

ECOMOD 2005.

INTERNATIONAL CONFERENCE ON POLICY MODELING.

Istanbul, June 29 – July 2, 2005

Long term growth potential in the EU and its relation with employment and unemployment.

André DRAMAIS¹

Abstract:

The present low employment-high unemployment position of most EU countries amper considerably their potential growth prospects, in particular in view of the ageing of the labour force. Some QUEST model scenarios are proposed illustrating various possible growth path to 2050

¹ European Commission. The views expressed in this note are those of the author and can not, in any way, be attributed to the European Commission.

Long term growth potential in the EU and its relation with employment and unemployment.

1. Concepts.

The measure of the potential growth of an economy is of great importance in any medium to long-term analysis since it determines not only the average trend growth that it can support without supply-generated inflationary pressures but also its potential for employment, income and wealth generation.

Unfortunately *there is no empirical method unanimously accepted for the determination of potential output* and, indeed, since potential output is itself an endogenous variable in a long-term growth process, the methodological problems raised by its measurement are considerable².

Some approaches are purely statistical by nature and derive potential output from the effective output trajectory, trended and smoothed by appropriate statistical techniques (peak to peak, Hodrick-Prescott filter, Beveridge-Nelson trend-cycle decomposition, etc.). These techniques are however short-term in nature.

When going into the medium-term, capacity, of course will vary according to changes in its determinants (capital, labour, technical progress...) and methods must become more structural and rely more on theoretical paradigms, hence the lack of unanimous agreements about them!

Partial approaches are also sometime used: if one reasons in a two factor (labour and capital) context and if labour is deemed either non-constraining (given very high involuntary unemployment) or complementary to capital, then the trajectory of the capital stock may proxy potential output when corrected for changes in the average productivity of capital (the inverse of the capital/output ratio).

In spirit, this “capital only” approach is quite close to what was called in growth theory³ the “warranted” rate of growth which depends on the domestic saving rate and on the marginal capital/output ratio.

However no growth model can ignore the role of labour and indeed, both the Post-Keynesian and the Neo-classical growth model introduce a “natural” growth rate which, in full-employment equilibrium is the sum of the rate of growth of the labour force and of the rate of technical progress.

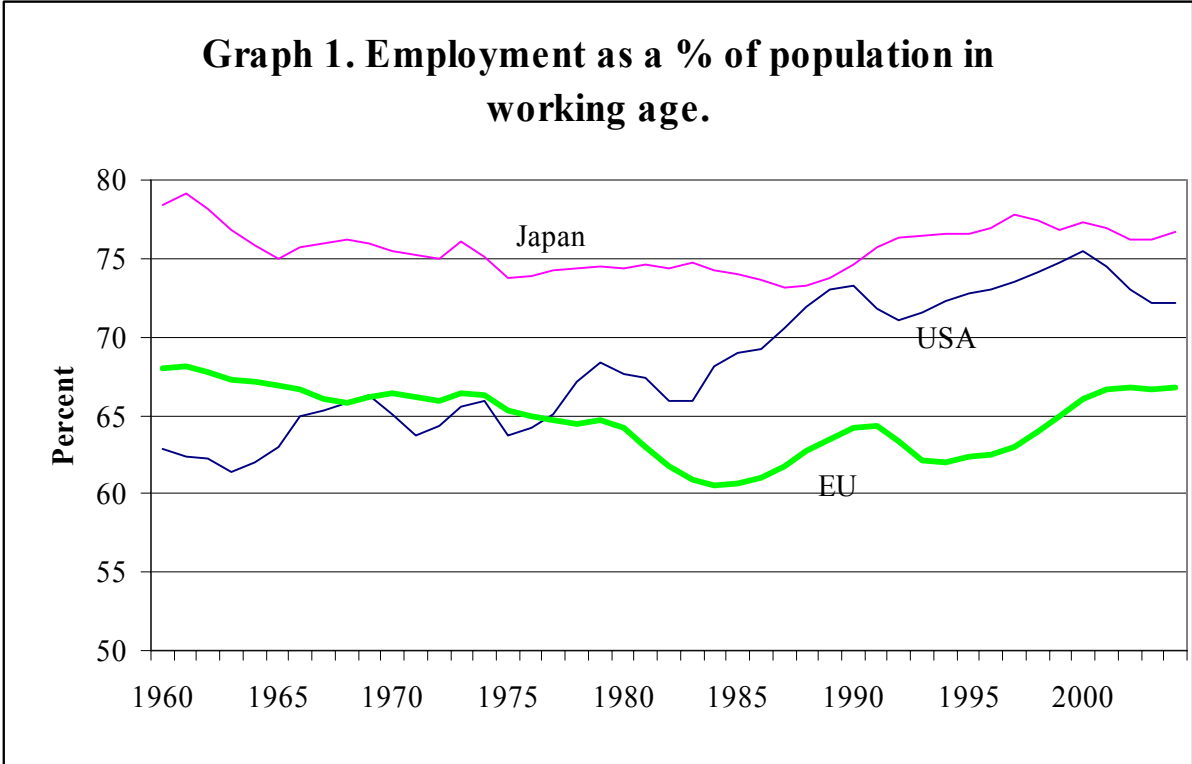
There are thus four basic determinants of potential growth in a steady-state context: the saving rate (determining investment i.e. changes in the capital stock), the capital/output ratio (equal to the reverse of the average productivity of capital), the rate of technical progress (equal to the rate of total factor productivity) and the growth of the labour force (in full employment).

These are steady state conditions and effective initial conditions when making the analysis may and will differ substantially given the presence in some case (like now...) of capacity underutilisation but mostly of a huge labour reserve, the problem we will specifically analyse in this paper.

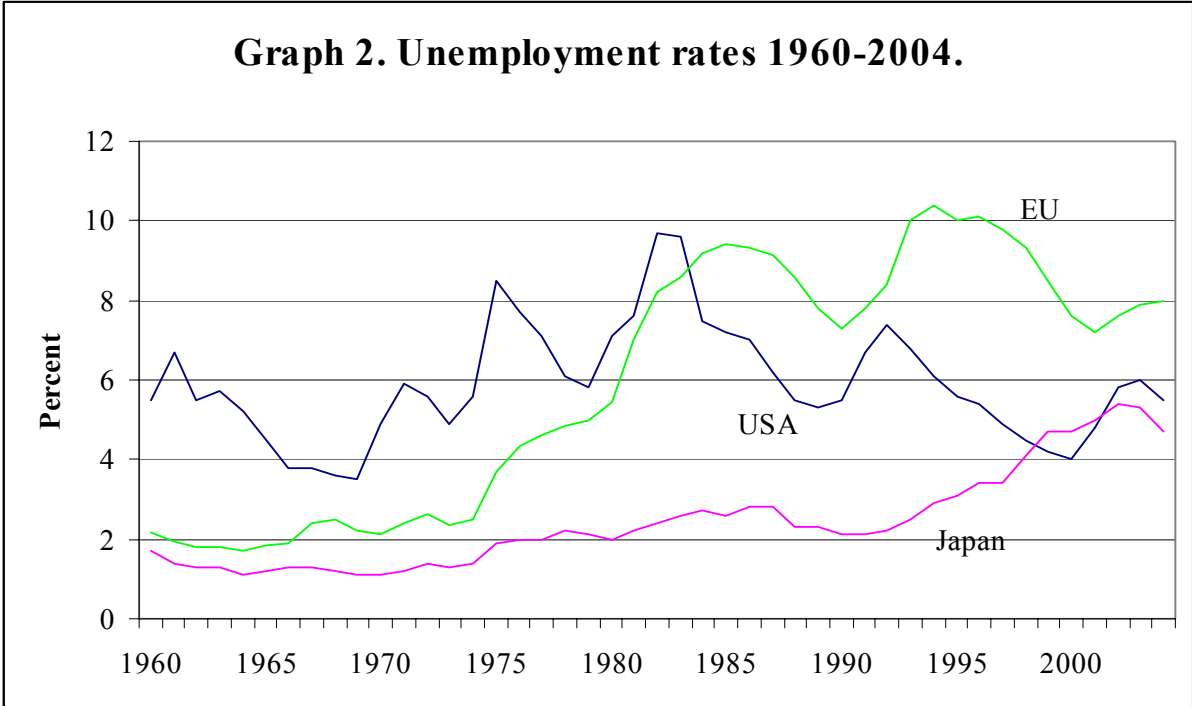
2. The growth potential of the EU labour reserve.

² « Croissance potentielle et écart de production », *Economie Internationale* : la revue du CEPII n° 69, I/1997.

³ See e.g. Hahn, F. H. and R. C. C. Matthews: “The Theory of Economic Growth: a survey”, *Economic Journal*, vol 74, 1964.



As regards the labour market, a most dominant feature at the EU level is the relative mediocrity of employment growth and level. Except during 1985 and 1990 and 1995 and 2000, employment growth since 1973 was unable to meet labour supply growth. This resulted in long periods of continuous unemployment increases.



Since 1995, however the situation is improving: the unemployment rate has been cut down by nearly 25 percent since 1995 (although it still remains way too high). The position of Japan is also worth noting since it is now comparable to the USA. At the same time, the employment rate, which felled by 15 points between 1960 and 1985 is progressively coming back to the level of the Sixties but is still well below the US and Japan.

Thus, the EU is characterised by a much larger under-utilisation of its potential manpower than both the USA and Japan

In the short run, this is undoubtedly a weakness and the source of a large social cost but it also represent a huge growth potential in the medium term since labour is also a factor of production. This potential come from 3 sources: those presently unemployed, those non active at present and the still positive demographic growth during the next ten years.

More specifically, the present unemployment rate of about 8 percent may be subdivided into:

- Those who are unemployed since a very short time for cyclical reason and may be quickly re-employed as soon as the cyclical slack is suppressed since they have the required qualification for the working post that will be reopened. But these represent only about one to one and a half percent of the labour force.
- Those who are temporarily unemployed (since less than one year, say) and may be considered as part of the normal turnover of the labour market since they may return to work with some (re)training provided that working posts are created for them. These may represent about 2½ to 3 percent of the labour force.
- Those who are unemployed since a long time and which are often hampered not only by the lack of working posts but also by inadequate qualifications.

Among those presently inactive, one may also take into account:

- Those who have never worked but would work if suitable jobs were available.
- Those who have left the labour force (“discouraged worker” effect) but who could return if conditions become favourable.

Finally those coming from the demographic increase in the labour force (including migration) which despite ageing will still be slightly positive on the average over the next ten years and add about 1.5% to the labour force.

All these groups thus require an expansion of the number of working posts and should be ready to acquire an adequate formation in order to have the “right” qualification. It must however be added that given the pressure of competition (both internal and external to the EU), of technological and organisational progresses this need for qualification applies to **all** member of the labour force, both in and out of work.

It is also worth noting that the overall turnover in Europe in terms of gross job creation and destruction is about as high in the EU as in the USA. According to a survey made at the beginning of the 1990s, data job turnover (both creation and destruction) represents 18 to 25 % per year. (see table 1)

Table 1. Gross job turnover as a percent of total employment

	Job creation	Job destruction	Gross turnover
Denmark	16.0	13.8	29.8
Germany	9.0	7.5	16.5
France.	13.9	13.2	27.1
Italy	11.9	11.1	23.0
Finland	10.4	12.0	22.4
Sweden	14.5	14.6	29.1
United Kingdom	12.7	10.6	23.3
United States	13.0	10.4	23.4
Canada	14.5	11.9	26.4
Japan	8.6	5.2	13.9

Source: Contini, B. Conference on “Unemployment and policies towards it” European University Institute, Florence, 12-13 April 1996.

In other words, every year a job is either created or destroyed for every four to five existing ones! About two-thirds of the total is due to the expansion or contraction of existing firms, one-third to the “birth” or “death” of firms, most notably SMEs.

It also appears that contrarily to some affirmations, labour mobility in terms of movements in and out of jobs is globally the same in Europe as in the United States but what is missing is a sufficient number of net job creations in order to absorb these movements and insure that the amount of “left-over” will coincide with the unavoidable minimum of frictional unemployment.

3. The order of magnitude.

Let us assume that in the next ten years the EU would be able to return to quasi full employment i.e. unemployment would be reduced to a purely frictional amount of, say 3 %⁴. The population in working age would grow by 1.5% cumulatively over the same period.

This would give an increase in employment by 9.382 million people, unemployment falling from 14.828 million to 5.446 million. With an increase in population of working age from 255.122 million to 258.949 million the resulting employment rate would be 69.5 % i.e. slightly higher than in 1960-61 (68.2 %). It may also be noted that the growth in employment would be 0.54% per year over this ten year period which is not absurdly high compared to the averages of 1985-90 and 1995-2000 (1.4% p.y.)

⁴ Frictional unemployment was about 2% during the last long period of full employment (1960-1972). The present assumption of 3% thus seems reasonably conservative, enabling some creeping-up of the frictional rate given the evolution of society towards more demanding qualification.

If one would be able to replicate the employment growth rate of 1985-90 and 1995-2000 over 2005-2014, then the employment rate would reach the maximum level observed in one member country i.e. Denmark where it reached an average of 76.2% during 1990-2004 and employment creation would reach 26.8 million over these ten years and would increase the potential rate of growth by about 1.5 % all other things being equal.

Such evolutions would have wide ranging implications beyond their pure labour market impact. In particular, what matters for the sustainability of the present system of social security is not the usual *demographic* “greying pressure” (ratio of aged person to total population) but rather the *economic sustainability* index i.e. the ratio of the aged population to effective employment that is to those effectively supporting the “pay as you go” pension system. It can be shown that at least until 2025 the realisation of the most optimistic employment scenario would practically cancel the grey pressure until then.

Of course, full employment can be restored only once and the ageing problem would continue to develop at least until 2050 according to the present projection. But in policy terms the high growth, high employment scenario would give policy makers extra time to reform tax and social security systems in a “non-brutal” way (since *ceteris paribus* it would lead to lower budget deficits and debt burden). It would also give time to develop and implement an “acceptable” migration policy and finally on such a long time span, behaviours in terms of fertility and birth rate may change.

The workforce potential of the EU is thus considerable and significantly larger than in the US and Japan. It will of course not be reached without effort in terms of structural reforms, more labour intensive growth patterns and a strong increase in productive capacity which requires a high investment rate and sufficient increase in total factor productivity.

4. QUEST II Central Ageing Scenario 2000-2050.

INTRODUCTION: This central ageing scenario, covering the period 2000-2050, is essentially a no-policy change view of the world over the next 50 years. It shows the public finance, employment, capital accumulation and growth implications of the ageing of populations in the absence of any specific, offsetting, policy adjustments. It should be stressed at the outset that all figures are in GDP per capita terms i.e. living standards, since in QUEST II GDP growth rates are adjusted for changes in trend population.

Given the extent of the demographic changes being envisaged it is accepted that the economic adjustment process will inevitably involve large shifts in an economies’ stock variables such as physical capital, net foreign assets, money and government debt, all of which are endogenously determined in QUEST. Stock adjustments of this magnitude invariably take time to feed through with the result that a long baseline is required for the model to settle down in a simulation after a shock. The 70 year baseline used in Quest II allows enough time for these dynamic adjustment mechanisms to work through and for the stock-flow adjustments to take place.

Finally, it is important to underline at the outset that all simulation exercises mechanistically apply past patterns of behaviour to expected future trends and given the unprecedented nature of the demographic changes, caution needs therefore to be exercised with regard to interpreting the results.

Quest's Baseline Scenario : Before going on to discuss the Central Scenario it is important to be clear about the public finance and labour market assumptions which underpin Quest's Baseline Scenario⁵, since it is against the latter which the Central scenario is compared.

- Baseline Public Finance Assumptions: Stability and Growth Pact is Respected: In comparing the central ageing scenario with the baseline, it is important to remember that the baseline already assumes broad respect for the Stability and Growth Pact (SGP). The EU's deficit at the general government level is assumed to disappear by 2008 and the Debt to GDP ratio is expected to be around 60% in the same year and to stay at that level thereafter for the duration of the baseline. The model in fact imposes a debt rule of 60% which ensures that, once that level is achieved, it doesn't change very much over the simulation horizon. The imposition of such debt rules are common in most large models since public debt dynamics is an intrinsically unstable process, with such rules ensuring that the public finances stay on a sustainable path throughout the simulation period. In the case of the ageing simulations, if a debt rule is not imposed the deficit and debt situations quickly reach unsustainable levels. Debt is stabilised via lump sum changes to net government transfers to households, which is the least distortionary budget category in the model.
- Baseline Labour Market Assumptions : Changes in the population of working age are driven by the assumption that the overall population is growing in all countries over the simulation horizon at a growth rate similar to that witnessed in the most recent decades. Since there is no change in labour taxes and no assumption regarding structural reforms with regard to the respective labour markets, the unemployment rate stays close to its historical level. In addition, participation rates are assumed to stay roughly at their 2005 levels and unemployment benefits are assumed to be indexed to gross wages.

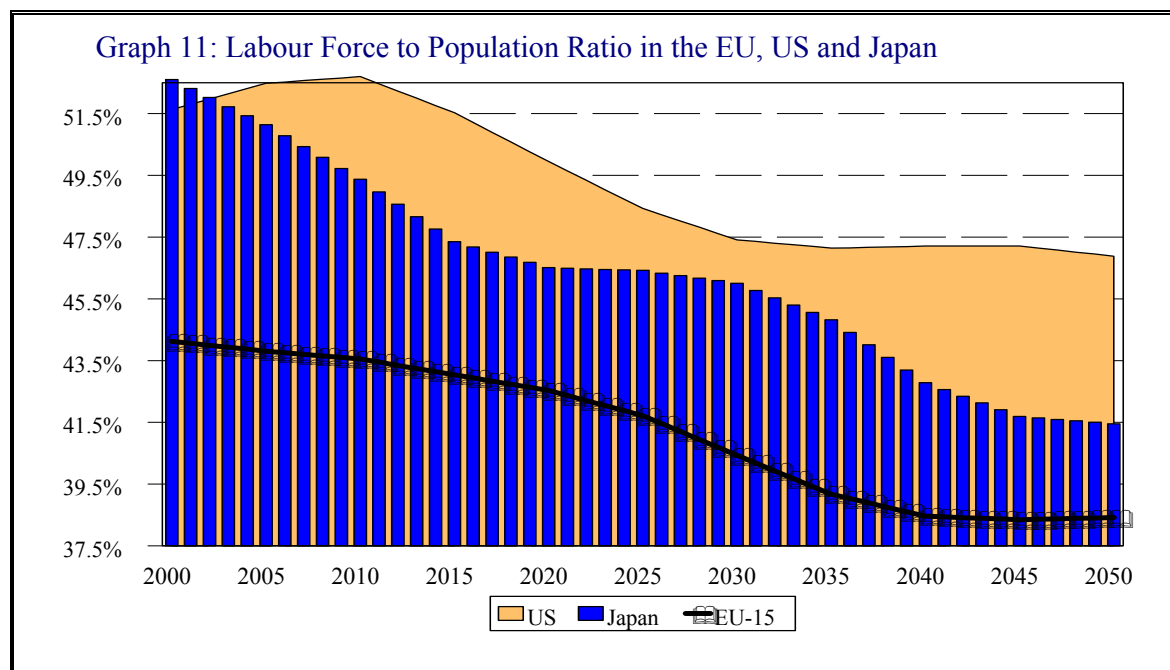
CENTRAL AGEING SCENARIO :

The above baseline scenario is given two age-related shocks: a labour force shock, which encapsulates the main features of the demographic projections over the next 50 years, and a public expenditure shock linked to the budgetary implications for pensions, health care and education of an ageing population.

Labour Force Shock : In terms of the population changes, the central scenario assumes that the EU's overall population will decline slightly over the 50 year period as opposed to an assumption in the baseline of the population continuing to grow modestly. In the case of Japan and the US the population is expected to decline substantially in the case of the former (-0.3% a year), and to grow by 0.4% a year in the US.

These overall population changes however mask important developments with regard to the structure of the population, with, as chapter one has shown, declines in the relative share of the 15-64 year old age group leading to large increases in all three regions in overall dependency ratios. These shifts in the population structure are accommodated in the model by changes in the labour force to population ratio which in the baseline is assumed to remain constant but in the central ageing scenario is expected to decline substantially in all areas as indicated in Graph 11.

⁵ The QUEST II baseline incorporates the most recent short and medium term projections of the Commission services up to 2005.



Public expenditure shock : In relation to the budgetary implications it is crucial to stress at the outset that these relate solely to the demographic pressures on the health care and pension budgets, with only about 40% of the increases in these budgets over the last 30 years being driven by age-related spending pressures. Consequently, it is assumed that the non-age spending factors (eg eligibility rules, benefit levels, cost push factors on the supply side of the health system etc), which in the past have been responsible for 60% of the increase in their respective budgets, will not be allowed to push up spending. This is a highly unrealistic prospect but any assessment of these non-ageing influences goes beyond the scope of this present study. All that can be said is that if these latter factors are allowed to grow as they have done in the past then the public finance burden will be more than double that indicated in the present study.

The long range forecasts for the public finance implications in terms of pensions, health and education are largely taken from existing OECD ((Liebfritz et al (1995), Roseveare et al (1996)) and Commission sources (D. Franco et al (1996 and 1997)). As stated previously the latter sources of information, derived from a partial analysis approach, can be effectively used as the basic inputs in a general equilibrium framework. It should be pointed out that most of the latter studies draw on national sources, with many of the national projections in relation to the per capita public expenditure implications of ageing being based on research work in the area of generational accounting.⁶

The main assumptions in relation to the direct public finance implications of ageing are shown graphically in Graphs 12 and 13. The pensions, health and education expenditure projections are extended where necessary by the use of empirically based rules of thumb⁷,

⁶ Leibfritz et al (1995) « Essentially, the generational accounting method is aimed at assessing whether typical members of each generation would receive back in transfers and services over their lifetime what they have paid in taxes (in net present value terms and adjusted for productivity growth), given the need eventually to satisfy an inter-temporal budget constraint that requires the present value of future tax payments (of existing and future generations) to equal the present value of all future government consumption less the initial stock of debt »

⁷ An example of such a rough rule of thumb would be that referred to by Borsch-Supan (1996) who estimates that in the absence of policy adjustments, total age-related social expenditures (i.e. pensions, health and education spending) should grow roughly in proportion to the dependency ratio. He states that “the rise in the dependency ratio translates into an increase in the public demand for funds as long as specific social expenditures and tax rates remain as they are now”.

with the latter drawing on the reasonably strong econometric links between the level of public expenditures on health care systems and pension schemes and changes in the populations' age structure.

The salient features of the public expenditure projections underlying the simulation are as follows:

- Pensions: In the absence of any corrective action, age related pressures on pensions expenditure are likely to result in a progressive, ex ante, increase in Government expenditure equivalent to 9, 2 $\frac{3}{4}$ and 5 $\frac{1}{4}$ percentage points of GDP in Japan, the US and the EU respectively in 2050.

In the case of the EU, due to the pension reforms set in place in a large number of Member States, the above pensions expenditure to GDP ratio is now being forced up only by demographic trends. However, despite the reforms, the demographic trends alone, as reflected in unprecedented increases in dependency ratios, result in large increases in the pensions expenditure to GDP ratio which raises concerns regarding the long-term sustainability of pay-as-you-go (PAYG) pension systems.

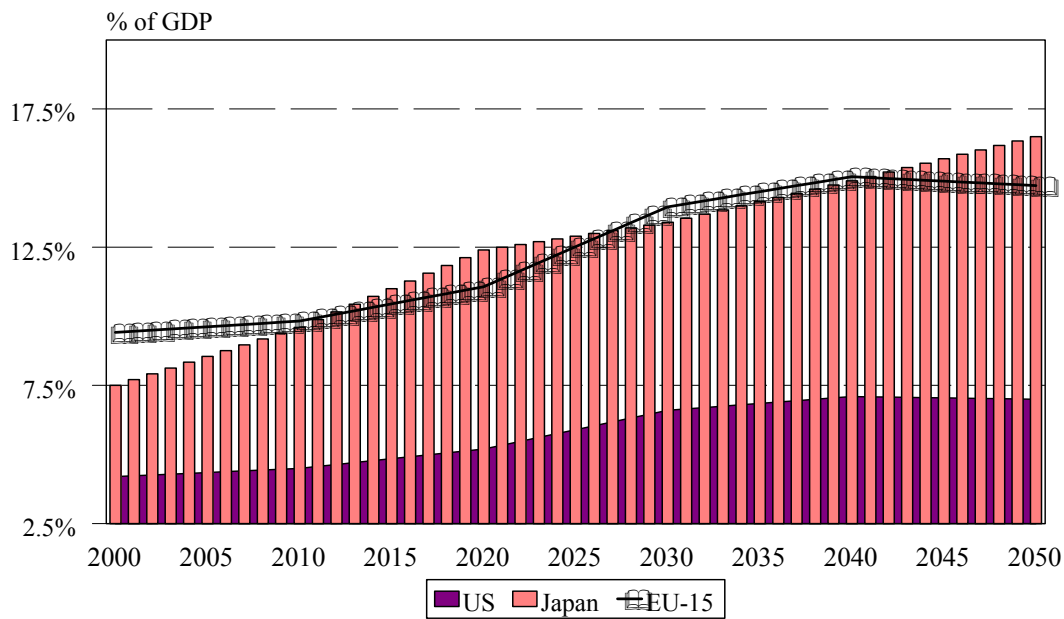
- Health Care: In relation to health expenditures, the direct effect of ageing on government deficits is equivalent to an increase of about 1 $\frac{1}{4}$ to 1 $\frac{1}{2}$ % of GDP in all three cases⁸. Given the latter, relatively small, increases which are expected, it is not surprising that the OECD (1995) estimates that "it would only be necessary to hold growth in per capita real public health spending to around $\frac{1}{2}$ to 1 percent lower than productivity growth in order to offset the impact of ageing on health spending"

While the health care costs appear manageable it is important again to underline that these projections only refer to the direct effects of ageing on health budgets and do not incorporate any estimates for the non-demographic cost push factors which in the past have been more responsible than any ageing effects for the sharp increase in health care spending. In this regard it is noted that publicly funded health care expenditure for the Community as a whole nearly tripled over the period 1960-95, a period of relatively benign demographic developments, growing from 2 $\frac{1}{2}$ % of GDP in 1960 to 6 $\frac{3}{4}$ % in 1995.

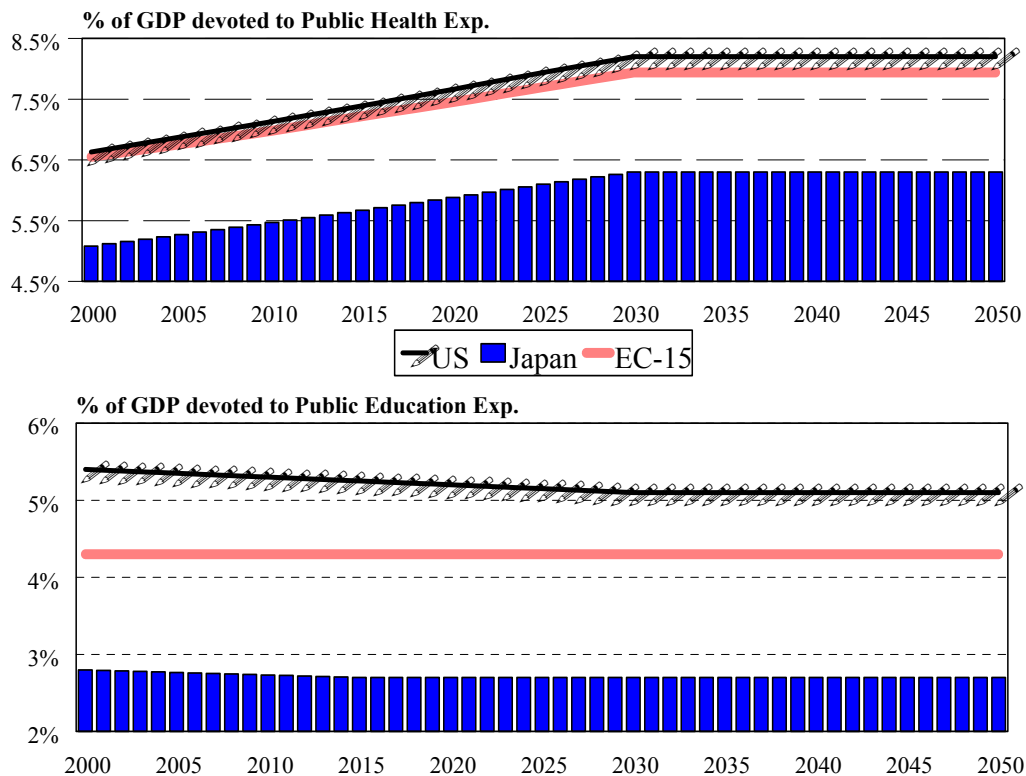
- Education: The demographic impact on education expenditure, despite falling primary and secondary school populations is not expected to provide any significant budgetary savings which could be used to alleviate the additional cost pressures on the pensions and health budgets. Using OECD and Eurostat sources for public expenditure on education as a percentage of GDP in 1995 allied to a per capita breakdown for the primary, secondary and tertiary sectors, it is projected that the direct budgetary effects of ageing will be small, on the assumption that expenditures per child grow in line with real productivity developments.

⁸Health care provision for the elderly is on average more expensive than for the non-elderly, with the 1993 ratio estimated by the OECD at 4 $\frac{3}{4}$, 4 $\frac{1}{4}$ and 3 for Japan, the US and the EU, respectively.

Graph 12: Public Expenditures on Pensions 2000-2050



Graph 13: Public Expenditure on Health and Education 2000-2050



The overall impact of these budgetary changes, in the pensions, health care and education sectors, would be to increase public expenditure as a % of GDP by 6 3/4, 10 and 4 percentage points in the EU, Japan and US respectively. Left unbridled, in terms of policy corrections,

the budget deficit and debt implications of these developments would quickly reach unsustainable proportions⁹.

How are the Additional Age-Related Spending Pressures Financed : The Central Scenario, as with the baseline, assumes that the SGP is respected. Consequently, with the debt rule imposed it is clear that the imposition of the above changes in government expenditures would have the effect of breaching the 60% rule and would have to be financed either on the revenue or the expenditure side of the budget. Since the bulk of the increase in government expenditure occurs on the pensions budget and since it is also assumed, for reasons spelt out in the next chapter, that Governments will make little progress over the simulation horizon in moving to a fully funded pension system (i.e. the PAYG pension system is left broadly unchanged), it is assumed that the additional budgetary costs are financed by increases in social security contributions, which in Quest II has exactly the same impact economically as a direct increase in labour taxation.

MAIN RESULTS OF THE CENTRAL AGEING SCENARIO:

The overall impact of the above labour market and public finance shocks is to reduce the level of GDP over the period 2000-2050 in the EU, US and Japan by 19, 10 and 22 percent respectively compared with the baseline. The evolution of these changes is indicated in Graph 14, with the greatest effects occurring after 2020.

In terms of growth rates, Table 10 shows that ageing is expected to reduce the annual average rate of growth, relative to the baseline, by close to ½ a percentage point in the case of the EU and Japan and around a ¼ of a percentage point in the US. In absolute terms the EU's and Japan's annual average growth rate over the period 2000-2050 would fall from the baseline rate of 2 ¼ percent to roughly 1 ¾ percent in the present scenario. As regards the US, the fall would be from the baseline figure of 2 percent to 1 ¾ percent.

(Note : See box 4 for a discussion on the sensitivity of the results to different assumptions regarding the reservation wage)

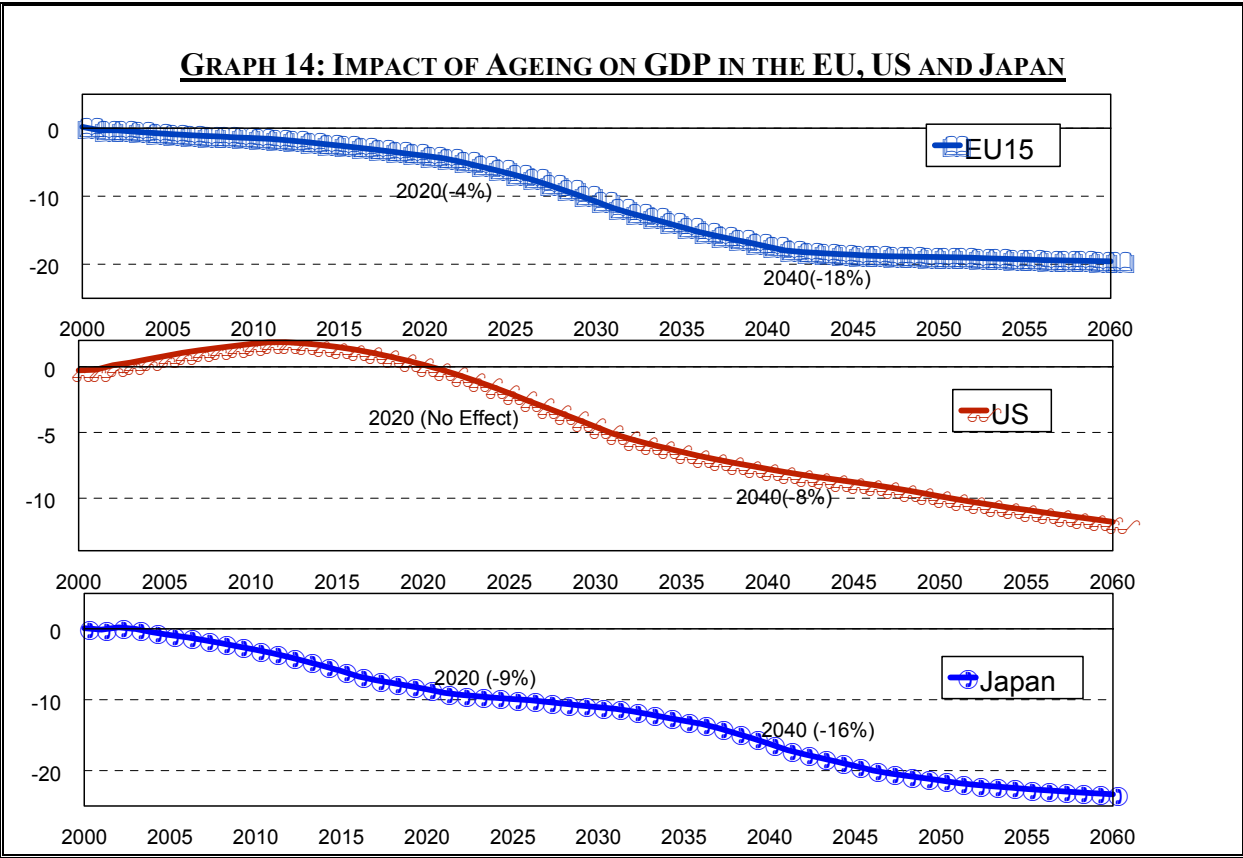
TABLE 3 : CENTRAL AGEING SCENARIO *: AVERAGE PER CAPITA GROWTH RATES OVER THE PERIOD 2000-2050**

	EU15		US		Japan	
	Ageing Scenario	Change Relative to Baseline	Ageing Scenario	Change Relative to Baseline	Ageing Scenario	Change Relative to Baseline
GDP	1.84	-0.43	1.71	-0.21	1.67	-0.49

*In the Central Scenario unemployment benefits are assumed to be indexed to gross, as opposed to net, wages). In addition, no change is expected in relation to participation rates, with the result that the decline in the population of working age feeds through fully to the respective labour forces.

⁹ The overall impact of ageing on primary balances over the period 2000-2050 can be estimated by taking the primary balance level for 2000 as the base and adding in the above expected changes to public pensions, health and education expenditure over the next 50 years. In the latter case, the assumption is made that all government revenues as well as government expenditures that are not sensitive to the ageing phenomenon remain constant, as a percentage of GDP, at their 2000 levels.

**Note : A direct comparison with the results of the OECD simulations is not possible since the baseline scenarios differ because of different assumptions regarding TFP growth rates. However, it should be stressed that the change in growth rates relative to the respective baselines is broadly similar for the EU and Japan although this is not the case for the US.



In terms of the decomposition of growth into its employment, capital stock and total factor productivity components (see Table 11), it should be stressed at the outset that this growth breakdown is purely indicative, with its purpose being to show where the changes in growth are emanating from. While the breakdown can therefore be used in broad terms to indicate what is driving average growth rates down in the respective regions, it should not be compared with expected changes in actual employment or capital stock levels over the simulation period.

Given the comments in the previous chapter concerning the need to take a neutral position with regard to technical progress over the time horizon of the simulation, it is not surprising that the results regarding the contributions to growth show no change with regard to total factor productivity. As the Table indicates the effects of ageing manifest themselves in terms of changes to employment and the capital stock, with the former being the most affected. In overall terms, 70% of the decline in average growth rates in the Community is expected to result from employment changes with the remaining 30% emanating from capital stock changes. A roughly similar breakdown is envisaged for Japan with the ¼ point reduction in average US growth rates emanating almost entirely from employment changes.

TABLE 4 : CENTRAL AGEING SCENARIO : CONTRIBUTIONS TO PER CAPITA GROWTH OVER THE PERIOD 2000-2050

	EU15		US		Japan	
	Annual Average % Change	Change Relative To Baseline	Annual Average % Change	Change Relative To Baseline	Annual Average % Change	Change Relative To Baseline
Employment	-0.13	-0.30	0.03	-0.18	-0.16	-0.36
Capital Stock	0.75	-0.12	0.75	-0.05	0.72	-0.12
Total Factor Productivity	1.22	0.00	0.94	0.02	1.12	-0.01
Totals	1.84	-0.43	1.71	-0.20	1.67	-0.49

CONCLUSIONS: In the case of the EU this central ageing simulation shows that per capita living standards are likely to fall significantly over the next 50 years. The effect of ageing populations in terms of slowing the rate of growth of potential output will also make the budgetary implications of ageing, in terms of higher pensions and health care costs, more difficult for the individual economies to bear. While the above no policy change simulation may be unrealistic in that Governments are unlikely to stand idly by, it nevertheless gives an idea of the scale of the task faced by policymakers in devising policy measures aimed at avoiding, or at least cushioning, the potential shock to peoples' living standards.

If the scenarios prove accurate, economic agents in Europe could be looking at an annual half point reduction in potential growth rates from the present 2 ¼ percent to an average rate of 1 ¾ percent over the next fifty years, representing a cumulative GDP loss of nearly 20 percent. Cumulative reductions of 10% and 21½% are predicted for the US and Japan respectively. While these large corrections are not inevitable, countries need to accept that they must act quickly to set in place a range of policies and reforms, along the lines set out for the Community in the subsequent chapter, in order to avoid such a slowdown. In relation specifically to the Community, at this stage it is possible to say that while the broad framework for ensuring budgetary sustainability, in the face of substantial age-related spending pressures, would appear to be in place in the form of the Stability and Growth Pact (SGP), less comfort can be taken from the degree of readiness of the Community's labour markets to withstand the inevitable shock which is looming, with labour force declines of the order of 15 percent being presently predicted.