more puzzling is the poor EU performance, with falling rates of investment despite rising profitability and declining cost of capital. Only the collapse in the equity markets could be the answer.

Nevertheless, other more worrying structural factors may also be at play, such as, on the one side, locational investment considerations, given that the international location choice for investors have increased and there is a growing flow of investment in those regions that offer most expected favourable ratios between capital productivity and capital cost. The case in point is that of the US in recent years, where falling ITC investment prices and high rates of innovation, as expressed by accelerating productivity and TFP growth rates, created an extraordinary investment climate that affected the EU domestic investment growth. On the other side, demographic trends in the EU are going to affect investment negatively. With an increasing dependency ratio, it is likely that domestic investment as a share of GDP declines or remains constant in a situation of falling interest rates. There are several reasons for this to happen. First, a declining population requires less net investment in order to keep the

capital/labour ratio constant. Second, a declining domestic labour force reduces the return prospects for domestic investment as well as the risk associated with overinvestment. In a world of free capital mobility this effect is likely to be stronger since firms can avoid the pressure on domestic returns by investing abroad. It seems paradoxical but the falling trend in the investment rate is likely to be accompanied by a secular decline in interest rates, with falling borrowing costs in this case reflecting lower returns from capital investment (due to expected decreases in the labour supply and in the domestic demand) rather than acting as an stimulus to undertake additional investment.

TFP is, finally, the most concerning aspect of the relative performance of the EU. For the first time in a generation the US has a trend rate of TFP growth, which is higher than that of the EU, as shown also in graph 8. This significant turning point results from a combination of a sharp downturn in the EU trend, and a rapid upturn trend in that of the US. Given the importance of TFP for long-term growth perspectives, this recent reversal puts into question the future prosperity of the EU.

Within the EU, there are major differences of performance in individual member countries since the early 1990s. There is a first group, which includes two larger countries, namely Germany and Italy, which stand out for their persistent poor outturns relative to the EU average. They represent around 40% of the EU total output, thus, their performance constituted a significant drag on the aggregate EU position. A second group, made up of Belgium, Denmark, France, Austria and the UK, grew close to the EU average. The final group of small and medium countries, that is, Greece, Spain, Ireland, the Netherlands, Portugal, Finland and Sweden, managed to grow at significantly faster pace than the EU average, especially over the period over the second half of the 1990s. In the period 1996-2002, this group grew at an average rate of 3.5%, compared with 3.25% of the US and with 2.25% of the EU as a whole. In the case of Greece, Spain, Ireland and Portugal, the growth out-performance is in part influenced by an element of catching up, given that their standards of living in the early 1990s were significantly below the EU average. Ireland has been, by far, the best performer of the group and of the whole EU. Excluding this group of catching-up countries, the most striking labour productivity performances came from Belgium, Austria, Finland and Sweden. Nevertheless, the first two were not able to combine high rates of labour productivity and high rates of labour utilisation, while Finland and Sweden could maintain both rates at a high level throughout the period.

Finally, the study makes an interesting attempt to look beneath the economy-wide trends and to assess the broad structural changes that have occurred at the industry level in both economies over the period since 1980. Two main questions are addressed. The first one is to know if the divergences in labour productivity growth trends between the EU and the US emanate from either structural employment shifts from low to high productivity industries or they simply reflect higher productivity growth rates in specific industries. The second one is to know if they are only simple differences emanating from specific industries in the manufacturing or services sectors or they are more pervasive productivity differentials and if these differentials are due to productivity gains associated with innovation and specifically with the adoption of ITC technologies.

In order to solve both questions, it uses two new industry data sets, which are both are highly disaggregate are internationally comparable and cover the period 1979-2001: the DG Enterprise and the GGDC (Groningen Growth and Development Centre) The first one is the "Industry Labour productivity Database", which is used for the "shift and share" analysis. The second one is the "Industry Growth Accounting Database", which permits a growth accounting analysis at the industry level similar to that of the entire economy.

The "shift and share" analysis consists in calculating aggregate productivity as a weighted average of the underlying industries productivity, with the weights being determined by each industry's share in overall employment. Consequently, the change in the EU and the US economies productivity growth rate over a specific period of time is determined, not only by the productivity growth rate of each individual industry, but also by the changes in the industry composition of employment. Therefore, aggregate changes in productivity are decomposed into three effects: The "intra-industry effect", the "structural change effect" and the "interaction effect". In this context, aggregate productivity changes are due either to an "intra-industry or "within industry" productivity growth effect, equal to the sum of productivity growth in the individual industries in the absence of structural changes, that is, of changes in the employment shares of specific industries; to a "structural change" effect, equal to the contribution to overall productivity growth of a shift of employment resources from low to high productivity industries, showing a healthy process of restructuring in the economy; or to an "interaction" effect, a residual term, which captures the dynamic component of structural change. The sum of these last two effects is sometimes used as a measure of the overall reallocation of resources process in an economy.

Through this decomposition it is possible to know why the EU and US economies differ in terms of their labour productivity growth rates, with a combination of three possible explanations: the differences in average productivity growth rates of individual industries, the differences in the reallocation of employment resources between industries, and finally, the differences in the initial starting conditions levels in terns of productivity, which encapsulate the potential catching-up.

The results of this "shift and share analysis" are the following: First, for all three periods the intra industry growth effect dominates the outcome, accounting for between 89% and 95% of the aggregate productivity growth in the case of the EU and from 100% to a 120% of the change in the US. Second, the shift effect has been positive over the last two decades for the EU, compared with a consistent negative pattern for the US. Thus, the EU is still gaining from a shift of employment from the low productivity industries such as agriculture to higher productivity industries such as manufacturing and services. For the US, however, this process appear to be completed, the negative contributions suggesting that workers are, on average, moving into lower productivity service industries. Over the whole period, the EU has been able to use changes in the industry composition of employment as a mechanism for closing the productivity gap with the US. However, the contribution fro this "catching-up" process has been declining over time, more than halving between the 1980s and the 1990s and falling from a contribution of 0.5 percentage points over 1980-1990, to less than 0.25 percentage points in the 1990s and continues with the same trend becoming increasingly a services-dominated economy like the US, where employment shifts from manufacturing to service industries are often associated with declines in productivity growth. The average trend in productivity growth in manufacturing, over the whole period, has always been higher than that of services, both in the EU and in the US. Therefore, the only way that the EU can reduce its productivity gap in the future is to generate productivity gains at the "intra-industry" level, as the US has been doing for the last three decades.

The "shift and share" analysis for the US suggests a surge in pure productivity gains from within industries themselves, more than compensating the negative effect from the reallocation of employment resources between industries. The extent of the surge is suggestive of the emergence of a new technological regime, which is permeating a wide range of industries and positively influencing their productivity performance. This new regime could, at least in part, be driven by the efficiencies being reaped from the use of ITC products and services and the wider changes associated with the creation and diffusion of ITC-specific knowledge. Graph 5

shows how the EU trends in labour productivity, both in manufacturing and services has been steadily declining from the mid 1980s and seem to have stopped in the last few years, while the US trends have been growing in both sectors, in manufacturing, since the early 1990s and in services since the early eighties, increasing the productivity gap with the EU.

This is the reason why the said study digs a little deeper to see if the ITC technologies have played an important role in the US in this diverging trend in manufacturing and services productivity, by decomposing 56 industrial and services sectors into ITC producing manufacturing and intensive ITC using services. Although manufacturing has been always producing higher productivity growth rates and levels than services, the recent surge in productivity in the US services, since the early 1990s, is suggestive that services could challenge manufacturing in terms of productivity in not so distant future and this could be the result to the creation and implementation of ITC technologies in this sector.

The results are shown in graph 9, which looks at the trends in labour productivity per hour in ITC-producing manufacturing and intensive ITC-using private services. In ITC producing manufacturing there is high surge in annual growth rates of labour productivity per hour, starting from a higher level, in the US, since the early 1990s, reaching at the end of the 1990s annual rates close to 25%. On the contrary, a lower surge, starting from a lower level, in the EU, since the mid-1990s, reaching annual growth rates close to 15%, ten percentage points lower, therefore producing an increasing annual growth of labour productivity per hour gap between the two. In ITC using private services the annual growth rate of labour productivity per hour gap is even larger, given that the surge in the growth rates of labour productivity per hour has been very strong in the US, although starting from a lower level, since the late 1980s, and reaching annual rates close to 4.5%. On the contrary, in the EU the annual rates of growth of per hour labour productivity have been falling, since the mid-1980s, and stagnant from the mid-1990s, reaching, at the end of the period, annual rates of growth lower than 2%, less than half than the US ones.

The overall contribution to labour productivity growth from ITC investments and from technical progress in the production of ITC goods and services accounted for about 60% of the US labour productivity growth over the second half of the 1990s, compare with 40% in the EU. This would translate into an ITC contribution of around 1 percentage point to aggregate labour productivity growth in the US and 0.66 percentage points in the case of the EU.

Finally, the study focuses on some policy actions needed to improve the EU underperformance relatively to the US and to encourage TFP and capital accumulation areas aiming at boosting future productivity growth, and achieving the specific Lisbon target of making the EU the most competitive, knowledge based, economy in the world by 2010.

First, due to the significant negative effects from the regulatory framework on investment, policy makers should consider putting a greater emphasis on regulatory changes in their reform agendas. The IMF has published a study (Bayoumi et al (2003) that concludes that deregulating the EU economy to the US levels could increase output by nearly 7% and productivity by 3% in the longer term. The Fraser Institute (2003) has elaborated an index of regulation showing that the level of regulation in the EU, both for the overall economy as well for the capital, labour and goods markets, is substantially higher than in the US. The Lisbon target is to eliminate these differences by 2010. Nevertheless, even if this were the case, what is very doubtful, it would not lead to sufficiently productivity gains over the next 7 years to close the present efficiency gap with the US, of roughly 10%. Given the limited dynamic efficiency gains of deregulation, it should be accompanied by measures to increase knowledge production.

Second, other of the targets of the Lisbon Agenda is action to boost TFP growth. In order to achieve this target, action is needed to increase investment in the knowledge economy, in terms of higher spending on third level education, software and R&D. With respect to R&D, the focus should not be on boosting public spending directly, but on creating the conditions, which will promote an endogenous increase in market based research spending, through tax credits and other instruments. Graph 11 compares the levels of investment in the knowledge economy of the EU and the US, in terms of GDP. The biggest gap is in tertiary education, where the EU spends less than half than the US, in software and R&D the difference are smaller, but still substantial. Total investment on the knowledge economy is 3.5% of GDP in the case of the EU and 6% in the case of the US. Market size id a crucial determinant for R&D, since the development of new products typically involves large sunk costs. Since research activities are human capital intensive, education is an essential requirement for those activities. Finally, more equity based financial structures seem to have promoted the riskier forms of investment in R&D, more than bank based systems.

The conclusion of the study are that introducing such a large package of supply side reforms over the coming years would be a significant boost to the EU potential growth rates, on average, between 0.25 and 0.75 percentage points over a 5 to 10 year horizon. However, even assuming a no-policy change in the US over the same time scale laid out by the Lisbon Agenda, the EU will take a much longer period to overtake the US. There are other targets, very difficult to achieve as well, that need to be accomplished, such as the need to integrate the predominantly low-skilled part of the EU potential labour force to reach the employment rate target of 70% and the continuous drag on productivity induced by the EU ageing labour force.

4.2) The future extrapolations made by the European Competitiveness Report

The European Competitiveness Report (2003) develops an interesting exercise of extrapolations, acknowledging the little veracity of extrapolations but trying to show which are the future long-term challenges for the EU. Taking into account the past economic performance of the EU and the US, from 1990 to 2002, in terms of GDP growth, GDP per capita growth, productivity per worker growth, employment growth and productivity per hour growth, its tries to answer three questions:

The first question is, on the assumption that GDP per capita in the EU will grow at the same pace as during the period 1996-2002, how much time will be required for the EU to double its standards of living, measured in terms of per capita GDP. Taking as a base the period 1996-2002, it will be almost the same number of years for the EU, 35 years, than for the US, 36 years. If the base period is 2001-2002, the picture improves, given that the US suffered a recession in 2001, it will then take 68 years for the EU and 210 years for the US. If the base is the period 1996-2000, the picture worsens, and the EU will take 30 years and the US 27 years. Finally, if the base is the rate of growth of 2002, for the EU will take 98 years and for the US only 51.

The second question is how much additional growth will need the EU to catch up with the US, 20 or 50 years from now. The results are that the EU will need an additional 1.6% annual growth rate in GDP per capita, an additional 1.2% annual rate of growth of productivity per worker, and an additional 0.34% annual rate of productivity per hour worked. In the case of the catching up in 50 years, the respective additional growth rates are, 0.65% in GDP per capita,

0.48% in additional productivity per worker and an additional 0.14% productivity per hour worked.

The third question is, judging from the past, what will the gap in 10 years and 20 years from now? The results are the following: In 2002, the gap in standards of living between the EU and the US was of the order of 28%. If the 2002 growth rate of GDP per capita is taken as a base, in ten years the gap will be 32% and in 20 years 36%. If the base period is the growth rate of 2201-2002, it will be 22% in 10 years and 17% in 20 years. If the base period is 1996-2000 the gap will be 29% in ten years and 30% in 20 years. Finally, if the period taken as a base is 1996-2002, the gap will be 27% in both 10 and 20 years. In terms of productivity per worker, where the gap in 2002 was 23%, using 2002 as a base, it will go up to 37% in 10 years and 50% in 20 years. If the base period is 2001-2002, the gap will be 30% in 10 years and 38% in 20 years. If the base period is 1996-2000, the gap will reach 30% in 10 years and 37% in 20 years. If, finally, the base period is 1996-2002, the gap will go up to 30% and 38% respectively. In terms of productivity per hour worked, where the gap, in 2002, was 8.5%, taking the same year growth rate, the gap will go up to 26% in ten years and to 41% in 20 years. Using the period 2001-2002 as the base, the gap will go up to 13% in 10 years and to 19% in 20 years. If 1996-2000 is taken as the base, the gap will go up to 11% in 10 years and to 165 in 20 years. Finally, taking the period 1996-2002, the gap will go up to 125 and to 17% respectively.

The obvious conclusion is that becoming the most competitive economy in the world, as expected by the Lisbon targets, will require a significantly superior performance, relative to the US, through the coming years and that current trends are not supporting such a conjuncture. Although the productivity gap is today narrower that the gap in standards of living, if current productivity trends do not change very substantially, the productivity differences will increase further in the future. This implies that convergence towards the US standards of living would have to rely on an important improvement in EU participation and/or employment rates, which is going to be extremely difficult with the faster ageing of populations in the EU. This conclusion leads to the issue of the impact of ageing populations in the EU economy, which is the subject of the next chapter.

4.3) The OECD "Sources of Growth" Study

The OECD has conducted, as well, a study about the sources of growth in OECD countries (OECD, 2003) in which makes an assessment of the present gap in GDP per capita between the EU and the US and its medium term developments, proposing a series of structural policies to be implemented by the EU in order to enhance its future growth.

It starts by pointing out that the gap in GDP per capita had been slowly narrowing, through a conventional process of catching up, until the 1980s, and stalled ever since, but that labour productivity levels continue to narrow until the mid 1990s reducing its gap to 10 percentage points of the US level (although this partly reflected the shedding of low-skilled labour) Since then, relatively lower unemployment rates combined with the smaller number of hours worked per person employed, account today for most of the difference in GDP per capita relative to the US. To the extent that it seems natural for people to demand more leisure as their real income levels go up, an increasing use of labour potential both in terms of employment and number of hours worked does not necessarily imply a welfare improvement. It is likely however, that the large discrepancies observed in the EU and US employment rates have to do more with

the pervasive influence of structural policies on incentives both to hire and to take up work than differences in preferences for leisure.

The sources of growth in labour resource utilization in the EU countries, since the mid 1990s, shows that the continued decline in hours worked was more than offset by the positive impact from raising participation and employment rates. While such positive trends cannot go on forever, because of the rapid ageing population trend, there is still scope, in some EU countries for employment and participation rates to offset the projected negative contribution from demographics. In fact, despite the considerable progress achieved in some member countries, notably the UK, the Netherlands and Ireland, during the past decade, structural unemployment still remains relatively high in the EU, leaving significant room for improvement. Related to this, the incidence of long-term unemployment remains quite high in the EU as a whole compare with the US or even Japan, and it has not decline during the 1990s.

Furthermore, the problem of high unemployment in several EU member countries is compounded by low participation rates, resulting in even larger cross-country differences in overall employment rates relatively to, for instance the Scandinavian countries, which have the highest employment rates. This problem is mainly concentrated in much lower participation and employment rates of the young, the old and the female workers.

The study concentrates in these lower participation and employment rates, suggesting a series of structural measures to reduce them, following the research done in the OECD Jobs Strategy (1999) These reforms can be regrouped into two broad categories: First, the tax and benefit system, which includes unemployment support and tax wedges. Second, the labour and market regulation that covers employment protection legislation, rules regarding minimum wages and other working conditions as well as administrative burdens on the start-up of firms and other barriers to competition.

As regards the first group, in the case of tax and benefit system, policy makers are frequently confronted with a trade off between meeting social objectives and minimising disincentives to work. For instance, unemployment benefits provide needed support for workers and households experiencing job losses. However, high replacement rates (the level of unemployment compensation relatively to the last working wage) can raise the structural unemployment rate by lowering the gap between income from work and the income received on support. This is particularly the case if high replacement rates are accompanied by a lengthy entitlement period. An extended benefit period can contribute to lengthening the average unemployment spell, thus leading to a loss of human capital and the reinforcement of insider-outsider mechanisms, potentially reducing the overall wage sensitivity to labour market conditions.

The combination of high replacement rates and duration of benefits show that unemployment income support relative to the wage level can be quite high in several countries, notably in Denmark, the Netherlands, Portugal, Finland, Belgium, France, Austria, Spain and Germany, all of them more than doubling the US rate and almost doubling the UK rate. Moreover, despite the empirical evidence that these rates can have an impact in structural unemployment, reform in this area has been difficult and very uneven. Replacement rates have been increasing in the last 7 years in some countries such as the Netherlands, Portugal, Austria and Germany, while they have come down in others such as Denmark, Spain, France, Sweden and the UK, increasing the gap within member countries. Despite the fact that his issue is especially relevant for long-term unemployed, whose earnings potential in the labour market is often less than that of the average production worker, net replacement rates for long-term

unemployed are extremely high in some EU member countries such as Sweden and Denmark, which are above 100% or Finland, the UK, Portugal, the Netherlands and Belgium, which are above 80%, while in France and Spain are similar to the US, that is, below 60%, being the EU average 75%.

Nevertheless, most countries have taken measures to improve such a trade off. While the level of duration of benefits have generally been maintained to avoid adverse social consequences, eligibility and work availability requirements have been tightened, by raising the minimum amount of time spent in employment required to satisfy qualifying criteria, and reducing the scope for turning down job offers repeatedly without facing some penalty. Furthermore, eligibility to benefits for certain groups has been made conditional to enrolling in various schemes such as schooling, vocational training, voluntary work or a subsidised job. In return, governments are providing more intensive job-search assistance, including personalised job counselling and follow-ups so as to improve job matching. The majority of countries have raised active support to the unemployed in order to reduce the long-term dependence on benefits, although the amount of resources spent in active labour market policies varies substantially among EU member countries both in terms of GDP and as a percentage of total expenditures on active or passive measures. This kind of active labour market policies need to be well designed and well targeted in order to be effective, otherwise their cost can rise very quickly without achieving much result (Martin, 2000)

The said trade-off can be particularly difficult for workers with low earnings potential due low productivity. First, a significant reduction of in out-of-work benefits can push many of them into poverty. Second, to avoid this, many countries have chosen to provide in-work benefits or payroll tax rebates combined with a minimum wage, incurring in fiscal costs. Third, to limit the fiscal costs, the benefits are typically based on their level of earnings, but a rapid withdrawal as earned income increases generates high marginal effective tax rates, lowering incentives to increase the work effort beyond a certain threshold (poverty trap) Finally, raising the threshold for benefit withdrawal and/or lowering its pace pushes the problem of marginal effective tax rates further up the earnings scale and can rapidly increase the budgetary costs, which may imply to raise tax rates. Several countries, among others, the UK, France, Finland, Belgium and Ireland, with the aim at improving in-work benefits of low-wage earners, have favoured measure to top-up wages of low-income households with in-work benefits. In addition, the phasing out of these benefits, also earnings-tested, has been more gradual.

In order to lower the cost of low-paid jobs, and stimulate labour demand, several countries have reduce the wedge between the wage paid by the employers and the take-home pay of employees by cutting labour taxes, mainly employers and/or employees contributions to social security. After rising steadily from the mid-1970s to the mid-1990s, tax wedges have been reduced in several EU member countries, including France, Italy and the Netherlands, where wedges were, and still are, relatively high. In fact, the reduction in tax wedges, in the late 1990s, has been a key factor behind the relatively strong employment EU performance, especially in countries where the measures were indeed targeted for low-paid jobs. However, deteriorating public finances reduce the scope for further cutting of tax wedges.

Finally, the particularly high rate of inactivity among workers aged 55 to 65, one area which could be given particular attention, is the incentives for early retirement resulting from existing public pension and other benefit schemes. A large number of countries where the official retirement age remains at 65, the average effective retirement age is several years lower. Unfortunately, the effective retirement age has decline over time as life expectancy at that age has increased significantly. In many countries, such patterns have been encouraged by public

pension policies of high replacement rates, combined with a low return on extra years spent in work beyond a certain age or number of years of contributions. More important, special early retirement programmes, unemployment-related benefits and disability schemes have provided older workers with an early route out of the labour market, even in countries where participation rates of older workers are high, so are their employment rates suggesting no inherent barriers to employment at an old age. Considering that the burden of early retirement on output and public finances is going to intensify over the next decades, the disincentives to work at older ages should be radically removed.

As regards labour market regulation, the employment protection legislation (EPL) provides a good example of the possible effect of labour market institutions on structural unemployment through their influence on the shock transmission mechanism. By raising the cost of dismissal it reduces the incidence of lay-offs and hence the flow into unemployment, But, on the other hand, strict firing restrictions make firms more hesitant to hire new employees, making it harder for the unemployed to re-enter employment (Boeri et al., 2000)

Moreover, EPL may have adverse indirect effects by reducing the speed of real wage adjustment as well as aggregate wage flexibility. The lower the job turnover associated with strict EPL often implies an increase in the average duration of unemployment and the proportion of long-term unemployment, raising its persistence and potentially reducing the impact of unemployment on wage setting. As noted earlier, it is striking to observe that countries with rising shares of long-term unemployment are also the ones generally facing increases in structural unemployment rates. There is a very high correlation among the two, as shown in Graph   which correlates changes in the incidence of long-term unemployment with changes in structural unemployment, between 1990 and 2001 (OECD Employment Outlook, 2002) This has been accompanied, during the last decade, by a tendency to ease regulations affecting temporary contracts and consequently by an increase of the share of temporary jobs in total employment, which has increase the power of "insiders" (who are typically employed on permanent contracts) as it has been explained by Dolado et al. (2001) in the case of Spain, by Blanchard and Landier, (2001) in the case of France and by Nannincini (2001) in the case of Italy.

Another labour protection regulation, in many European Countries, is the setting up of a statutory minimum wage. A uniform rate is often applied nation-wide, which when is moderate relative to the average wage, its incidence on overall employment can be limited, but when not, it has the risk of affecting disproportionately specific categories of workers, such as youth in search of a first job experience, or have adverse employment effects on some regions with high rates of unemployment. In general, minimum wages have been slowly falling during the past decade, but they still remain high in certain countries such as France and Ireland, which may prevent relative wages from reflecting productivity differentials. Sometimes, binding floors on the wage of less productive workers are imposed via an extension of collective agreements. In some cases, these floors can exceed the statutory minimum wage, such is the case of Belgium and the Netherlands. As it has been explained in Chapter 2, this problem is proportionally more acute in the countries where the trade Union membership and the coverage of employees by collective contracts are larger.

Empirical evidence shows that labour market performance can also be influenced by product market regulations that reduce the level of competition. Regulatory reforms aimed at lowering entry and exit costs, trade barriers and the stringency of state controls can stimulate output and employment by raising the elasticity of product demand, reducing thereby price mark-ups and lessening labour market segmentation. Progress by reforming such regulations

may have boosted employment rates by between 0.5 and 2.5 percentage points across the EU over the past two decades. As Blanchard and Giavazzi (2001) have shown, an increase in labour market competition puts downward pressures on wages in the short run, especially in highly protected sectors, where the scope for rent-seeking behaviour by workers is largest, but in the longer run, stronger competition tends to boost real wages through it favourable impact on productivity. One of the reasons why reforming labour market policies has proved to be difficult in many countries is the associated rents enjoyed by specific groups that are well position to resist.

CHAPTER 5

The long-term future, the ageing population challenge.

After the next ten years, the main economic issue facing both the US and the EU will be the impact of the ageing of the population on public expenditure. The combination of the present persistent falling trend in fertility in most OECD countries and their present persistent growing trend of life expectancy is going to put a very strong pressure on public finances in the future. The spending pressure will be much higher in the EU than in the US, making it much more difficult for the former not only to be able to comply with the budget rules established by the Maastricht Treaty and by the Stability and Growth Pact (SGP) which are necessary to achieve a successful Monetary Union but, what is more worrying, to keep a sustainable level of budget balances and of the debt to GDP ratios. The consequences can be extremely negative for the future growth of the EU. A "greying" population means less active population, less entrepreneurship, less innovation, higher, and probably unsustainable, public expenditure and, therefore, a lower rate of growth. A few recent reports have tried to measure the impact of ageing on public finances and all of them reach similar conclusions: the impact is large enough to become the most important economic challenge of the XXI century for the OECD countries and especially for the EU.

5.1) The EU Report

5.1.1) EU Demographic Projections up to 2050

The Economic Policy Committee of the European Commission, under the mandate of the ECOFIN Council, which was worried about the fiscal impact of the EU future ageing demographic prospects, established a "Working Group on Ageing Populations" in 1999, which after working for two years, issued a final report titled "The budgetary challenges posed by ageing populations" (European Economy, 2001, No 4) This report was done in parallel with a similar report by the OCDE (Economic Outlook, No 69, June 2001)

The report is divided into four sections. The first one includes demographic projections up to 2050 for all member countries. The second one looks at their effect on public expenditure on pensions. The third one measures the direct impact of ageing populations on public expenditure on health and long term care. The final section considers the sustainability of public finances.

The underlying demographic assumptions on which the age related expenditure are based are the following: The average EU fertility rate in 2000 stood at 1.5 children per fertile woman, but ranged from 1.2 in Spain and Italy, 1.4 in Germany to 1.7 in France and the UK, 1.8 in Denmark and 1.9 in Ireland. By 2050 the EU average fertility rate will converge upwards to 1.7 children, with most of the increase occurring in the first two decades. The life expectancy is

projected to increase steadily over the said period. Having risen from 67 years in 1960 to 75 in 2000, average life expectancy at birth for men is projected to rise by five years to 80 in 2050. For women, it is also projected to rise from 80 years in 2000 to 85 in 20050. Sweden with 82 years and Italy, Greece and Austria with 81 years will be above the average for men and France with 87 years and Sweden with 86 will be above the average for women. The migration flows assumption is an annual net inward migration to EU member States of around 640.000 migrants over the projected period, coming down from 661.000 in 2000 to 622.000 in 2050, constituting approximately 0.2% of the total population. Germany, Greece, Luxembourg, Austria, Portugal and Sweden will be above the 0.2% average.

As a result of these assumptions, the total size of the EU population will continue to grow slowly from 376 million in 2000 to 386 million in 2020 and then to fall to 364 million in 2050, a drop of some 12 million compared with 2000. Whereas large falls are projected in the size of the total population in Italy, Spain and Germany, 17%, 11% and 85, respectively, the total population is expected to grow in a number of countries, including France and the UK, by 5% and 4% respectively, with the largest increases in Luxembourg and Ireland, 29% and 26% respectively. The total population size is projected to keep growing in France and UK until 2040, whilst it is already starting to fall in Italy and to decline in Spain by 2010 and Germany by 2015.

The EU working-age population (persons aged between 15 and 64) will stay broadly stable at some 246 million until 2015, after which it will decline to 203 million by 2050, a drop of 18%. In percentage terms, the largest declines are projected for Spain (–29%) and Italy (-33%) with only Ireland projected to see an increase of 5%. As well as declining in size, the labour force will be "greying", with workers aged between 55 and 64 accounting for an increased share of total workforce. At the same time, the number of elderly persons aged 65 and over will rise from 61 million in 2000 to 103 million in 2050, an increase of some 70%. All member countries experience increases over 50% with the largest increases taking place in countries having low starting positions (Ireland, Luxembourg and the Netherlands)

As a consequence of these outcomes, the old-age dependency ratio of the EU, defined as persons aged 65 and over as a percentage of the working-age population aged 15 to 64, will more than double from 24% in 2000 to 49% in 2050. Striking differences across Member States are evident. In terms of starting position, Ireland has the lowest old-age dependency ratio at 17% compared with ratios of 25% and over in Belgium, Greece, Spain, France, Italy and Sweden. In most Member States that ratio will reach a new plateau around 2040, with the highest ratios of some 60% in 2050 for Spain and Italy. Finally, the very old-age group of persons, aged 80 and over, will almost triple from 14 million in 2000 to 38 million in 2050.

5.1.2) Projected Public Pension Expenditure in the EU up to 2050

The assumptions made by the Age Working Group report are the following: Labour participation rates in the EU are based in the projections of the International Labour Organization (ILO, 1997). Participation rates for men will remain almost constant from 76.9% in 2000 to 77.4% in 2050, however participation rates for females will be converging to that of the men average in 2050, that is, from 57.7% in 2000 to 69.5% in 2050. Participation rates for males aged 15 to 54, fall slightly, from 85.1% to 84.6%, but for males aged 55 to 64 they rise

from 52.6% to 56%. Participation rates for females rise in both age segments from 67% to 77.1% in women aged 15 to 54 and from 29.9% to 46.7% for women aged 55 to 64. It is very important to mention that these participation rates could be smaller since some countries, such as Spain, Ireland and the UK measure their participation rates for males and females only for aged 20 to 54, instead of 15 to 54, given that they tend to be smaller from 15 to 19 years of age.

Unemployment rates are expected to fall to their structural levels, as defined by the OECD, by 2050, that is, around 8%, although some countries like Spain have projected unemployment rates (4%) much lower than the ones envisaged by the Age Working Group and very difficult to achieve unless very radical labour reforms are implemented.

Higher participation rates and lower unemployment rates can offset some of the impact of demographic projections on the size of the labour force or working-age population. Therefore, the key variable is not so much the old-age dependency ratio (elderly as a percentage of the working-age population, but rather the balance between economically active and inactive persons, who must be supported. Two new ratios must therefore be measured. The first one is called "potential economic dependency ratio" which expresses the number of potentially inactive persons as a percentage of the labour force, that is, the population aged 15 and over inactive or not in the labour force, as a percentage of the total number of persons in the labour force. The second one is called "effective economic dependency ratio" that expresses the actual number of inactive persons as a percentage of the total persons employed, that is, the number of persons aged 15 and over, who are not employed, as a percentage of the total number of persons employed. Clearly, these ratios are higher than the old-age dependency ratio, and both rise over the projected period.

The potential economic dependency ratio increases, for the EU as a whole, from 74% in 2000 to 96% in 2050 and the effective economic dependency ratio increases from 90% in 2000 to 106% in 2050. Some countries exceed such percentages. In the first ratio, Belgium increases from 92% to 113%, Spain from 92% to 114% and Italy from 109% to 125%. In the second ratio, Belgium increases from 114% to 128%, Spain, from 123% to 128% and Italy, from 134% to 142%. The countries with lower ratios are, in the first case, Denmark, with 66% in 2050, Sweden, with 76%, Ireland, with 77% and Luxembourg with 32% and, in the second measure, again Denmark, with 76%, Portugal and Sweden, with 86 and Luxembourg with 29%, at the end of the projected period. Nevertheless, most measures of economic dependency ratios include children (persons aged 0 to 14). When children are included in the EU ratios the potential economic dependency ratio increases from 112% in 2000 to 131% in 2050 and the effective economic dependency ratio increases from 135% to 145% between both years. That is, each person employed in 2050 will have to support 1.45 inactive person. However, in this case, children are excluded from the definition of inactive persons to facilitate the comparison with the evolution of the old-age dependency ratio.

Finally, the macroeconomic assumptions of the projections are the following: The real GDP growth will go down from a present annual rate of 2.5%, between 2000 to 2005, which has not proved to be right as of today, to an average of 1.6%, between 2000 and 2050. Labour productivity growth will stay constant at an average annual rate of 1.8% over the whole period.

The results of these assumptions combined on public pension expenditure, before taxes, as a percentage of GDP are shown in table 22. Pensions measures are meant to refer to all replacement revenues for the older population, for example, they include early retirement, disability and survivors pensions and other transfers to the elderly, such as

unemployment benefits to people aged 55 and over and "social pensions". As regards the starting position in 2000, spending in on public pensions accounted for an average of 10.4% of GDP, albeit with considerable variations among Member states. It ranges from low levels of 4.6% of GDP in Ireland and 5.5% in the UK, to 14.5% in Austria and 13.8% in Italy. These differences stem from the fact that public pensions in some countries include earnings-related schemes with entitlements dependent upon past contributions: this tends to lead to a higher level of public expenditure on pensions. On the contrary, public pensions schemes in other countries operate on a more "flat-rate" basis, often aiming at providing a minimum level of retirement income, supplemented with private occupational schemes and/or private savings, which fall outside the public sector and, consequently, the scope of the projection exercise.

The projections show an increase in public pension expenditure between 3% and 5% of GDP in most Member States over the period up to 2050. The EU average goes from 10.4% of GDP in 2000 to 13.9% of GDP in 2050. The countries that experience higher increases are Greece with 12.2%, Spain with 7.9%, the Netherlands with 6.2%, Denmark with 5%, Finland with 4.7%, Ireland, with 4.4% and Portugal, with 4.1% of GDP. Nevertheless, there are notable differences among them, given that Denmark, Finland, Ireland and the Netherlands have large funded components of their pension systems, whilst Greece, Spain and Portugal rely exclusively on a "pay as you go" financing. Germany and France have average increases of 5% and 4%, given that German figures are accounted before the 2001 reform. The UK is the only one to actually project a decrease of public pension expending, as a percentage of GDP, this is largely the result of the indexation of pension benefits to inflation. The increases in Sweden and Italy are small, 2.6% and 2.1% of GDP respectively. This is the result of having introduced in the 1990s reforms establishing the so-called "notional defined contribution" pension schemes, which mimic the operation of funded pension schemes, but remained financed on a "pay as you go" basis (in Sweden a proportion is financed on a funded basis) These schemes limit the impact of ageing on pension expenditure in two important ways. First, a close actuarial link is established between contributions and entitlements. Second, the final pension annuity at the age of retirement is determined by a formula that takes into account the life expectancy at the age of retirement. Therefore, public finances are sheltered from the impact of increases in life expectancy that are mostly shifted to the individual.

These increases of public pensions expenditure as a percentage of GDP are decomposed into four explanatory factors. The first is the population ageing or dependency ratio effect, which measures the changes over the projected period in the ratio of persons, aged 55 and over, to the population aged 15 to 54. The second is the employment effect, which measures the changes in the share of population at working-age (15 to 64) that is employed, that is, the inverse of the employment ratio. The third is the eligibility effect, which measures the share of population aged 55 and over that receive a pension, and the fourth is the benefit effect, which measure the changes in the average pension relative to output per worker. The dependency ratio rises very substantially in all countries placing an upward pressure on public pension expending and it is the main driving force of the increase in pension expenditures. The eligibility ratio places also an upward pressure, being the second driving force of higher expenditures, due to the large increase in female participation rates, although is partly compensated by the reduction in the number of women receiving "survivors" pensions. The increase in the effective retirement age would also counteract the increases, given that it will lower the share of persons aged 55 and over receiving pensions. The benefit and the employment ratios tend to offset part of the expenditure increases.

Finally, it is important to take into account that these projections could worsen if the population decreases further, if the participation rates end to be lower, if the employment

rates are lower and/or the productivity ratios are lower than expected by the initial assumptions, and the other way round.

5.1.3) Projected increases in EU public expenditure on health and long term care.

The economic implications of increased public expenditure on health and long term care are quite different than in the case of public pension expenditure. This is because the first one would also translate into an increase in the size of an already relative large sector of the economy, which will affect the sectoral structure of the economy and the overall economic development.

At first sight, health care and ageing seem to be highly correlated because older persons tend to consume more health care than other age groups, this seems to be the case especially for very old persons. Looking at the distribution of health care expenditure by age on an static basis, that is, on a single year, is shows that, at early ages health expenditure tend to be high, up to 5% of GDP per capita, mainly because in some member countries costs of birth are included in public health expenditure. After childhood, the age-related expenditure profiles reveal increasing per capita expenditure levels with age, in all EU member countries, increasing from 2.5% of GDP per capita at ages 5 to 9, up to 17% at ages 80 to 89, and, then, they tend to fall for the highest age groups over 90, down to 15% of GDP per capita and below. The reason is that, at very old ages, expenditures are increasingly included in long-term care and not in health care, although it is often difficult to distinguish between both kinds of expenditures. Males tend to generate more expenditure on health care with age than females in most member countries.

Expenditure on long-term care show a similar pattern than expenditure on health care, although the levels of expenditure in terms of GDP per capita at prime ages tend to be lower and, at very old ages, tend to be much higher. This is the result of some member countries supplying long term care in a formal institutional setting, as it is the case for health care, although more and more is being provided at the home of the elderly, which it is preferred by the latter and implies a lower level of expenditure. Contrary to the case of health care expenditure, when long-term care is broken down by sex, female expenditure, in terms of GDP per capita, tends to be higher than male expenditure in most member countries.

Nevertheless, contrary to the apparent conventional view, the very high growth of health care expenditure levels in the second half of the past century, that almost double between 1960 and 1990, was driven mainly by the increased coverage by public health care and public insurance and by the increased demand or consumption of health care in line with increased prosperity, as well as by the supply of more expensive technology and by the higher medical price inflation, but not so much by the ageing effect. Another reason for the limited effect of population ageing on health care expenditure is that this type of expenditure over the life of an individual tends to be concentrated at the end of life, irrespectively of the age of death, this is the reason why they are called "death costs". Given that mortality rates are higher in older age groups, the concentration of expenditure at the end of life leads to an upward bias in the distribution of health expenditure by age of these groups. But to the extent that in the future life expectancy is going to continue increasing, and mortality rates at an specific age going to continue decreasing, projections based on the static age-related expenditure profiles as above are going to overestimate the impact of ageing on future aggregated expenditure levels. Life

expectancy has been increasing significantly in the second half of last century and is expected to continue increasing in the future. These increases have gone hand in hand with improvements in the average health status of the elderly, due to new pharmaceutical discoveries and new medical treatments and technologies as well as more prevention and information about how to achieve a more healthy life. But on the other hand, the very old continue to be characterised by illness, disability and frailty. In sum, ageing is not and neither will be the key driver of expenditure increases in the future (Jacobzone, 2001)

The projections carried out by the Ageing Working Group are limited to the impact of ageing on health care and log-term care expenditure up to 2050. Therefore, they do not take into account the previous non-aged related factors, which are going to reduce the future expenditure and make this simple approach to have a number of drawbacks. The first is that the future relationship between age and health care and long-term care expenditures is going to be much more complex than projected. The second is that the projections avoid explicitly modelling other important factors such as the diffusion of medical and pharmaceutical technology, the relative prices for medical inputs, the intensity of care at older ages and the extent to which long-term care is provided in a formal setting.

Projections are based on the same demographic and macroeconomic assumptions that the preceding ones on public pension expenditure and all base line projections share a common methodology. They use two different costs assumptions. The first is that expenditures per head on both health and long-term care, across all age and sex groups, grow at exactly the same rate as GDP per capita. The logic of this assumption is that it is neutral in macroeconomic terms. If there is no change in the age structure of the population, then the share of the health and long-term care sectors in GDP will remain the same over the period even if the size of the population changed. The second is that expenditures per head grow at the same rate as GDP per worker, that is, at the same rate as productivity. The reason for this one is that wages are a key determinant of costs in both sectors, given that are labour intensive.

The results of these projections are shown in table 23. The impact of ageing on the levels of health and long-term public expenditure in EU member countries, up to 2050, would range on additional expenditure ranging between 1.7% and 3.9% of GDP. The total EU weighted average goes from 6.6% of GDP to 8.8% of GDP in 2050, if measured by GDP per capita and to 9.3% if measured by GDP per worker. Their total levels of expenditure on both public services by 2050 will range from 7.5% in Italy to 12.1% in Sweden. These levels compare with a range, in 2000, from 5.5% in Italy to 8.8% in Sweden, that is, levels of expenditure, in 2050, which are around 30% to 40% greater than in 2000. The countries that experience the highest expenditure increases are those that have a strong tradition of formal provision of long term care for the elderly, such as Denmark, the Netherlands, Sweden and Finland. Therefore, it is long-term care, not health care, the one that takes the largest percentage of the increase. In almost all member countries, except Greece and Spain, projection results under the GDP per worker cost assumption are higher than under the GDP per capita cost assumption, because employment growth over the projected period will be lower that population growth, due to the changing age composition of the population, including, notably, a population "greying".

In sum, on the one hand, these simple projections tend to overestimate the direct impact of population ageing on overall expenditure levels because they do not take into account but, on the other hand, other factors which have driven in the past the increases in health and long-term care expenditure costs per head or per unit are not explicitly included. The simple cost assumptions used in the projections may underestimate the impact of these non-demographic factors in driving costs per head or per unit. In any case the increase in the fiscal

burden implied by the projections is significant and will add to the increase in pension expenditures and worsen the sustainability of public finances.

5.1.4) The Future Sustainability of Public Finances in the EU.

The former projections up to 2050 show that ageing populations could lead to an average annual increase in public expenditure on pensions of 3.5% of GDP for the EU member countries and that they could increase the average annual health and long-term care public expenditures by 2.7% of GDP in 2050. That means a total annual average increase in EU public expenditures of 6.2% of GDP by 2050. This will put a substantial pressure on member countries to sustain sound public finance positions that comply with the EMU requirements of the Stability and Growth Pact (SGP) and which facilitate growth and employment.

The Ageing Working Group (AWG) has taken a pragmatic approach in the absence of an agreed definition of sustainable public finances and assessed sustainable public finances in terms of compliance with the budgetary requirements of the Maastricht Treaty and the SGP. That is, avoiding excessive deficits, keeping debt levels below the 60% of GDP reference value and respecting the "close to balance or in-surplus" requirement of the SGP. Although the SGP only imposes commitments on member countries for budget positions in the medium term (three to five years) and does not require explicit longer-term targets, sustainability is de facto ensured, provided budget balances respect the "close to balance or in-surplus" target.

Based on this simple and transparent approach, the AWG has constructed some long-term sustainability indicators, defining sustainability as non-violation of predetermined levels of deficits and debt, which involves making a number of arbitrary assumptions and benchmarks, which are not very different to those found in the synthetic indicators proposed in the sustainability literature such as those developed by Buiter (1985) and Blanchard (1990) Moreover, the AWG recognises that sustainability also entails keeping the tax burden at reasonable levels and ensuring that non-age related expenditures are not crowded out by increased spending on pensions and health care.

The AWG takes a two-step approach to cast light on the sustainability of public finances. The first step involves verifying whether existing budgetary policies can insure continued compliance with the EMU budget requirements. The second step involves estimating synthetic indicators of the scale of budgetary adjustments required by the member countries to ensure sustainable public finances. For the first step, a baseline test is undertaken, which involves extrapolating budget balances and debt levels on the basis of the baseline age-related expenditure projections. A set of assumptions is required. The tax burden and non-age related expenditures are held constant and a fixed interest-growth differential is maintained throughout the projected period. It is then possible to estimate the evolution in public debt over the projected period, a result that hinges upon whether the starting primary budget surplus (that is, excluding debt service payments) is sufficiently high so that the fall in the interest burden over time can absorb the additional age-related expenditures. Given the sensitivity of the results to the underlying assumptions, three stress tests are carried out to ascertain whether public finances are sustainable, under different circumstances. The first is setting the initial primary balance at more or less favourable levels compared with the baseline. The second is assuming a higher or lower age related expenditure growth and the third one assuming higher or lower interest-growth differentials.

The second step develops two synthetic indicators of the required adjustment effort. The first indicator considers the difference between the projected primary surplus in the baseline projection and the required primary surplus necessary to ensure a balance budget in all years of the period up to 2050. The second indicator is a "financing gap" or "tax gap", which measures the difference between the current tax ratio (which is held constant over the period) and the constant tax ratio needed to achieve a predetermined budgetary target at a specified date in the future. Both indicators are applied to two stylised countries: an "average debt" country where the initial level of public debt is 60% of GDP and a "high debt country" where initial public debt is set at 100% of GDP. In both cases, non-age related expenditure is assumed to be constant at 23% of GDP. Age related expenditure is assumed to stay constant at 16% of GDP until 2010, and thereafter, it increases in a linear fashion by 5 percentage points of GDP by 2030 and stays constant at 21% of GDP until 2050. Both countries are assumed to be in a position of budget balance in 2005. Real interest rates are fixed at 4% and inflation at 2%. Nominal GDP growth is assumed to be constant at 4% over the period. In this setting, the lower interest burden of the "average debt" country results in a lower constant tax burden than in the "high-debt country".

The results for the "average debt" country show that, in the baseline scenario, a budget position below the 3% reference value is maintained until 2025. Thereafter, deficits increase to unsustainable levels as debt levels increase. Government debt stays below the 60% of GDP reference value until about 2035, but the reference value is breached some 10 to 15 years if stress tests are applied. When assessing the required level of adjustment, the difference between the projected primary surplus and the required one to achieve a balance budget position is shown in table 24, both in the baseline scenario and with stress tests. The required primary surplus is of 3.5% of GDP in 2005 and goes down slowly to 2% in 2020 and to 0.6% of GDP in 2050. The difference between the required and the projected primary surplus goes up from 0.1% of GDP in 2005 to 2.2% of GDP in 2050. If the initial primary surplus is worse than in the baseline, the difference goes up from 1.1% of GDP in 2005 to 3.2% of GDP in 2050, and if the age-related expenditure is higher than in the baseline, the difference goes up from 0.1% of GDP in 2005 up to 2.7% of GDP in 2050.

The results of a "high debt" country with a larger initial primary surplus, show, in the baseline scenario, that the deficit gradually increases but remains below 1.5% of GDP over the projected period. Public debt level falls slowly and by 2015 reaches 60% and stays below 60% until 2050, but with the negative stress tests, both deficit and debt levels increase above reference values at the end of the period. The required primary surplus is 5.8% of GDP in 2005 and goes slowly down to 3.3% of GDP in 2020, to 1.5% of GDP in 2040 and to 1.0% in 2050. The difference between the required and the projected primary surplus goes up, in the baseline scenario, from 0% of GDP in 2005 up to 1.5% of GDP in 2030 and then down to 0.2% of GDP in 2050. With a worse initial primary surplus the difference goes up from 1% of GDP in 2005 up to 1.2% of GDP in 2050. With higher age-related expenditure the difference goes up from 0% of GDP to 2% of GDP in 2030 and then down to 0.7% of GDP in 2050.

In both cases it is shown that by having large primary surpluses the member countries will be able to meet the costs of ageing populations. Nevertheless, historical experience shows how difficult is to maintain such high primary surpluses over long period of time. The "high-debt" country needs to maintain an average primary surplus of 2.8% of GDP over the whole period up to 2050 and the "average debt" country needs to maintain an average primary surplus of 1.7% of GDP over the same 50 years period. Both levels are extremely difficult to meet for so many years, considering the fact that there could be a business cycle recession every ten years. Besides this fact, by looking only at projected changes in primary

balances, a paradoxical policy conclusion emerges: that "high debt" countries are better place than "average debt" countries to meet the budgetary cost of ageing. This is because high debt countries need to run very high primary surpluses in order to cover interest payments and to respect the close-to-balance or in-surplus rule of the SGP. This focus on the changes of primary surpluses overlooks the fact that high debt countries will have to sustain a greater degree of "budgetary effort" keeping very high primary surpluses than the average for a log period of time.

5.2) The OECD Report

5.2.1) Demographic and Expenditure Projections to 2050

The OECD has coordinated another report called "Fiscal implications of ageing: Projections of age-related spending" (OECD, 2001) using projections based on the work of national experts as well, but with the difference that it has not controlled the use of underlying population and macroeconomic assumptions within the models beyond those agreed by the participating countries.

The demographic assumptions are the following: Fertility rates, for the OECD average, go up from 1.54 children per woman in 2000 to 1.66 children per woman in 2050. The EU average is 1.52 children in 2000 and 1.68 children in 2050, for Japan, the rates are 1.38 in 2000 and 1.61 in 2050 and for the US are 2.05 in 2000 and 1.95 in 2050, all of them below the population replacement rate which is 2.1 children per woman. Life expectancy for males at birth, for the OECD average, goes up from 74.1 years in 2000 to 79.3 years in 2050, and for females, the OECD average goes up from 80.6 years in 2000 to 84.7 years in 2050. The EU averages are, for males 74.9 in 2000 and 79.9 in 2050 and for females 81.0 in 2000 and 85.2 in 2050. The Japan figures are, for males, 77.4 in 2000 and 79.4 in 2050 and, for females, 84.1 in 2000 and 86.5 in 2050. Finally, for the US, the life expectancy for males goes up from 73.9 in 2000 to 79.1 in 2050 and the life expectancy for females goes up from 79.6 years in 2000 to 83.5 years in 2050. There is also an assumption made for annual net immigration rates, as a percentage of the total population. The OECD average is 0.22% in 2000 and falls to 0.20% in 2050. The EU average is 0.16% in 2000 and 0.19% in 2050. The Japan figures are not available and the US rates are 0.33% in 2000 and 0.25% in 2050.

In sum, these assumptions show an average increase of fertility of around 8% and a lengthening in average lifetimes of about 4.5 years, between 2000 and 2050. In the case of the EU the increase in average fertility is of 10% and the average increase in life expectancy is of 4.6 years. In the case of the US, average fertility declines by 5% and life expectancy increases by 5.2 years. The assumptions for participation rates, unemployment and labour productivity rates are the same as in the EU report, that is, the ILO 1997 and the OECD 2000.

Under these assumptions, the base line projections for old age dependency ratios, measured as individuals aged 65 and over as a percentage of those aged 20 to 64, increase, in the case of the EU average from 26% in 2000 to 52% in 2050, that is, the ratio doubles. In the case of Japan, the ratio goes up from 23.5% in 2000 to 65% in 2050, almost the triple. For the US the increase is smaller going from 22% in 2000 to 37% in 2050, an increase of

68% only. That is, the US old age dependency ratio will be, in 2050, 15 percentage points lower than in the EU and 28 percentage points lower than in Japan.

Under these baseline old age dependency projections, the baseline projections for total old age related public expenditure, including not only pensions but also long-term unemployment, disability, early retirement programmes, health and long-term care are the following: Total average age-related spending for the OECD countries goes up from 16.9% of GDP in 2000 to 22.4% of GDP in 2050, an increase of 5.5 percentage points of GDP. In the case of the EU, the average increases from 18% of GDP in 2000 to 24% of GDP in 2050, that is, an increase of 6 percentage points. In the case of the US the increase is 5.5 percentage points but at a much lower level, from 11.2% of GDP in 2000 to 16.7% of GDP in 2050. In pensions and early retirement the US expenditure increases from 4.6% of GDP in 2000 to 6.7% of GDP in 2050, 2.1 percentages points of GDP while the EU expenditure increases from 10.6% of GDP in 2000 to 13.6% in 2050, 3 percentage points. Health and long-term care expenditures, rise in the US from 2.6% of GDP in 2000 to 7% in 2050, 4.4 percentage points, while in the EU from 7.4% in 2000 to 10.4% of GDP in 2050, 3 percentage points.

The OECD report points out the difficulty of the EU countries to face an increase of age-related public expenditure of around 6 percentage points of GDP in the next 50 years, given that the average level of total budget revenue in the EU was, in 2000, around 52% of GDP, while in the US was only around 30% of GDP. The room for manoeuvre for increasing the tax pressure is much narrower in the EU therefore the adjustment will have to come from a strong reduction of the primary surpluses, an increase in the budget deficits or both.

The OECD report simulates the fiscal impact of ageing on debt levels in a stylised country. In the stylised OECD country, pension spending represents 8% of GDP in 2000, the primary surplus 2.5% of GDP and net debt 55% of GDP. The projected increase in age related spending, from 2000 to 2050, is 6% of GDP and the change in age related spending is fully reflected in the overall primary balance, given that other government revenues and expenditure remains constant over the whole period up to 2050. Assuming a 1.9 per cent annual real GDP growth and a real interest rate of 4%, debt will increase, over the period up to 2050, by 100 percentage points, therefore, net debt will double, going up from 55% to 110%.

If we consider the stylised country to fit the average EU country, the impact of this raising trend in age related expenditure on public debt figures could be explosive. At present, the average EU debt to GDP ratio is around 70% and could surge to 170% in 2050 if no pension or labour market reform is made by then. On the contrary, the present US debt to GDP ratio is 50% and it will increase only to 90%, by the year 2050, if there is no new reform made in the meantime. These figures could be even higher for the EU if we take into account that in most of the new potential members there is, at present, little pension coverage for the retirees and that their actual average debt to GDP ratios are similar (close to 70%) to those in the EU at present.

5.3) The United Nations Population Division Demographic Forecasts

The United Nations Population Division of the U.N has updated its demographic forecasts to 2050 in its latest report (2003) showing some differences with the EU and OECD reports.

Table 25 shows some long-term demographic projections for the EU and the US up to 2050, based on the medium world population forecasts of the UN. According to this report, the 2000 average fertility rates are 1.4 children per woman at the EU and 2.2 at the US, the first one being lower than the population replacement rate, that is actually 2.1 children, and the second one being above it. The fertility rates are expected to increase achieving by 2050, 2.16 children for the EU and 2.5 for the US. According to these fertility rates, the present EU population of 380 million will fall to 364 million by 2050, while the present US population of 285 million will go up to 397 million in fifty years time, overtaking the EU population. Nevertheless, by then, the EU will be, most probably composed of around 39 member countries. The present 15 member countries will become very soon 27, that is, with the addition of the new 12 candidates: 10 entering in 2004 and another 2 (Bulgaria and Rumania) in 2007 or in 2009. Later on, around 2012 or 2015, there will be another 6 potential candidates to join: Turkey, Albania, Bosnia-Herzegovina, Croatia, Macedonia, and Serbia-Montenegro. Finally, there are another 6 potential candidates that have some probability of joining sooner or later: 3 with a high probability (Iceland, Norway and Switzerland) and another 3 with a lower probability (Moldova, Belarus and Ukraine). All these 24 countries, if they all join the EU, will add another 360 million people to the present EU-15 therefore, by 2050, the EU population could reach 745 million, including present annual immigration projected to 2050, If the EU would stay only with 27 countries, the potential population will be only 475 million.

On the other side, according to this report, the average rate of immigration in the last decade has been much higher in the US than in the EU: 6 million entered in the EU versus 11 million in the US. Extrapolating these rates to 2050, the population of both economies will increase in 21 and 55 million respectively. Given that the fertility rate increases in parallel with the rate of immigration, since immigrants tend to have more children, specially those who come from Latin America, which are the majority and have at present a fertility rate of 2.7, the population increase in the US population could be much higher. On the contrary, the fertility rates of Central and Eastern European countries is even lower than in the EU, only 1.3 and in 2050 are expected to reach 2.2, therefore, the likelihood of a big population increase in the fully enlarged EU is much lower than in the US, unless there is a massive inflow of African immigrants, who are going to maintain high fertility rates in the next decades. The advantage of the US is that it has been, traditionally, an immigration country, where there are already 40 million "Hispanics" (15% of its total population) and a fast increasing immigration of Asian origin. In the EU, not having the possibility of very large immigration from the new Central and Eastern members, Africa can become the main pool of migrants in the future.

The UN report is also considering a slightly higher life expectancy in the US than in the EU, (83 years versus 81years, respectively, by 2050) and, as a consequence of these assumptions, is forecasting a worse elderly dependency ratio that the EU and the OECD reports. The UN uses a different elderly dependency ratio, which is more accurate to the present European situation, consisting in: the number of persons aged 60 and over as a percentage of the number of persons aged 15-59. It shows that, at present, that ratio for the EU is 35% and for the US is only 25%. By the year 2050, the EU elderly dependency ratio will double, reaching 70%, that is, 70 persons to be supported by every 100 at working age, while the US ratio will only go up to 35%, half of the EU one. The EU dependency ratio projection could very well take into account the new potential 24 members from the East and Centre of Europe, because their fertility and life expectancy will tend to grow over the next 50 years converging to the EU average. Nevertheless, at present, the UN forecasts that the elderly dependency ratio in Eastern Europe will be reaching 30% in 2050, less than half than in the EU. There is little potential error in these forecasts given that, for instance, the population over 65 to 100 years in 2050 is going to be today's population between 18 and 53 years of age.

5.4) The CSIS Report

The Center for Strategic and International Studies (CSIS) in Washington has published recently another report "The Global Retirement Crisis" (2002) in which it projects that the ageing problem is going to have a larger impact on public pension expenditure than both the EU and the OECD reports estimate. In both official reports each member country made its own projection using its own pension model and the EU and the OECD established only a common set of demographic and economic assumptions to which all countries adhered. In general, their projections include all publicly financed old-age pensions (both retirement and survivors benefits) all minimum or social assistance pensions and all special early retirement pensions. In a few countries, however, there are significant omissions. The biggest are for the Netherlands (early retirement benefits) the UK (civil service pensions) and the US (state and local employee pensions) The CSIS report starts with a premise, that "baseline spending projections" should always be based on established historical trends, unless there is a compelling reason to depart from them. The CSIS uses both official pension expenditure projections as a starting base and then it adjusts then to reflect its different assumptions about unemployment, participation, fertility and longevity rates.

The specific adjustment are as follows: First, the official projections assume that unemployment will fall beneath its recent historical average in every developed country except Japan and they do not offer any explanation for this development when unemployment has been chronically high in many EU countries for decades. Most economists agree that the problem is caused by rigid labour markets, high labour costs and easy access to generous unemployment, disability and early retirement benefits, and that large rate reductions are only possible with fundamental reforms. For this reason, the CSIS assumes that unemployment rates will stabilise at their 1990-2000 averages. This change raises projected pension costs significantly in a number of countries, with the biggest increase in Spain (2.3% of GDP by 2050) given that Spain had forecasted an unemployment rate of 4% by 2050, from the present 11%.

Second, the official projections assume that female labour force participation will rise, sometimes greatly, in every developed country except Norway. The CSIS assumes that women work patterns will remain unchanged, except to allow for a possible "cohort effect". That is, in some countries such as Austria, Belgium, Greece, Ireland, Italy, the Netherlands, Portugal and Spain, younger woman have now higher participation rates than older woman, therefore, the CSIS assumes that women aged 40 to 54 in these countries will eventually have the same rates as women aged 20 to 39. In other countries, women under 40 years of age work at lower rates than women over 40. In this case it is assumed that there will no be a "cohort effect" given that if there will be, a consistent projection will show a declining overall participation rate. In some other countries the official projections assume an increase in older men participation rates, due to recent pensions reforms. The CSIS allows this assumption except in Austria and Italy, where the projected rise is far greater than can be explained by policy changes. In the first participation rates of men aged 55 to 64 is projected to rise 55% and in the second 38%. The CSIS reduces both to 20%.

Third, the official projections assume that fertility rates will rise in most developed countries, with the biggest increases in those countries that now have the lowest rates, without much justification for this assumption, when there is no present evidence of that shift now. In Italy, Austria, Greece and Spain, fertility rates are declining or flat across every age bracket and

have been for decades. The only explanation possible is that fertility rates are now growing in some countries among women in their thirties and early forties, suggesting that they are merely postponing having children rather than reducing the number that they have planned. But the impact of this time shift is very limited and it is offset by falling rates among younger women. Therefore, the CSIS assumes that fertility rates will remain constant at their 1995-2000 averages.

Fourth, the official projections assume that the rate of improvement in longevity or life expectancy at birth will slow, although most demographers think that it will continue to grow at the present pace, or, more precisely, that mortality will continue to fall at its historical pace. Some demographers, which expect a slowdown, argue that life expectancy cannot keep rising because medical progress will eventually push everybody to a "natural limit" to the human life span. But if there was such a limit, mortality improvements for the oldest elderly age brackets should be slowing relative to those for the younger elderly age brackets and variations in life expectancy should be narrowing as more people bunch up against the limit. None of this appears to be happening. For many years, Sweden and Japan had a longer life expectancy than the other developed countries and such a differential appears to be persistent. The CSIS assumes that age specific mortality rates in the developed countries will continue to decline at their long-term (1950-1994) averages. That assumption will raise life expectancy in every country, ranging from an extra six months in Germany to an extra nine years in Japan. Finally, the CSIS does not change the official assumptions about net immigration and labour productivity.

Given these adjustments, the CSIS projections increase the levels of expenditure notably from the two previous official reports, the EU and the OECD ones. The combined EU-OECD projections show an increase in public expenditure related to ageing, from 2000 to 2050, of 6% of GDP in the case of the EU versus 13.1% of GDP estimated by the CSIS. In the case of the US the official increase is 4.4% of GDP and the CSIS estimates an increase of 10.1%.

5.5) Conclusion

Table 26 shows a summary of the differences in the public expenditure on pension and health projections between the EU report, the OECD report and the CSIS report. The average increase in total public expenditure for the EU, as a consequence of ageing, goes up, from 2000 to 2050, by of 7.2 percentage points of GDP, according to the EU report, by 6 percentages points of GDP, according to the OECD report, and by 13.1 percentage points of GDP according to the CSIS report. For the US, the increases in total expenditure related to ageing up to 2050 are of 4.4 percentage points of GDP, according to the OECD report, and of 10.2 percentage points of GDP, according to the CSIS report. Not only the increases in expenditure are lower in the US, between 2.9 and 3.8 percentage points of GDP less than in the EU, but also the ending level of expenditure in pensions and health is also much lower than in the EU, between 9.3 and 10.1 percentages points of GDP less than in the EU. Given that, as it was pointed out earlier, the present average fiscal pressure in the EU is 22 percentage points of GDP higher than in the US, (52% versus 30%) the fiscal effort that the EU needs to implement to cope with such an increase in public expenditure is huge and its room of manoeuvre for expanding tax revenue is very small. Therefore, the EU challenge is of enormous proportions in relative terms to the US one.

Such a dramatic future fiscal situation in the future of the EU could be reduced somehow provided that: its fertility, employment and productivity rates increase much faster than their present trend; its present retirement age goes back to 70 years, its present immigration rates are increased substantially and its present pension pay as you go systems are changed to a mixed ones, in which the pay as you go system is maintained only for minimum pension levels for every citizen and the rest of pensions are based on collective and individual private funded systems. Unfortunately, none of these objectives is easy to achieve. The inflows of immigrants have to be very large and not compatible with the present restrictive regulations and the apparent increasing rejection that immigration suffers by the average European citizen, once a certain threshold, as a percentage of the total population, is surpassed. The increase in the retirement age is absolutely necessary to compensate for the increase in the life expectancy, but today the present trend still goes in the opposite direction, by companies reducing the early-retirement age down to 50 years. The change from the pay as you go to the funded system needs to be financed by issuing new debt to avoid a major discrimination among cohorts, but the Stability and Growth Pact imposes very strict rules to reduce debt to GDP ratios to less than 60%. The increase in the employment rates needs a major labour reform in most member countries and an increase in competition by reducing product and factor market regulations. In the absence of these reforms the future budgetary and debt situation in the EU could become unsustainable, in the absence of very radical reforms.

In the US, on the contrary, although difficult, the budgetary and debt situations could be still manageable. Not only the levels of future public expenditure due to ageing are lower, but also its room for manoeuvre to increase tax pressure is larger as well as its room to increase its debt to GDP ratio, which is still almost 20 percentage points of GDP lower than in the EU, and it is not subject to the constraints of the Maastricht Treaty and the SGP. Its average labour force participation rates are over 10 percentage points larger than in the EU, even more in the case of the older workers. The US participation rate of persons aged 60 to 64 is 55% versus only 30% in the EU and its participation rate of persons aged 65 and older is 18% versus only 6% in the EU. The US old-age dependency ratio is going to be 35% in 2050, exactly half of the EU one. Moreover, the US pension plans posses 59% of all global pension assets, while its economic weight in the total economy is only 23%. In the EU, on the contrary, the UK alone has more pension assets than the rest of the EU combined, allowing the UK to be the only European Union country whose public pension system faces no long-term cost challenge. The main weakness of the US is that it spends 4,200 dollars per capita on health care, nearly 50% more than the next runner up, Switzerland, and more than 70% more than the EU average. Therefore, it also needs to introduce strong reforms in its present health system.

As it was pointed out earlier, this very large projected gap in the future budgetary and debt positions between both economies, could increase the present annual growth rate gap, of around 1 percentage point, in favour of the US, making even more difficult for the EU to catch up and converge with the US in the next 50 years.

CHAPTER 6

Which are the available policy options to reduce the fiscal impact of ageing?

What to do to overcome this important fiscal sustainability challenge? The OECD report (OECD 2001) deals with some alternative measures that could be implemented. Using the example of a "stylized" OECD country, in which the total average age related spending will go up between 6 and 7 percentage points of GDP (although, as it has been shown earlier the increases are significantly higher in some countries, mainly in the EU), the report tries to deal with the possible policy options available. As regards pension expenditures, although budgetary positions have improved in many countries in the past decade, the report has calculated the reduction in average benefits of old age pensioners and the reduction in the number of beneficiaries of old age pensions reflecting delayed retirement by 2005, to keep the debt to GDP ratio constant at 55% of GDP by 2050. It should be reminded here that the present average debt to GDP ratio in the EU is close to 70%. The results suggest that the required reduction in the number of beneficiaries could be close to 8%, corresponding to a rise in the effective age of retirement of more than one year, while the required fall in average benefits might have to be more than double that percentage, at around 17%. The larger required action on pension benefits, as opposed to pensioners, reflects the feedback effects of fewer pensioners on higher unemployment and GDP, as well as the effect on tax revenues. In reality, however, cutbacks in pension generosity might well induce people to work longer, while later retirement in some countries automatically leads to higher pensions, suggesting that the separation of these two effects may not be so near or the differences so marked.

Alternatively, countries could choose to increase further their primary surpluses now to offset the impact of ageing on the deficit through the remainder period. The simulations for the stylised country suggest, for example, that the age related increase in spending, taken by itself, could be fully offset by an increase in the primary surplus of an additional 1 percentage point of GDP and sustained through the whole period. This is because the higher non-age related surplus, assumed unchanged, helps to counteract the age-related fiscal pressure as they emerge. There is a narrow window of opportunity before dependency ratios begin to rise rapidly. Countries can profit from this period by improving the overall fiscal situation and announcing reforms, especially, as policies have to be phased in progressively, so as to allow households the time to adjust. If policies are implemented with a considerable delay, stronger measures will be required to achieve the same fiscal outcomes by mid century. If they were implemented 10 years later, that is, by 2015, the necessary reduction in the number of pension beneficiaries would be of 9.5% and the reduction in average pension benefits would reach 21.3%, or alternatively, the primary surplus would be higher. If the reforms would be carried by 2025, the reduction percentages would increase to 12.3% and 29.9% respectively or alternatively the necessary primary surplus would reach 1.8% of GDP.

It is important to take into account that sharp falls in average pension benefits may mean a widening gap between wage earners and income of pension beneficiaries, increasing poverty among the elderly. As they will account for an important share of the voters, they will be a strong pressure to reverse those reductions. This is the reason why there may be a need to provide alternative sources of income retirement, for example, funded private pensions or savings, of mandatory nature, and to encourage people to work longer in order to qualify for a full public pension. It will be necessary as well to encourage higher participation

rates of older workers and larger immigration flows, but these policies depend on whether they can find employment. In order to achieve this goal, new labour reforms are needed to reduce structural unemployment and encourage rapid employment growth.

Finally, it will be also necessary to control health and long-term care costs. The demand for both kinds of services will climb with the number of elderly and the very old. At the same time, the increasing participation rates of the working-age population and the smaller size of families are likely to limit the scope for families to care for the elderly in the future. Therefore, it might be necessary to increase the efficiency and effectiveness of health care, introducing budgetary caps, although it can lead to rationing and to lower quality care. Alternatively, there will be the need to find ways to limit the demand for and the supply of unnecessary services of health care and to improve the matching between health car needs and the supply of services. In the long term, health care expenditure will be driven, not only by ageing but also from the diffusion of new technologies and increasing relative prices of medical services, suggesting that a wider range of policies will be necessary to control health care costs, such as measures to prevent disability and to give support for the very old to remain at home, instead of being treated at health institutions.

6.1) The public versus private pension provision debate

The more radical pensions policy alternative is to make a transition from the present "pay as you go systems" (PAYG) to a fully funded pension system. This alternative has created a very heated debate among economists. Martin Feldstein (1996 and 1997) has been one of the pioneers promoting this idea. The main arguments for the this kind of proposal are the following: First, social security tends to displace savings, both public, by drawing resources from the government budget, and private, by replacing savings for retirement of forward-looking individuals, with social security taxes or contributions. Therefore, privatising social security could tend to increase capital accumulation and therefore the rate of growth. The fact is that in some countries in the EU there is a clear correlation between the generosity of the social security system and the reduction in the national saving rate. It is then probable that the increase in public pension generosity could have displaced the creation of wealth via capital accumulation.

Second, the way present government pensions systems in the EU are designed creates disincentives to people to stay on work beyond certain ages and, at the same time, employer-run "defined benefit" systems often have built-in incentives that encourage employers to retire workers at a relative early age, due to the increasing costs of pension rights as the worker extends his or her working life. This non-neutrality and disincentives of the EU pensions systems allow companies to ease workers out of the labour market and create an "implicit tax" on work. Workers tend to leave the labour force through any loophole when the implicit tax on work becomes high (Gruber and Wise, 1999). Therefore, both systems result, in contrast to the US, in a very high rate of early retirement and a very low level of economic activity among older employees. Employment rates in the EU stays roughly constant between people age 20 to 50, and then plunge between 50 and 60.

Third, the existing rights of workers toward their pension benefits, within the pay as you go system (PAYG) should be considered as "hidden-debt" because these rights are future liabilities for the social security system. The stock of pension liabilities has a similar nature to explicit government debt and it can amount or even exceed the current resources, that

is, GDP, of the country. The existence of this debt can go hand in hand with a current social security deficit (as in the EU) or surplus (as in the US)

What are the options available to solve these problems? There is an recent report by Brugiavini and Disney under the direction of Tito Boeri (2000) made for the European Round Table of Industrialists, which makes an excellent survey of this issue. and which is used extensively in the following pages. One option is "pure privatization" by creating funded individual accounts. But in order to do that, the existing public pension system has to honour the existing pension rights or hidden-debt. This can be done either by raising taxes and/or issuing new explicit government debt, hence involving some costs, which can be spread in different ways across different generations (the case of Chile with its "recognition bonds") or using the proceeds of privatization of public utilities to offset the explicit pension liabilities. Another option is "pure pre-funding", by reducing benefits and increasing contributions to reduce the future liabilities. The surplus of this exercise, if any, could be invested either in bonds or diversified portfolios. In the US, a social security "trust fund" has been created with the surpluses of the social security to have a cushion for future liabilities. A third option is to implement "soft reforms" within the existing PAYG system in order to reduce the dependency ratio, the replacement rate (that is, the ratio of the first social security benefit received by a retiree to his last wage while working) or both, by delaying the retirement age, encouraging female labour participation, encouraging migration, reducing the replacement ratio by reducing benefits, the eligibility or changing the indexation rules. There can be, of course, a combination of the three options or even a sequencing of them starting from the soft reforms, followed by the pre-funding and ending with the privatization.

What are the differences between PAYG and private funded systems? Both are mechanisms to redistribute resources over time. But while PAYG systems rely on inter-generational redistribution, private funded systems rely on inter-temporal substitution of resources, an element of flexibility that permits sharing the demographic burden over a much longer period. Another element of flexibility of funded pensions over the PAYG system is that, unless they have certain portfolio restrictions in the way they are invested, international diversification of its investments can automatically ease the pressure of an ageing population on the social security costs, at the time when a PAYG system would suffer the most from that pressure. If the demographic change is only temporary, and does not translate into a permanent shift I the age structure of the population, then funded systems can count on a longer horizon than PAYG systems and smooth out the resource crisis. But the problem in the EU is more a permanent shift in the population structure, based on the increasing life expectancy trend, than a temporary change based on the generation boom becoming elderly and the fertility rate falling at the same time. Therefore, this shift is going to affect negatively both to the PAYG and to the funded systems.

Whether a funded system is better than a PAYG system ultimately depends on the system rate of return. If contributions to a PAYG are seen as "force saving for retirement", then, given the rules in place, the relationship between what a worker pays and what he gets out can be expressed in terms of rate of return of those savings. While in a PAYG system this return depends on the growth rate of the work force and labour productivity, in a funded system this is the return on the investment of the fund. It can be said that there is a high correlation between the annual growth of the real wage bill, and the annual growth of the real return of the funded scheme, and therefore there is not a substantial difference. However, the studies carried out by experts found no evidence of strong positive correlation between them, increasing the attraction of the funded system. The key point is however that If funding implies that the same result in terms of providing a given level of lifetime resources for retirees can be achieved

through a lower contribution rate, its advantage is obvious, because it implies lower effective tax rates, less distortions in the labour market, less unemployment and a more competitive economy.

The debate around the two alternative systems has centred on whether a private social security can provide reasonable priced annuities that could replace social security annuities. The PAYG systems are typically "defined benefit" with some form of indexation preserving the real value of retirement income, while the funded systems would not normally deliver an annuity but a capitalise fund. One element of the real annuity is protection risk, although this can be achieved by the funded system provided there are indexed bonds in the capital market. Another issue is that annuities should be priced fairly. The argument for explaining unfairly priced annuities that are too costly for individuals is based on the fact that the annuity market is thin due to an "adverse selection" problem. When annuities are non-compulsory, annuity purchasers tend to be those individuals characterised by higher than average longevity, as they are a bad risk for the insurance companies, these tend to charge "load factors" on insurance premia for all annuity purchasers, to compensate for those bad risks. However as the demand for annuities increases the adverse selection problem will diminish and premia will eventually go down.

The second issue highly debated is the risk associated with rates of return of capital markets. Higher returns can be achieved by investing private pension funds in equities, but these are typically riskier assets than bonds, therefore there is an issue of how diversify by instrument and by market those pension funds. Nevertheless, the PAYG systems are not risk-free either. There are the risks associated to the evolution of the population and the productivity growth and to political risk, by being public. In principle, none of the benefits of higher returns would be lost if funds were invested by the government on behalf of the workers. However, there are two problems: the political risk of misusing the fund to finance current government deficits and the standard problem of the government not acting in the interest of the retirees. Usually, governments when they have a social security surplus, tend to fund other government investment instead of paying down debt and tend to preclude certain type of investments instead of maximising returns for a given risk.

Finally, the third important issue is the costs of transition from the PAYG system to the funded one, that need to be financed by raising taxes or issuing new debt (in the form of recognition bonds, for example) and that somebody has to pay for them. The way this transition is financed will affect to different generations in different ways. It is not fully true that the existing employees will have to pay twice: once for their own funded retirement and once for the retirement of their parents, because they will have to safe for their own retirement far less than for the retirement of their parents, and at the same time, the cost of the PAYG benefit outlays will go down as new retirees gradually substitute funded benefits for unfunded benefits. There are two economic issues in the transition. The first one is how many generations should share the cost of the transition, that means how fast should be done the transition from one to the other system. The second is that the cost of the reform, for the generations, which will suffer a net loss, is essentially a reduction in consumption lasting a number of years.

The way is financed affects the ones who have to pay differently. If it is financed by taxes on income or wages, only current workers will be affected, labour supply decisions will be distorted and costs will be spread over very few generations (only the middle ones) leaving very little room left for consumption smoothing. If it is financed by taxes on consumption, there will be a higher burden on the elderly because presumably benefited from a generous PAYG system and they tend to consume more, and a lower burden on working or future generations. If

it is financed by issuing new debt, taxes will be defer to younger generations, including new-borns, who also benefit most from the new system. Nevertheless, the creation of new debt is subject to macroeconomic constraints, in the case of the EU, included in the Maastricht Treaty and the SGP. These limits could be softened if it is argued that, on the one hand, this debt is earmarked to achieve only a strict funding target, and on the other hand, that it represents a form of investment for future generations.

Although not every EU country will be interested in undertake such a major reform, all member countries are concerned with the sustainability of their future pension finances. Furthermore, the EU has high on the Lisbon Summit agenda the issue of free mobility of labour both within a country and between member countries, hence measures need to be taken to improve the flexibility of the labour market via social security arrangements. There is an increasing need to ensure the portability of individual pension rights both within a country and across the EU, and this goal it is very difficult to be achieved under the present PAYG system.

Nevertheless, it is very important to understand that the previous listing of the adverse features of the existing pension systems, facing the challenge of ageing, should not draw the inference that they are bad and that those that can should opt out of the future problems. The PAYG systems are a suitable way of insuring participants against uncertainty as to the length of their life, smoothing income receipt over their lifetime as well as permitting people with adverse health shocks to reduce their commitment to work. The present PAYG systems are a reasonable expression of social solidarity across generations and across rich and poor people within the same generation. Therefore, the strategy of restoring the credibility of the EU pension systems should not prescribe the abolition of or the wholesale dismantling of public systems, unless a suitable and affordable private alternative can be provided. Even more, the compulsory nature of the public system should be preserved. Exemptions to the system are going to be dangerous inducing the best position firms or individuals to "free ride" on the system, leaving some other people with less income to suffer the consequences of not finding enough coverage and have to find other means of survival at their retirement age.

The very different situation of the member countries in terms of their initial level of budget deficits and debt to GDP ratios and of the future impact of ageing on the sustainability of their pension PAYG systems makes it very difficult to apply a one-fits-all solution. It is very easy for countries such as Ireland or the Netherlands, where the PAYG systems never really got off the ground to move to a fully or substantially funded system on a compulsory basis, and it is very difficult for most of the EU countries to do the same when they have very large, and sometimes very generous PAYG systems to do the same.

There is not a simple or easy way around the very important problem of funding the costs of transition. Therefore, a gradualist and mixed approach seems to be the right way to proceed. This approach will probably need, on the one side, the involvement of the private sector, and, on the other side some cutting back of pension provisions to those at or near the retirement today. Each country, according to its initial situation and its future projections should try to reach the right balance in the public versus private pension mix that better suits them, to restore the future credibility of their pension system.

Probably, the best way to proceed is through a system based on three pillars. The first one will be the public PAYG system, which is best suited for redistributing income from the lifetime rich to the lifetime poor and to guarantee a basic standard of leaving to the elderly. In those countries that currently have a substantial flat rate component to their public schemes this is done already in an explicit way. Where public schemes are earnings related and pension

benefits are not, there will be substantial redistribution to those who have had low lifetime earnings. Finally, in those countries where large earnings related benefit schemes are the norm, there is little room to do this kind of redistribution and they should take it into account when they implement their reforms.

The second and third pillars should be private and funded. The second based on the collective or occupational pensions systems and the third one based of individual or personal pension accounts. The second tends to be compulsory and the third voluntary. Occupational pension systems are mostly organized by the employers or by institutions, individually or collectively, to attend the retirement of their employees. The individual accounts are taken mainly by self-employed and by those who want to top up their PAYG or occupational pension provisions. Occupational or collective schemes have a number of advantages over individual ones. They are most cost efficient, since they do not involve costs associated with selling, advising and administering the funds and they allow a larger degree of risk sharing not only between employee and employer, but also between generations of employees. Those employees that retire when the stock market and asset prices are doing well ought to be able to cross-subsidize those employees that retire at more difficult market situations. Individual accounts tend to be more portable and more flexible but also more expensive. They are better suited for well off individuals. Occupational private systems coverage ranges from 90% in the Netherlands to 50% in the UK and to less than 10% in the rest of the EU. The UK and the Netherlands have the biggest size of funded systems in terms of GDP, being close or above their annual GDP. The rest of the EU countries have very small occupational funds in percentage of GDP, except Sweden, Finland, Denmark and Ireland. While in the EU most pension systems have "defined benefit" arrangements, based on a combination measure of the final salary and the number of years worked, in the US there has been a substantial shift towards "defined contribution" arrangements, which face much less risks, given that the pension benefits received depend exclusively upon the contributions made and the returns achieved by its investment.

These two pillars become essential where the public one focuses on its redistributing role and does not overdo it. In countries where the public system provides adequate pensions for those who have earnings of two or three times larger than the average, there is not much room for the private sector. And the other way round, with a population growing older, with already very high levels of taxation or contribution to fund the pension system, there is little or no chance that the current pensions provisions can be met entirely by the government. Even where the government continues to play by far the largest role in pension provision, some individuals and some elements of pension provision will have to come within the private sector.

Therefore, workers and firms will have to work together to guaranty that each retiree can achieve a given replacement ratio through private funded systems. This can also help to bring back more actuarial fairness into the retirement decision. Workers who are particularly concerned about their retirement can top up their pension with additional voluntary contributions to a saving instrument. These goals are better achieved through the capital markets and governments should make sure that private pension funds act in the best interest of the workers. This implies a set of rules, which protect the accumulated fund and the workers retirement income by invoking prudence in the investment decisions while allowing flexibility in portfolio choices.

CHAPTER 7

The Lisbon Summit and beyond.

Considering that the main reason behind the poor growth performance of the EU in the past seems to be related to the supply side of the economy, for a while, the decisions taken at the Lisbon Summit by the European Council, in March 2000, sent a signal of hope for the future of the EU. The heads of State and Government realized the urgent need for reforms in order not to lose even further their competitive edge with the US. Table 27 includes all the major strategic goals that were agreed at the summit, the so-called Lisbon Strategy. These goals attempt at increasing innovation and R&D by liberalizing product markets and improving regulation, increasing competition by accelerating the achievement of the Single Market and increasing the employment rates by making the labour market more Europe-wide and improving the quality of the workforce. All these goals aim at increasing the rate of growth and reducing the growth gap with he US and, at the same time, maintaining the distinctive European social agenda of cohesion and inclusion.

Unfortunately, the achievement of these goals is already behind schedule, although some improvements have been made, mainly in the area of employment creation and telecommunication and energy investment and prices. The reason of these difficulties to implement the Lisbon goals seems to be political. First of all, most of the necessary structural reforms imply some short-term costs in order to achieve medium and long-term large benefits. Given that every year there are national or regional elections in some of the EU member countries, there is an incentive for the governments that call for elections not to introduce any of the necessary reforms in order to avoid losing votes and maybe lose the election. Therefore, the expected reforms are postponed for the next year, in which the same happens to the governments of other member countries.

Secondly, the present EU governance system and its complex decision-making process at the EU do not help much to speed up the reforms. At present, the management of economic policies in the EU is a complex patchwork of different arrangements. Four basic approaches are adopted: delegation, commitment, coordination and autonomy of national policies. At the same time, many different instruments are used to execute economic policy, ranging from hard collective rules (the Stability Pact) to milder instruments of persuasion and soft procedures for cooperation and dialogue. The picture that emerges is one of confusion of approaches and instruments and of tension between goals and means. There are, at present, very important fault lines the in economic governance of the EU. There are policies that inappropriately allocated between the EU and the Member State levels with respect to the objective pursued or being correctly allocated they may not reach its objectives because of "spillovers" from failures in other policies. There are policies correctly allocated, but its design and implementation maybe deficient because of an institutional failure or of the lack of appropriate instruments. There are failures, which are internal to a policy domain, either because the goals, the strategy or the instruments do not fit with it. (Independent Group Report, 2003)

In the absence of competences and instruments to develop directly some of the relevant policies, the Lisbon Strategy has placed more emphasis on coordinating national policies, according to the so-called processes of Luxembourg, Cardiff and Cologne, brought

together under the umbrella of the Lisbon Strategy. A new policy instrument, the Open Method of Coordination (OMC) was introduced, consisting in four ingredients: Fixing common guidelines for national policies; developing structural indicators of national performance to compare best practice; asking countries to adopt national action plans to implement the guidelines and introducing a joint monitoring and reviews of the results. Nevertheless, it seems quite doubtful that the OMC alone, by issuing guidelines, agreeing on bench marks and comparing performance, would be sufficient to implement its strategy and reach its objectives.

The methodology used for the Single Market has not yielded the expected results in the cases of financial services and utilities. The commitment approach to fiscal policy has not yet found an organizing concept for the design and the operation of economic policy coordination. The approach of bench marking and coordination for the employment strategy is well suited, but it lacks the incentives to cooperate effectively to change the present policy. The combination approach of centralised action and decentralised initiatives to develop the innovation strategy is not yielding satisfactory results.

These structural indicators are the main tools for assessing progress in achieving the Lisbon objectives. The Spring 2003 Report of the Lisbon Agenda presented a simple but very informative exercise counting the frequency with which each member country was amongst the three best or three worst performers on each indicator. The results show that certain countries appeared again and again amongst the top three performers, most notably Denmark, Sweden and Finland. It is important to note that these are precisely the same countries that had undertaken deep and successful reforms well before the launch f the Lisbon strategy. On the other hand, the major Euro Area member countries, such as Germany, France and Italy, came out as clear laggards with respect to structural reforms. The strong productivity growth performance of a small number f EU member countries demonstrates that there is nothing inherently wrong with the policy framework established at Lisbon. It is only a question of implementing it, and this implementation is taking much more time that it was expected during the optimist and ambitious mood shown by the European leaders at Lisbon.

The main problem now is that the Lisbon Summit created very large expectations about the future rate of growth of the EU, given that the heads of State and Government had solemnly promised to make the EU the "most competitive economy by 2010", setting among others precise numerical targets for the employment rates. At that time, the growth of productivity was satisfactory and consumers thought that growth rates in excess of 2.5% seemed within reach. Therefore, consumption expenditure started to show a reasonable rate of growth. However, these expectations have been bitterly disappointed: growth has been low, as productivity growth has plummeted. The Lisbon Strategy seems to have already lost its initial credibility.

This bursting of the "Lisbon bubble" (Gros et al. 2003) seems to be one of the main reasons why private consumption demand in the EU has grown by only 1% per annum over the last two years and it might be close to zero in 2003. By contrast, the US consumption demand has kept growing at 3% per annum. Given this situation, with productivity growth rates being so low, the prospects for a quick turnaround must be dim and so there are the consumer expectations.

7.1) The Independent High Level Study Group Report

There is a new good sign of hope embedded in the excellent recent Independent High Level Study Group Report, established on the initiative of the President of the EU Commission (2003) The report, although represents only the opinion of the Independent Group and "not necessarily" reflects the views of the Commission, not only complements the Lisbon Strategy but it goes much further beyond it and becomes a better base from which to start a new process of introducing the necessary radical changes in the EU, from its system of governance to the implementation of the truly necessary structural reforms. This report, reminds the one conducted in 1985 under the initiative of the then Commission President Jacques Delors (European Commission, 1985) which was the origin of the most important and ambitious plan of the EU: the fully integration of the EU internal market by 1992. In order to make the present "European model" of growth, stability and social cohesion and inclusion sustainable in the long run, the present High Level Group Report, designs a new "Agenda for a growing Europe", which includes, among others, the following far-reaching recommendations:

a) Make the Single Market completion faster and more dynamic in order to increase competition further. That implies, for product markets, reducing substantially entry costs and administrative procedures while increasing anti-trust action on incumbent's attempts to prevent entry by others. For capital markets, it involves, besides completing at a faster speed the single market for financial services, promoting those forms of equity-based capital, which are particularly suitable for risky ventures. For labour markets it implies to increase the present flexibility of labour markets in the member countries, reducing the large rigidities that still exist. It also involves a much larger labour mobility within countries, between countries and from third countries. In order to achieve this goal it is necessary to remove the non-transferability or non-compatibility of acquired rights in terms of basic provisions for health, pensions and unemployment and issuing work permits in the form of "green cards" that allow free movement of third country nationals throughout the EU. It also implies a more open attitude at the EU level to immigration from third countries, promoting legal economic immigration.

b) Boost investment in knowledge in order to achieve a higher level of innovation and growth. There is a high underinvestment in the EU in higher education and in R&D compared with the US, exactly half in terms of GDP. Member countries of the EU need not only to invest more, but also to invest better in higher education and research. In higher education it would mean to create an Independent European Agency for Science and Research similar to the American National Science Foundation, making an objective competition for funding, basing its decisions on scientific criteria and a rigorous and transparent peer review process and run by the most highly respected scientists. It will be necessary to increase the number of centres of excellence and to cluster the best researchers across universities and topics in order to attract the best faculty from everywhere in the world. In R&D, in order to increase private expenditure it will be necessary to introduce tax credits, being larger for small start-up firms.

c) Improve EMU's macroeconomic framework by ensuring that both monetary and fiscal policy became more symmetric over the business cycle and are better coordinated. The monetary policy strategy adopted by the ECB has succeeded in establishing its anti-inflationary credentials since the beginning of EMU. Nevertheless, the definition of its price stability objective as a year-on-year increase in the HICP for the euro area below 2% over the medium run has led to the perception that while the ECB has defined a reasonable "upper bound" of 2% in its fight against inflation, the implicitly-defined lower bound of 0% was too low to fight deflation. Therefore there was the feeling tat it was asymmetric in its aims in the sense of caring more about inflation than deflation and that the resulting monetary policy stance could eventually become too tight to accommodate the need for different countries to carry out the necessary adjustments in relative national price differentials as well as to avoid the risk of any

particular country entering into more or less prolonged deflationary periods. These potential problems could be exacerbated with enlargement. The new monetary strategy of the ECB in May 2003 tried to increase its monetary policy symmetry by sending the message that it will aim at an inflation rate close- but still below- 2% in the medium term, so as to maintain its anti-inflationary credibility and, at the same time dispelling the fears of deflation. This is a step in the right direction that now needs to be perceived as such by the markets.

As regards fiscal policy, there is also a need to improve its stabilization framework based on the Stability and Growth Pact (SPG) and make it more symmetric over the cycle. There is a need to foster a symmetric budgetary behaviour over the different phases of the business cycle by introducing three complementary rules to achieve it: To enhance budgetary surveillance for an earlier detection of budgetary slippage, especially in good times, to provide the right incentives for good fiscal behaviour and to make sure that fiscal rules do not have an inherent pro-cyclical bias.

The first one can be achieved by devoting more resources to monitoring fiscal policies and carrying out high-level missions to the member countries. The second can be implemented through the creation of independent national Fiscal Auditing Boards entrusted with the mission of auditing the quality of information on currently budgetary situations and short-term prospects and the accuracy of government's evaluations of the budgetary consequences of each policy measure.

The second rule is to provide the right incentives for good fiscal behaviour. The best way to achieve that goal is to establish "rainy-days funds" which are used in slowdowns and replenished in upturns. To avoid moral hazard, there should be some rule that ensures that resources are withdrawn only in the case of protracted slowdowns and that such a decision by the Member State should need the approval by the Council based on the Commission recommendation. If sound structural budgetary positions are maintained, thanks to the rainy-days funds, the 3% of GDP ceiling should not need to be overly constraining in normal cycle slowdowns, however, in the event of severe recessions respecting such a constraint may imply damaging pro-cyclical policies. This could be avoided by re-defining the "exceptional conditions" under which a temporary excess over the 3% ceiling is allowed. Instead of defining exceptional only a 2% fall of real GDP, which is overly restrictive, it should be define as simply an annual fall of real GDP.

The third rule is to combine short-term flexibility with long-term sustainability. The SPG puts undue weight on budget deficits, largely disregarding longer-term public debt sustainability concerns. Countries with low levels of debt should have more flexibility on their budgets, to recognise their previous stability efforts, while countries with high debt levels should maintain structural budgets close to balance or in surplus. This higher room for manoeuvre would be very suitable for the new EU members, which have, most of them, low debt levels and high investment needs. Therefore, countries with public debt levels below 40% of GDP should be allowed to have an structural deficit of up to 1.5% of GDP for the time span covered by their Stability or Convergence Programme. At the end of that period those budgetary requirements should be re-assessed and the implicit liabilities should be estimated on the basis of a commonly agreed method. Clearly, countries running structural deficits of 1.5% of GDP may see their nominal budget deficits frequently exceed the 3% of GDP threshold during periods of cyclical downturns. The 3% limit should be kept for everybody, but the timing for the return to a level below the 3% threshold should be longer for these countries with a low level of public debt.

A more effective coordination of macroeconomic policy is also necessary. The present institutional setting has three weaknesses: an inappropriate distribution of responsibilities between the Commission and the Council in the enforcement of the fiscal rules, a weak "political ownership" of the coordination procedures and the coexistence within a single institutional setting of Member States who have adopted the euro and those who have not. Some reforms should enhance the effectiveness of its coordination. First, the Council is entrusted with both policy and surveillance functions at the SPG while the Commission has not been given the legal means to perform its surveillance in an authoritative way, because its warnings and recommendations have to be enforced by the Council, as a consequence, the enforcing of the rules risks to be partisan, through national authorities applying the rules to themselves and hence having incentives for collusion. Therefore, the Commission should be entrusted with the implementation of the Council decisions, being entitled not only to deliver early warnings but also to determine whether an excessive deficit exists.

Second, in order to increase Member States' ownership of budgetary policy coordination, it would be necessary to align the national Stability and Convergence Programmes with the orientation of the national fiscal policies, leaving the Commission to set the external assumptions for those programmes and to propose the guidelines for the orientation of national fiscal policies and, finally, to consolidate all the national programmes into an aggregate "European Stability Programme". At the same time, to increase the degree of national budgetary transparency, independent national Fiscal Auditing Boards should be established entrusted with the mission of auditing the quality of information on budgetary situations and the accuracy of the governments' evaluations of the budgetary impact of alternative policy options.

Third, given that the all-EU Ecofin is still responsible for all the formal decisions of the euro area, although non-euro member states do not participate in the vote of euro only issues, it would be a better arrangement to entrust the euro-area Council with all the decisions which are specific to the participants in the euro and be given the right to amend and adapt rules that currently need to be remitted to the wider Ecofin in order to be formally sanctioned, obviously except when these decisions might be contrary to the general interest of the EU. Moreover, at the moment there is no natural forum for exchanging views between the single monetary authority, the ECB, and the fiscal authorities of the countries sharing monetary sovereignty. The asymmetric composition of he Eurogroup, in which the ECB president faces 12 finance ministers and a commissioner, does not favour dialogue, the reverse asymmetry is present when the Commissioner or the Council president attend the Governing or General Council of the ECB. The best way should be holding regular informal meetings between the president of the ECB, the Council president and the relevant Commissioner.

d) Improve convergence and restructuring policies. With enlargement, reducing income disparities will be a matter of priority and urgency to maintain the principle of cohesion and to avoid rising disparities. Given the narrow availability of financial resources at the EU budget, convergence policy should be focused on low-income countries rather than in low-income regions and funds should be allocated on the basis of its GDP per capita level measured at purchasing power parities. It is obviously possible that, during the catching-up process, increasing regional disparities within the poorer countries may also emerge, but these problems could be mitigated by national growth and eased by national transfer schemes. The two main objectives of convergence policy should be, on the one side, institution-building to reach a good and stable administrative capacity and, on the other side, sustaining high rates in human and physical capital. The main principles underlying the current EU cohesion policy, that is, multi-annual programming of expenditure, national co-financing, and additionality of EU money with respect to national money should be kept. Nevertheless, the key principle of

conditionality should be strengthened. Governments should be left free to choose the investment project to be financed by the EU, but it should declare ex-ante the expected results of the investment project, so disbursements of funds could be made dependent upon reaching the expected results. The evaluation of these results should follow an "output" logic based on quantitative results, rather than an "input" logic based on amounts spent.

Restructuring policy becomes another priority, given the potential impact of the completion of the Single Market, of enlargement, as well as of globalization, on the necessary EU industrial change and upgrading and on employment in the different sectors of production. This policy should facilitate the process of allocation and reallocation of all displaced or affected persons regardless of their country of residence or their sector of activity. Eligibility for being covered by this policy should be limited in time but with the possibility for renewal. It should cover the temporary costs of finding a new job as well as the necessary retraining in order to achieve a faster transition between jobs and improving mobility and employability. The agricultural sector should be included as well.

e) Mobilise and re-focus the EU budget. The actual EU budget is a relic of the past and it should be radically restructured, given that expenditure, revenue and procedures are all of them inconsistent with the present and the future state of EU integration. Half of its spending goes on supporting a sector whose economic significance is very small and declining while little is spent to provide economic and non-economic public goods typically featuring large economies of scale and convergence policy is very dispersed across EU countries and does not support the activities that it should. Ninety per cent of its revenue is financed via national contributions linked to national treasuries, rather than from taxes levied on EU-wide fiscal bases. Finally, the procedures for adopting the EU Financial Perspectives, that is, the multi-annual frameworks, which determine the maximum amount for every item of expenditure in the EU annual budget, is driven by narrow national calculations of self-interest, bolstered by unanimity voting and, logically, its negotiations have followed the line of least resistance.

The EU budget should focus spending on those economic and social areas where it is best able to make a contribution to growth and solidarity in Europe. This implies a shift away from traditional expenditure, such as the Common Agriculture Policy (CAP) and involves a regrouping of the EU budget spending into three new funds: A fund for economic growth, a convergence fund and a restructuring fund.

The Growth Fund should be allocated to those projects that would make the largest contribution to the EU growth objective, concentrating on three areas identified as the most relevant growth engines at the EU level: R&D and innovation, tertiary education and training and cross border infrastructures.

The Convergence Fund should help the catch-up process and be invested on institutional building and in physical and human capital.

The Restructuring Fund will be aimed at facilitating the resource allocation due to wider and deeper economic integration of the EU compensating affected workers for re-training, reallocating and setting up new businesses.

To make these new funds fully operational, it will be necessary to cut in a very sizeable amount the spending devoted to agriculture. Four reasons justify this reduction. First, given its huge absolute and relative size it is the only expenditure available to make room for the more necessary new funds. Second, the CAP has moved away from being an allocative policy trying to promote efficiency and production, towards being a distributive policy for a small group

of citizens. Third, the large spread of income, population density and climate across the enlarged Union implies a large heterogeneity of preferences that makes it very difficult to conduct a single agricultural policy from Brussels. The same holds for interpersonal distribution for a sector of activity. Fourth, The CAP is not consistent with the Lisbon goals, given that its value-for-money contribution to EU growth and convergence is lower than what is targeted for most other policies. Therefore, there is a solid argument for decentralising to Member States the distributive function of the CAP, as it is the case for other distributive policies.

On the Revenue side of the budget, the very large national contributions, 90% of the revenue by 2006, feeds the tendency of the national governments to focus the debate on the net balance or "juste retour" issue, preventing a rational allocation of the budget. The way forward should be to target those sources of revenue that have a clear EU dimension rather than those with a national label. Revenues that directly accrue (partially or totally) to the EU budget should be related to a EU policy, to avoid being reapportioned nationally, or have a mobile tax base within the EU, such as the "seignorage" earned from issuing euro banknotes.

On procedures, a radical change is also needed towards: more ex-post evaluation of expenditures based on meeting criteria specified ex-ante; a greater devolution of responsibility for budget execution to relevant, local, national or EU autonomous bodies and, finally, a qualified majority voting for the adoption of multi-annual budgetary guidelines.

f) Improve effectiveness in the governance of the EU. There is an urgent need to change the way the present governance system of the EU works. First, the assignment of competences between the EU and the national levels of governance should be more flexible and more coherently defined. Not only the various roles of the EU institutions: rule-maker, policy-maker, regulator, supervisor and facilitator should be clarified and properly assigned and the devolution to the competences to the national level should be more flexible avoiding unnecessary overlapping. Second, there is a case for devolving funding, economic law enforcement and regulatory functions that are concentrated into the Commission to independent European bodies. For instance, the responsibility for enforcing competition policy, except state aids, should be assigned to a European competition authority accountable to the Council and Parliament, whose decisions could be subject to formal override by the Commission. The same should be done to sectoral regulation.

Third, the enlarged EU should move further towards decentralised implementation of market regulation by developing "steered networks" of national and EU bodies operating within the same legal framework and partnerships of autonomous national bodies cooperating with each other and with EU bodies. Fourth, the obligations of EU and national regulators should be strictly defined to prevent, by the Commission or the national regulators, any attempt to foreclose national markets or departs from commonly agreed principles. Fifth, the management of the Single Market should be improved, by strengthening the sanctions for non-application of its directives and by concentrating product and service safety under at the EU level. Sixth, the Lisbon Agenda should be accelerated in its implementation limiting the OMC to the areas where there are no alternatives, such as using the Community method more extensively and giving the right incentives to Member States to direct budgetary priorities towards growth enhancing spending categories.

Finally, institutional reform should be directed to achieve more strategic capabilities. The Commission should be leaner, with only 15 Commissioners with focused portfolios and a specific Commissioner for accelerating the Lisbon Agenda. Its staffing should be improved by hiring high-level professionals. The Council should be mainly focused to the

growth agenda with the same resolve it has achieved in the macroeconomic field. For achieving such an objective, qualified majority voting should be extended to the whole economic field. The same focus on enhancing growth should be taken by the Member States. Finally, a higher degree of cooperation is needed among subsets of Member States to lead the way and attract other countries into the same integration path.

The new proposed EU Constitution, by introducing the rule of majority voting in almost all the decisions, could help to speed up the Lisbon strategic goals by making easier to find the urgently needed majority voting, provided there is a consensus among the largest EU members, which, in principle, should take the leadership to implement the reforms. The problem is that most of the major member countries are going, at present, through a period of very low growth (partly because they have not implemented previously the necessary reforms) and find it difficult to embark in such a policy process. As Commissioner Fritz Bolkestein comments: "Member States are strong on rhetoric and weak on actions. There is much poetry but precious little motion". Let us hope that the entrance of new members states from the east and the coming into force of New Constitution will give a strong impulse to the reform process and that the recommendations of the Independent Group Report will be followed, so as to improve the future economic performance of the enlarged EU.

BIBLIOGRAPHY

Aghion, P and Howitt, P (1992) "A model of growth through creative destruction" Econometrica 60

Aghion, P and Howitt P. (1998) "Endogenous growth theory" The MIT Press. Cambridge, Mass.

Ahn, S. and Hemmings, P. (2000) "Policy influences on economic growth in OECD countries: An evaluation of evidence" OECD Economics Department Working Paper No 246.

Algan, Y. Cahuc, P and Zylerberberg, A (2002) "Public employment and labour market performance" Economic Policy, Vol. 34, April

Auer, P and Cazes, S (2000) "The resilience of the long-term employment relationship" International Labour Review, Vol. 139, No. 4

Bailey, N. and Lawrence, R. (2001) "Do we have a New Economy?" Paper presented at the Annual Meeting of the Allied Science Association. New Orleans.

Barro, R.J. and Lee, J.W. (2000) "International data on education attainment, updates and implications", NBER Working Paper No 7911.

Barro, R.J. (1991) "Economic growth in a cross section of countries", Quarterly Journal of Economics, 106 (2) May.

Barro, R.J. and Sala I Martin, X (1995) "Economic Growth" McGraw-Hill, New York.

Bassanini, A and Scarpetta, S (2001) "Does human capital matter for growth in OECD countries? Evidence from pooled mean-group estimates" OECD Economics Department Working Paper No 282.

Bassanini, A. and Scarpetta, S. (2001 B) "The driving forces of economic growth: panel data evidence for OECD countries" OECD Economic Studies No 33.

Bassanini, A., Scarpetta, S and Visco, I. (2000) "Knowledge, technology and economic growth: recent evidence from OECD countries", OECD Economics Department Working Paper No 259.

Bassanini, A., Scarpetta, S. and Hemmings, P. (2001) "Economic growth: the role of policies and institutions. Panel data evidence from OECD countries" OECD Economics Department Working Paper No. 283.

Bassanini, A. and Ernst, E. (2002) "Labour market institutions, product market regulations and Innovation: a cross country evidence from OECD countries" OECD Economics Department Working Papers No. 283

Bayoumi, T. Laxton, D. and Pesenti, P (2003) "When leaner is not meaner: measuring the effects and spillovers of greater competition in Europe" IMF Working Paper.

Boeri, T; Brugiavini, A and Disney, R (2000) "European Pensions, an Appeal for Reform" European Round Table of Industrialists, Brussels

Blanchard, O. (1990) "Suggestions for a new set of fiscal indicators", OECD Working Paper, No 79

Blanchard, O. (1998) "Revisiting European Unemployment: Unemployment, capital accumulation and factor prices" NBER Working Paper No 6566.

Blanchard, O. and Wolfers, J. (1999) "The role of shocks and institutions in the rise of European unemployment: the aggregate evidence", NBER Working Paper No. 7282.

Blanchard, O and Landier, A (2001) "The perverse effects of partial labour market reform: fixed duration contracts in France" NBER Working Paper Series No. 8219

Blanchard, O and Giavazzi, F (2001) "Macroeconomic effects of regulation and deregulation in goods and labour markets" NBER Working Paper Series, No. 8120

Blanchard, O. (2003) "The economic future of Europe" December, mimeo.

Boeri, T., Nicoletti, G., and Scarpetta, S (2000) "Regulation and labour market performance" CEPR Discussion Paper No 2420

Buiter, Willem (1985) "A guide to public sector debt and deficits) Economic Policy No 1

Cameron, G. (1998) "Innovation and growth: a survey of empirical evidence", Nuffield College. Oxford. Mimeo.

Colecchia, A. and Schreyer, P (2002) "The contribution of Information and Communication technologies to economic growth in nine OECD countries". OECD Economic Studies No 34.

Crafts, N. and Toniolo, G. (1996) "Post-war growth: An overview", in Crafts, N and Toniolo, G eds. "Economic growth in Europe since 1945", Cambridge University Press, Cambridge

Center for Strategic and International Studies (CSIS) (2002) "The global retirement crisis" by Richard Jackson. Washington D.C

Colecchia, A. and Schreyer, P. (2002) "ITC investment and economic growth in the 1990s: is the US a unique case? A comparative study of nine OECD countries" Review of Economic Dynamics, Vol. 5 No. 2

Daly, K. (2003) "Euroland: Productivity is not the problem" European Weekly Analyst, Goldman Sachs. June 27th.

Daveri, F (2000) "Information technology and growth in Europe". Parma University.

David, P.A. (1990) "The dynamo and the computer: An historical perspective on the modern productivity paradox", American Economic Review Papers and Proceedings, vol. 80, No 2.

Denison, E. (1974) "Accounting for United States Economic Growth, 1929-1969" The Brookings Institution. Washington.

Deroose, S and Thiel, M (2001) "Considerations and conjectures on economic growth in the EU". European Economy, No 1. Directorate General for Economic and Financial Affairs, European Commission.

Dolado, J.J., Garcia-Serrano, C. and Jimeno, J.F. (2001) "Drawing lessons from the boom of temporary jobs in Spain" University of Alcala. Mimeo.

Durlauf, S.N. and Quah, D.T (1999) "The new empirics of economic growth" in J. Taylor and M. Woodford eds. "Handbook of Macroeconomics", North-Holland, Amsterdam

Eichengreen, B (1996) "Institutions and economic growth in Europe after World War Two" in N. Crafts and G. Toniolo eds. "Economic growth in Europe since 1945" Cambridge University Press, Cambridge

European Commission (1985) "Completing the internal market" a technical report. Brussels

European Competitiveness Report (2001) European Commission

European Competitiveness Report (2002) European Commission

European Competitiveness Report (2003) European Commission

European Economy (2001) No 1

European Economy (2001) "The Budgetary Challenges Posed by Ageing Populations" No 4

European Economy (2001) " The EU Economy: 2001 Review" No 73

European Economy (2002) "2002 Broad Economic Policy Guidelines" No 4

European Economy (2002) "The EU economy: 2002 review" No 6

European Economy (2003) "The EU Economy 2003 Review" No 6

Feldstein, M (1996) "The missing piece in policy analysis: Social security reform" American Economic Review, Papers and Proceedings.

Feldstein, M (1997) "Transition to a fully funded pension system: five economic issues" NBER Working Paper No. 6149

Feldstein, M. ed. (1998) "Privatizing Social Security" NBER and University of Chicago Press

Fitoussi, J.P. et. Al. (2000) "Roots of recent recoveries: labour reforms or private sector forces" Brookings Papers on Economic Activity, 1.

Ford, R. and Laxton, D. (1995) "World public debt and real interest rates" IMF Working Paper No. 95/30

Gordon, R.J. (1995) "Is there a trade-off between unemployment and productivity growth?" CEPR Discussion Paper No. 1159.

Gordon, R. (2000) "Does the New Economy measure up to the great inventions of the past?" Journal of Economic Perspectives Vol. 14 No 4

Gordon, R.J. (2002) " Two centuries of economic growth: Europe chasing the American frontier" Paper prepared for the Economic History Workshop, Northwestern University, October

Greenwood, J. (1999) "The third industrial revolution: Technology, productivity and income inequality" Federal Reserve Bank of Cleveland Review.

Gros, D., Jimeno, J. F., Mayer, T., Thygesen, N. and Ubide, A (2003) "Adjusting to leaner times" 5th Annual Report of the CEPS Macroeconomic Group, July, CEPS, Brussels.

Grossman, G.M. and Helpman, E (1991) "Innovation and growth in the global economy" MIT Press, Cambridge Mass

Gruber, J and Wise, D (1999) "Social security and retirement around the world" NBER ans The University of Chicago Press

Guellec, D and Van Pottelsberghe, B (2000) "The impact of public R&D expenditure on business R&D", OECD STI Working Paper No 4

Guellec, D and Van Pottelsberghe (2001) "R&D and productivity growth: panel data analysis of 16 OECD countries" OECD Economic Studies No 33.

Hanel, P. and Niosi, J. (1998) "Technology and Economic growth: a survey" Statistics Canada Research Paper.

Hers, J. (1998) "Human capital and economic growth: a survey of the literature" CPB Report No 2.

H.M. The Treasury (2002) "Realizing Europe's Potential" Economic Reform in Europe. February.

H.M. The Treasury (2003) "Meeting the Challenge: Economic Reform in Europe" February.

H.M. The Treasury (2003B) " Structural indicators of European Economic Reform: Measuring Europe's Progress. February.

Horstein, A. (1999) "Growth accounting with technological revolutions" Federal Reserve Bank of Richmond Economics Quarterly, 85 (3)

Horstein, A. and Krusell, P. (2001) "New technology and productivity: a macroeconomic perspective" European Economy No 1. Directorate-General for Economic and Financial Affairs European Commission

Hulten, C. (2000) "Total factor productivity: a short biography" NBER Working Paper No 7471

International Labour Organisation (ILO) (1997) "Economically active population" Geneva

Independent High-level Study Group (2003) "An agenda for a growing Europe: Making the EU economic system deliver" Chaired by Andre Sapir on the initiative of the President of the European Commission. July. Its members were: Phillippe Aghion, Giuseppe Bertola, Marin Hellwig, Jean Psani-Ferry, Dariusz Rosati, José Viñals and Helen Wallace and its RapporteursÑ Marco Buti, Mario Nava and Peter M Smith.

Jacobzone, S., Cambois, E and Robine, J.M. (2000) "Is health of older persons in OECD countries improving fast enough to compensate for population ageing?" OECD Economic Studies No 30

Jacobzone, S (2001) "Healthy ageing and the challenges of new technologies: Can the OECD social and health care systems provide for the future?" Proceedings of the Tokyo workshop on healthy ageing and the biotechnologies, organized by the OECD and the Japanese Ministry of Health

Jones, C.I. (1995) "Time-series tests of endogenous growth models" Quarterly Journal of Economics, Vol. 110

Jorgenson, D.W. and Stiroh, K.J. (2000) "Raising the speed limit: US economic growth in the information age" Brookings Papers on Economic Activity.

Joumard, Isabelle (2002) "Tax systems in European Union Countries" OECD Economic Studies No. 34, 2002

Jovanovic, B. and Rousseau, P.L. (2000) "Technology and the stock market: 1885-1998" mimeo.

Keeley, L.C. and Quah, D. (1998) "Technology in growth" Centre for Economic Performance Discussion Paper No. 391.

King, R.G. and Rebelo, S.T (1993) "Transitional dynamics and economic growth in the neoclassical model" American Economic Review Vol. 83

Krueger, Dirk and Kumar, Krishna (2003) "US-Europe differences in technology-driven growth: quantifying the role of education" NBER Working Paper 1001.

Lequiller, F (2001) "The new economy and the measurement of GDP growth" INSEE Working Paper G2001/1, February

Lucas, R. (1988) "On the mechanics of economic development" Journal of Monetary Economics 22, July

Lucas, R. (2000) "Some macroeconomics for the 21st century" Journal of Economic Perspectives Vol. 14

Mankiw, G., Romer, D. and Weil, D. (1992) "Contribution to the empirics of economic growth" Quaterly Journal of Economics. 107. May.

Martin, J. (2000) "What works among active labour market policies: evidence from the OECD countries experiences" OECD Economic Studies, No 280

McMorrow, K. and Roger, W. (2001) "Potential output: Measurement methods, new economy influences and scenarios for 2001-10: A comparison of the EU-15 and the US" European Commission Economic and Financial Affairs Economic Paper No 150.

Nelson, R. (1998) "The agenda of growth theory: A different point of view" Cambridge Journal of Economics, 22.

Nicoletti, G., Scarpetta, S. and Baylaud, O (1999) "Summary indicators of product market regulation with an extension to employment protection legislation" OECD Economics Department Working Papers No. 226

Nicoletti, G. and Scarpetta, S. (2003) "Regulation, productivity and growth: OECD evidence" Economic Policy No 36, April.

Nickell, S and Nunziata, L (2000) "Employment patterns in OECD countries" OECD, March

Nordhaus, W.D (2001A) "Alternative methods for measuring productivity growth" NBER Working Paper 8095

Nordhaus, W.D (2001B) "Productivity growth and the new economy" NBER Working Paper 8096

Obstfeld, M and Peri, G (2000) "

OECD (1999) "Implementing the OECD jobs strategy: assessing policy and performance" Paris

OECD (2000) "A new economy? The changing role of innovation and information technology in growth", OECD. Paris

OECD (2001A) "The OECD productivity manual" OECD Paris

OECD (2001B) "Productivity growth in ICT producing and ICT using industries: A source of growth differentials in the OECD?" Paris.

OECD (2001C) "The impact of ICT technologies on output growth: issues and preliminary findings" Paris.

OECD (2001D) Economic Studies No 33. Paris

OECD (2001E) "Fiscal implications of ageing: projections of age-related spending" OECD Economic Outlook No 69. Paris

OECD Employment Outlook (2002) OECD Paris. July

OECD Employment Outlook (2003) OECD Paris.

OECD (2003) "The Sources of Economic Growth in OECD Countries" Paris

O'Mahony, M. (2002) "Productivity in the EU, 1979-1999" National Institute of Economic and Social Research, published by H.M. Treasury. February.

Onliner, S. and Sichel, D (2000) "The resurgence of growth in the late 1990s: is information technology the story?" Federal Reserve Board Finance and Economics Discussion Paper No 20.

Onliner, S. and Sichel D. (2002) "IT and productivity: Where are we now and where are we going?" Ferderal Reserve Bank of Atlanta Economic Review, 3rd quarter.

Pilat, D. (1997) "Competition, productivity and efficiency" OECD Economic Studies No 27

Rebelo, S. (1991) "Long-run policy analysis and long-run growth" Journal of Political Economy No. 99 (3)

Roger, W. (2001) "The contribution of information and communication technologies to growth in Europe and the US: A macroeconomic analysis". European Commission Economic and Financial Affairs Economic Paper No. 147.

Romer, P.M. (1986) "Increasing returns and long-run growth" Journal of Political Economy No 94 (5)

Romer, P.M. (1990) "Endogenous technical change" Journal of Political Economy 98

Sakellaris, P and Vijselaar, F.W (2003) "Capital quality improvement and the sources of growth in the Euro Area" Mimeo, September

Scarpetta et al (2000) "Economic growth in the OECD area: recent trends ant the aggregate and sectoral level" OECD Economics Department Working Papers No. 248

Schreyer, P. and Pilat, D. (2001) "Measuring productivity" OECD Economic Studies No 33.

Schreyer, P. (2001 "Computer price indices and international growth comparisons" OECD. Paris.

Solow, R. (1956) "A contribution to the theory of economic growth" Quarterly Journal of Economics &).

Solow, R. (1957) "Technical change and the aggregate production function" Review of Economics and Statistics. 39.3.

Stiroh, K. (2000) "What drives productivity growth?" Federal Reserve Bank of New York, New York

Swan, T. (1956) "Economic growth and capital accumulation" Economic Record, 32.

Tanzi, V. and Lutz, M.S. (1973) "Interest rates and Government debt: Are the linkages global rather than national?" in A. Harry (eds) "The political economy of Government debt" North Holland. Amsterdam.

Temple, J. (1999) "The new growth evidence" Journal of Economic Literature, No 37, March.

Temple, J (2001) "Growth effects of education and social capital in OECD countries", OECD Economic Studies, No 33

Thiel, M. (2001) "Finance and Economic Growth: a review of theory and empirical evidence" European Commission Economic and Financial Affairs Paper.

United Nations Population Division (2003) "World Population Prospects: The 2002 Revision" New York.

Whelan, K (2000) "Computers, obsolescence and productivity" Federal Reserve Board Finance and Economics Discussion Paper No 9