Europe: Grey Hair and Low Growth

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Research paper

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Abstract: This paper treats the links between demographics and economics. It shows how European institutions (like the European Commission) and European policies are slowly but surely taking into account the fundamental relationship between demographics and economics. We demonstrate the bases of the productivity gap between Europe, especially France, and the United States and explain why we propose to consider productivity as an indicator of exclusion. We suggest not using the GDP per active worker to compare developed countries, but rather the GDP per active worker adjusted with the employment rate. Similarly, in order to compare level of wealth, we propose not the GDP *per capita* but the potential GDP *per capita* taking into account the labour effort measured by the number of hours worked. This paper also constitutes an appeal for more research about the links between demographics and economic growth, especially about the existence of a "demographic multiplier", considering that development is the result of investment not only in technology, but also in human capital.

There is no sustainable development without children. In fact, the recent Green Book on demographic change has made Europe aware that, in comparison with the USA, it has a demographic deficit which is likely greater than any technology gap. In short, all of Europe has discovered that there can be no growth 'without cradles' and that grey hair will probably lead to soft growth. Given that the active population of the new Europe of 25 will decrease by more than 20 million people between 2010 and 2030, increased immigration and the successful integration of newcomers through more flexible public and family policies are vital.

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A taboo topic that evokes past dictatorships in countries like Spain, Italy and Germany, family policymaking remains tainted with a conservative, rightwing image even in France. Oddly enough, those who initially promoted family policies just after the Liberation, Alfred Sauvy, among others, tended to be socialists [1]. At this point in history, let us hope that the call for a *European Youth Pact* from four leaders located in Paris, Berlin, Madrid and Stockholm will rouse the entire Old Continent. In general, if the population is aging from the top down, the good news is that we are living longer; however, if the population is aging from the bottom up, we do not have enough people to replace the existing generation. The latter statistic is not fatal but certainly will impact our future, which already appears compromised and imbalanced simply because the next generation will be insufficient in number.

Despite relatively good demographics in comparison with its neighbours, France also has a dwindling youth base. A glance at the figures available proves that in 1999, there were 2.5 million youths (ages 0-18) fewer than in 1975; in other words, 12.8 million versus 15.3 million! With a fertility rate hovering around l.4, the Europe of tomorrow will have one-third fewer youths than the Europe of today. There is simply no guarantee that the next generation will be there to pick up the baton.

At the European Council in Lisbon in 1990, Europe adopted an ambitious program to take the lead in the new knowledge society. An aging Old World felt reassured about a future populated by grey-haired sages with youthful spirits and innovative minds. That was all well and good, but what if there are no more young people to take up the torch, to carry on working? The projections for 2050 are dramatic. Italy for example, will lose one-third of its population. Wealth may indeed require educated citizens, but when there are not enough people, there is no wealth or future!

No Sustainable Development without Children

What would the ecologists say if the fertility rate of whales had shrunk over the past twenty years to less than half the level of renewal? As good environmentalists, they would appeal to public opinion in resolving this planetary ecological disaster. Yet this is exactly what is happening in Northern Italy and Catalonia, where the fertility rate has been falling for the past twenty years to arrive at fewer than one child per woman. Obviously the species is far from going extinction, but cultural variety is being threatened. Ironically it was in the name of variety that ecologists did oppose plans to put a highway through the Bercée forest in France. Part of their logic was to save a species of plum-eating beetles. Sustainable development keeps the future alive for generations to come, yet we seem to focus on bugs and whales while forgetting about people!

The principle of precaution should be applied to economics as well as society, especially when we consider the troubling correlation between economic growth (recession) and demographic dynamics (regression). The causal relationship is not proved, but when in doubt, as in ecology, we should encourage research. In the meantime, we should operate as if demographic vitality were the first condition required in sustainable development. As of 1987, the Brundtland Report defined Sustainable Development as that which meets the needs of the present without compromising the ability of future generations to meet their needs (Brundtland,

1987). Of course without those future generations, sustainable development becomes a moot point. The risk of a demographic implosion in Europe should be ecologists' first concern. Some "green fundamentalists" may consider the extinction of the White Westerner (*read* polluter and waster) is good news for nature. Again, humans as a species are not threatened, but Europe's cultural variety is. This cultural variety which constitutes Europe's identity deserves to be preserved in its historical biotope. It seems paradoxical to promote the conservation of plant or animal species yet forget mankind in the struggle for an open, culturally varied future. One day the "politically correct movement" will realize that we need to protect not only whales but also people.

Overall, Europe should open its borders to immigrants in a more selective way, similar to the American system, and use more positive public and family policies to ensure integration in the host society. Successful integration comes through the national school system where native-born children and newcomers mix; hence the need for more children, a higher birth rate in Europe. The Public Opinion Analysis sector of the European Commission has shown that one out of every two women would like another child, but juggling work and family life make it too difficult (European Commission, 2002). Aging from above is great news for those Europeans living longer and in good health. It becomes a problem when there is no next generation, no one to take up the torch. It is really aging from the bottom of the age pyramid that we must avoid. Again, what good is saving the whales if there are no children to see them and no children to use the latest supercomputers?

Refusal to See the Link between Economic Growth and Demographics

Alfred Sauvy (1980) decried people's "refusal to see" the reality of not renewing the generations and economic development that ignored future generations; in other words, that which is contrary to the very definition of sustainable development. Intergenerational solidarity does not mean making the young pay systematically for their elders' poor management and lack of foresight. If seniors have retirement problems, one reason is that they had fewer children. This follows the Sauvy "theorem": "today's children determine tomorrow's retirement". In fact, the increase in dependency rates which threatens our retirement programs may stem from an increase in the numerator (a higher number of retired people) as well as from the denominator (number of taxpayers, for example, for demographic reasons, but also a result of Malthusian choices regarding seniors' working, women's working, etc.). It should not be up to future generations to pay off the public debt accumulated by their forefathers. Gerard Calot (2002) in his intellectual testament reminds us all that "*a drop in the birth rate for a country is equal to less investment for a company. For a certain period of time there is a benefit: a more comfortable financial situation. This comes, however, at the cost of serious problems later on. Family policymaking is a long-term investment. […] A low fertility rate is met more favourably by all the actors in a society, fewer educational expenses, fewer interruptions in women's careers, more money available in each household.*"

Contemporary political leaders know that a dwindling youth base in the population is a serious matter but they prefer to avoid the topic in the short-term as bad news and calls major efforts will not win them any votes. Occasionally they do say out loud what they are really thinking. This was the case of François Mitterrand

(1988) who wrote of "*a France poor in children in an even poorer Europe*". In 1994, Jacques Chirac commented that the drop in the birth rate is the virus that will attack our competitiveness. Alain Juppé (2000) did use the expression "demographic suicide" but never mentioned it again. In general, everything goes on as if we want to avoid admitting consciously or unconsciously the confession of something better left unsaid.

Europe's leaders are, however, well aware of the phenomenon of aging from the top down. They know that our health and retirement systems must undergo painful reforms. The state must ensure funding will be available for those over 80, a segment of the population that will double in France by the year 2035 to surpass 6 million people! People often object by saying that old age has been redefined since 1680 when Pierre de Richelet stated in his dictionary that "*A man is called old from age 40 to age 70*". Perhaps we can live "young", healthy and independent up to age 80. Unfortunately beyond 85, most people are no longer independent. We might be able to extend the deadlines, but the younger citizens still active in the workforce will be fewer and paying more to maintain their seniors.

Therein lies the rub. How long will the active members of society agree to keep paying ever-increasing sums to retirees who own approximately one-third of the overall heritage, who are paying one-third what they contribute to health insurance yet use the medical system the most? All that without mentioning various reduced fares and discounts granted to seniors… How can we promote family policy without clashing with the "grey power" lobby? In an aging Europe at the turn of the millennium, young people became a minority. What a difference from 1968 when the under-20 segment of the population was double that of the over-60 segment! In 2050, the ratio might be inverted!

The Turning Point of October 29, 2004: the European Youth Pact

For thirty years the topic of youth never appeared on the agenda of European summits of heads of states. The same silence was deafening at the Parliament in Strasbourg. Only when Sweden took over the EU presidency in 2001 was the taboo issue addressed clearly. To paraphrase the Swedes, the low European birthrate has negative effects on economic growth and, therefore, prosperity. The State must intervene so that people may manage their professional and personal lives better. Germany, a country with more coffins than cradles right now, recently had an interesting cover on the popular *Der Spiegel* magazine. The image was one of a couple with two children and a third child outlined only. Obviously the demographic issue is part of the *zeitgeist* there. Chancellor Gerhard Schröder has just launched an ambitious program promising parents greater daycare options by the year 2010 (CNAF, 2004). In 2001, he even had a long article in *Le Monde* describing the family as essential to the future (Schröder, 2001).

The negative economic situation familiar to EU countries since 2002 has not made broadcasting the demographic message any easier. The transition to the Euro and the Enlargement to 25 countries took the spotlight. Once the referendum on the European Constitution is over, we hope that the main issue in Europe will not be the so-called technology gap with the USA but the demographic gap. The shift in focus is not that great as the USA remains the country of reference. If demographics do top the agenda, the joint letter of October 29, 2004, signed by President Chirac, then

Chancellor Schröder, President Zapatero and Prime Minister Göran Persson, will mark the end of the *Omerta* on population growth that has reigned in Europe up to now [2]. This letter went unnoticed in France and was pointed out by a *Time Magazine* reader (Graff, 2004).

At the February 17, 2005 inauguration of the High Council on Population and the Family (*Haut Conseil de la Population et de la Famille*), over which he presides, Jacques Chirac referred at length to this letter and to Europe's need to meet the goals set in Lisbon (activity, employment, technology and training) through what he called "a European pact for youth". Our greying continent must not forget its young people by worrying only about health, retirement, and old-age security. Europe must enable young people to find their place in the labour force and society at large, e.g., through housing programs and also "*commit to new programs that support European demographics and improve the balance among personal, family and professional lives so that couples may have as many children as they wish*".

France could not take on the initiative all alone. The French policy, which historically promoted a strong birth rate, was never appreciated much by its neighbours who feared nationalistic dreams of grandeur. On the other hand, if France's neighbours asked themselves the same question, their answer would be no different. France has an important role to play because of its healthy demographics and its relatively unique model of family policymaking which may provide food for thought. Of course this model is not perfect and may be improved by integrating policy from other countries trying to reconcile family and professional obligations. It is worth mentioning that the French school of demographics and statistics is one of France's rare centres of excellence. We should take advantage of this position to make a diagnosis and then credible proposals in this matter.

The March 2005 Good News: Europe Confronts the Demographic Challenge

The European Union has decided to confront the challenge highlighted by the Wim Kok report (2004). In its March 2005 Green Book, the Commission urgently insists that the Lisbon Strategy be put into effect (European Commission, 2005). The emphasis should be on the following:

- Policies that target greater participation in the job market for young people, women and seniors, innovation and greater productivity ;
- Innovative measures to support a higher birthrate and controlled use of immigration to create new investment opportunities, increase consumption and the creation of wealth ;
- Reinforcement of solidarity between generations through the distribution of the fruits of growth, through some balance in the care of the very elderly, through the distribution of financing needs related to the social security and retirement programs ;
- Promotion of a new organization of the worked and the definition of life-long training policies.

The European Union intends to develop a broad-based approach to the active lifecycle thus facilitating new transitions between age brackets over time. The issues

brought together in the Green Book will be discussed at a conference in July 2005. They will certainly have an impact on the European Youth Pact. The Commission has put children and families at the very heart of measures taken to find ways to growth. In the end, we must ask two simple questions: "*What value do we attach to children? Do we want to give families, whatever their structure, their due place in European society?*"

High and Low Demographic Pressures

Developed countries possess over two-thirds of the world's wealth whereas they account for less than one-fifth of the world's population. In 2025 their share in the world's wealth will have decreased slightly for a population reduced by 16% of the total (Population Reference Bureau, 2004). If we consider certain hot spots in the Middle East, we see that Israel will increase its population from 6 to 9 million by then, followed closely by the Palestinian territories which will have doubled from 3 to 6 million. At the same time, Iraq will balloon from 25 to 45 million; Syria, from 17 to 28 million. Obviously today's hot spots or potential conflict zones are not being depopulated. It would seem that war stimulates fertility!

Among developed countries, the United States provides the exception to the rule and continues to expand. The American population has increased by 80% since 1950 and will grow by approximately 40% by 2050. In that year it will surpass the Europe of Fifteen by 20%, despite the fact that in 1950 the American population was less than half the European (United Nations, 2004).

Still, among developed nations such as Russia, the Eastern European countries and Japan will experience a demographic situation even more devastating than that of the European Union. For the period 2000 to 2025, the American demographic trend (increase of 66 million) will be superior in absolute value to that of Brazil (increase of 54 million) or the Indonesia's (increase of 55 million) and opposite to the Japanese (decrease of 2 million) and the Russian (decrease of 17 million).

The Japanese population will fall from 127 to 125 million in 2025 and then to 112 million in 2050. The active population will decrease by 2 million between the years 2000 and 2005. This decrease will continue by 12 million more between 2005 and 2025. During the same period the number of citizens over age 65 will explode, thus marking an increase from 25 million to 36 million. What kind of economic crisis will hit this country as it risks losing around 15% of its population by 2050? Japan entered an economic crisis as the 1990s began, yet no one has connected this to accelerated aging [3]. The recent upswing in the Japanese economy is basically explained by an incredible leap in the Chinese demand.

Western Europe has at least caught a glimpse of its future. In 2025, the "Fifteen" will have almost the same number of inhabitants as in 2000 (378 million).

France as a driving force in European Demographics

With a fertility rate hovering around 1.9, France should be proud to come second to Ireland, the EU fertility champion in 2002 (Sardon, 2004). Without the

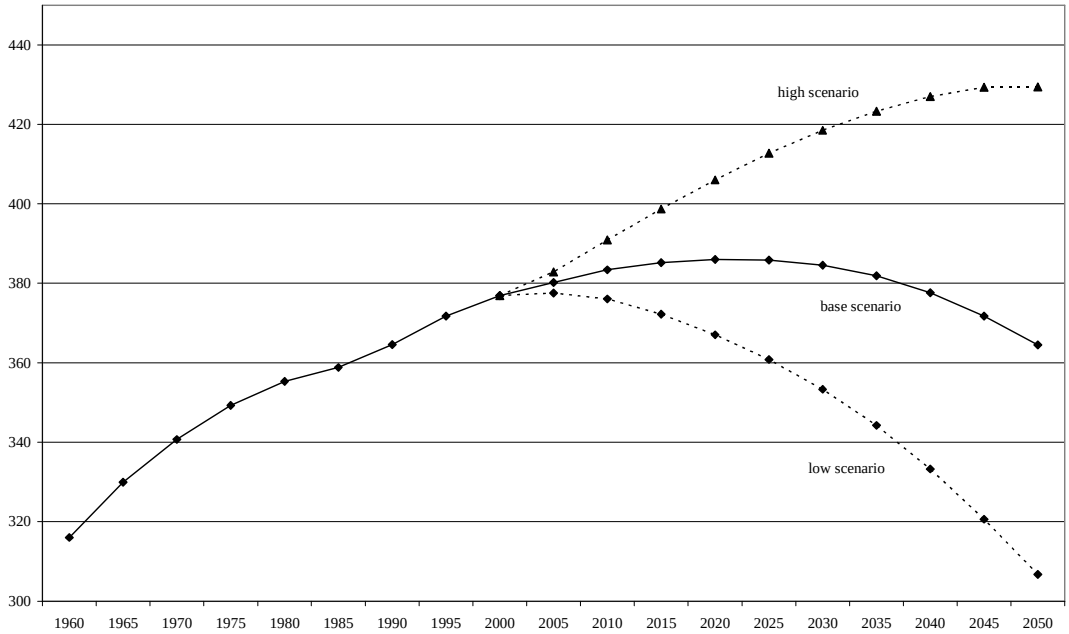
French natural "surplus" of 210,000 people, the figure of the European Union (with 15 members) might be 73% less.

France boasts of its growing population and, indeed, will see an increase of 4 million by 2025. In fact, France is rightfully proud to have had more births than the reunited Germany since the year 2000, especially as Germany had double the French rate in 1939. Germany will lose one million citizens over the next 25 years and currently has a deficit of 120,000 births compared to the number of deaths in its population (Sardon, 2004).

Yet France should also be concerned, even alarmed, by its main neighbours who are also its main clients. Through immigration and the amnesty offered illegal migrants over the past few years, Spain will see its population rise by 4 million rather than drop by 3 million. Similarly, Italy's population will decrease by only 1 million rather than the 3 million projected in 2004, and overall, the perspective for Great Britain resembles that of France.

In this context, the positive migratory balance of over one million people is what boosted the Europe of Fifteen's population statistics. Indeed annual net flows exceeded 200,000 for Germany, Spain and Italy, 150,000 for Great Britain (Sardon, 2004).

Graph 1 – The Demographic Implosion of the Europe of Fifteen (1960- 2050, in millions)



Source: Eurostat, 2005 for retrospective data, 1995 revision, 1999 for the projections.
Note: the three scenarios arise from the difference in the estimate for the fertility, lifespan and immigration rates for the Europe of Fifteen.

The demographic decline in Europe has long been expected. In fact, the UN even published a provocative report in 2000 which announced a decrease of 40 million inhabitants by the year 2050. The same report underscored the necessity of bringing several hundred million immigrants to counteract the effects of an aging population. Naturally such simple mathematics cannot predict. Nonetheless, without

immigration, there will be fewer active citizens available to ensure the production of wealth. When OECD experts considered the impact of an aging population on economic growth, they calculated that as of 2010, the average income per inhabitant would rise less than half as fast as it did on average in the past.

The EU should not count on Eastern Europe either. Its population will shrink like that of Japan. Russian will drop from 147 million to 129; the Ukraine will fall from 49 to 37 million and even the very Catholic Poland will decrease by 1,6 million inhabitants between 2000 and 2025. Beyond figures in absolute values, we can see that it is aging from the top down (more old people) and aging from the bottom up (fewer youths) that will affect productivity, entrepreneurial and competitively. Our Old World will really deserve its clichéd name soon! In this context, immigration appears necessary, but problems arise when the newcomers are concentrated in a few megacities where tension and urban apartheid become entrenched. We know that the integration of Islamic populations is not as easy as that of migrants from elsewhere in Europe. The East, which is draining out, is not a reservoir. Perhaps we should consider the potential of Latin America, where the population will rise by some 140 million by 2025.

In the meantime, the proximity of high- and low-pressure zones translates to migratory flows. Europe receives a growing number or new immigrants annually. In 2002, 1.3 million came: some 350,000 for Italy, 230,000 for Spain [4] and 220,000 for Germany, and the United Kingdom follows with 150,000 while Portugal takes in 70,000 (Sardon, 2004). Some 50,000 additional foreigners were arriving in France — officially — every year. That figure has now been doubled to 100,000, but given illegal immigration and occasional amnesties, the number is likely closer to 150,000 or 200,000, as seen in the nearest neighbouring nations.

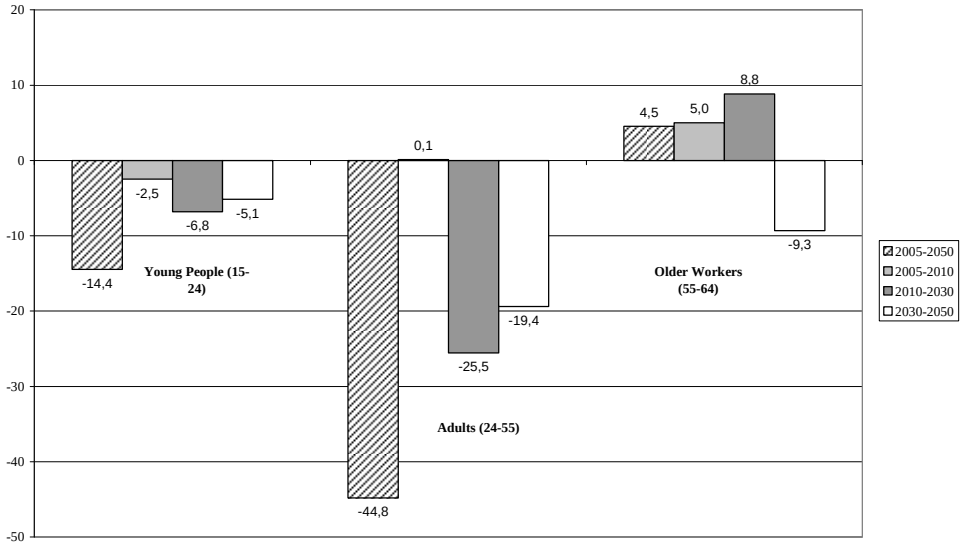
These flows should increase tremendously, given the lack of labour available in the rich yet aging North and the plentiful, young yet unemployed population in the poor South. There are already more youths under age 20 in Algeria than in France (15 million) and this is twice the Egyptian figure! The 8.5 million Spaniards under age 20 contrast sharply with their 14 million counterparts in Morocco. Who would not be tempted by the El Dorado of a job in the North, where there are not enough hands and heads?

As a solution, immigration raises several questions rarely asked because they are simply too delicate politically. The first question involves selective immigration. This implies quotas according to origin and profession. North America, Great Britain and certain Nordic countries use this system. Others, like France, take in those who reach the national territory. As a result, two-thirds of the immigrants who get to France have no more than high school or “lyceum” level whereas these categories are only 30% and 22%, for Great Britain and the USA respectively (OECD, 2001). The second question involves the reception and integration of foreigners. The *laissez-faire* in this area leads to new situations, including a Europe of urban apartheid and ghettoization where the living conditions degenerate and the original inhabitants leave (Maurin, 2004). The third question raises the issue of developmental ethics. In other words, do we have the right to loot the human capital of poor countries by

attracting their best and brightest to our shores? Asking the last question in this way leads us to a negative realization: those countries will not develop with this approach.

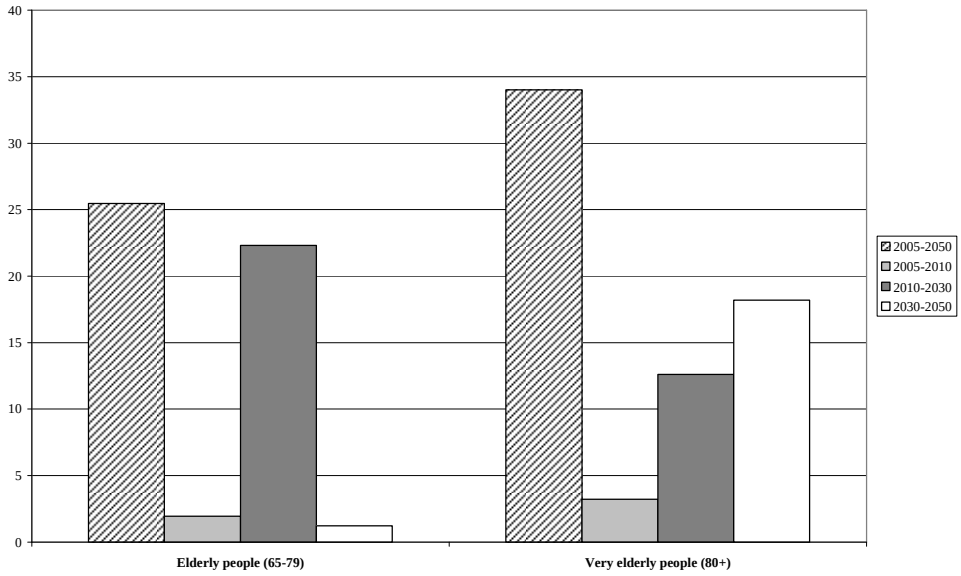
The aging active population will have an especially noticeable impact on the European Union during the period from 2005 to 2050. In fact, between 2010 and 2030, the number of workers aged 25 to 54 could drop by 25 million, and even 45 million between now and 2050. There will not be enough young replacements in the labour force between the ages of 15 and 24 either because their numbers will fall by approximately 7 million between 2010 and 2030. The number of older active workers (55 to 64) will have to rise; however, they will not be enough to make up for previous population deficits as their numbers will increase by fewer than 9 million over the same period. This perspective of a dwindling active population in Europe heralds shortages in manpower in the least popular trades and reinforces the need for selective immigration.

Graph 2 – Population Changes by Age Bracket in the Europe of 25 (variation 2005-2050, in millions)



Source: Eurostat, 2005

Graph 3 – The Aging of the Population by Age Bracket in the Europe of 25 (variation 2005-2050, in millions)



Source: Eurostat, 2005

Meanwhile, the ranks of young retirees, or seniors as Eurostat calls them, will swell by more than 20 million. Elderly people, that are those over age 80, will rise in number by an additional 30 million. The issue of independence and guardianship, as well as intergenerational solidarity, will certainly come to the forefront given that these generations are more numerous yet had fewer children than did their parents.

The Multiplier Effects of Demographics

At the Commission in Brussels and most other international and national bodies, the link between growth and demographics is rarely ever discussed. Reports on technology, innovation, and competitiveness abound; however, Man is considered little more than human capital to be trained. People are viewed as an investment or a long-term growth factor. Demography is treated only as aging from the top down with the subsequent problems created by retirement pension plans, health spending, and dependency on the state, but almost never in terms of the consequences of aging from the bottom up, in other words, the effects on growth and the position of Europe on the world stage. Even the ambitious Lisbon strategy for growth and employment relies essentially on information technology and a growth economy to ensure Europe's future and power on the international scene with a horizon line of 2010. Yet at the halfway point, the recent report by Wim Kok focuses on a knowledge-based society and sustainable development for an enlarged Europe. There is one new element: one page devoted to the aging of Europe. This greying Europe could decrease the EU's potential growth by one point (1% rather than 2%) from now to the year 2040; however no mention whatsoever is made of European demographic developments in contrast with American trends (cf. chart 1). This omission is all the more glaring as such comparisons are systematic in terms of research efforts, innovation and productivity figures.

Chart 1 - Comparative Demographic Developments of Triadic regions (1950- 2050, in millions)

	1950	2000	2050
United States	158	284	395
European Union (15)	295	378	335
Japan	84	127	112

Source: United Nations, 2004, Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2004 Revision

As Alfred Sauvy used to say, economists refuse to see the link between demographics and economic growth so they fail to test it. Yet post-war prosperity and the baby-boom that went hand in hand with the American economic miracle likely stemmed from strong demographics. For some twenty years, the American fertility rate has been 2.1 children per woman versus 1.5 in the Europe of Fifteen. The American population also experienced major migratory influxes which continue. Comparing the European and American rates requires a technique that explains long-term differences. We have to wonder if a "demographic multiplier" effect is not involved. This hypothesis could not be developed fully within the framework of this paper [5], but some research tends to highlight this relationship (Doliger, 2003). If tested, we could understand why growth and especially gains in productivity from the 1950s and 1960s were on average double that of the 1980s and 1990s even though these last two decades saw more technological advances which theoretically yield gains in output.

This last point is not ignored by economists, who always refer to the famous Solow Paradox about seeing computers everywhere, except in productivity statistics! With the new economy, the question seemed answered: the USA undergoing a period of strong economic growth with (apparent) productivity gains far above Europe's. Obvious proof of Europe's technological lagging? We may wonder about this explanation now that past statistics are validated and well-known. For example, in the 1980s, GDP growth per active worker was comparable in both zones at approximately 1.7%, with a slight European advantage. However, the initial results for the period from 2000 to 2004 reveal a clear-cut difference between the USA whose apparent productivity seems to rise at over 2% annually and the Europe of Fifteen whose rate is under 1%. The question begs to be asked: Is this difference due to the technology gap or the demographic gap? We put forth the demographic hypothesis. The demographic factor now plays a determining role as the gap is widening more than ever.

The entire population is not active, but the number of hours worked basically explains away the difference in productivity levels. Americans work 46% more than the French on an annual basis. Yet if they are working, then there must be a real demand to be met. Indeed, perhaps the demand is greater there because of demographic expansion.

If we reject the hypothesis of independence between the two variables (GDP *per capita* and Demographic Growth), then we can suggest a new hypothesis, that of

a demographic multiplier which might be at the root of the major gains in productivity made in the US and not in Europe.

Economists usually explain growth with three factors and reference to the famous Cobb-Douglas production function. The factors are capital, work and technological progress. We know that productivity is the remainder of additional growth which cannot be explained by the increase in production factors (capital and labour). For lack of anything better, we attribute this increase in growth in the GDP per active worker to progress in information technology. In sum, it is a positive way of naming an unexplained remainder.

GDP growth depends upon two factors: GDP per active worker and the number of active workers. The increase in the ratio GDP per active worker is more significant in the USA than in Europe since the mid-90s. Yet how can we explain the productivity and economic growth of the 1960s — approximately double that of the 90s on both sides of the Atlantic — when there were no computers?

It turns out that the variation in the GDP per active worker is more important since the number of active workers and the number of job openings increase in a growing population. Technological progress, training and economies of scale combine to lower unit costs and improve quality; in other words, the added value is greater, or the GDP per active worker. The multiplier effect in demographics still plays a role in the United States, albeit a lesser one than in the 1960s, but not in a greying Europe. As mentioned, most economists fail to see the demographic multiplier because they simply do not look for it. Yet this hypothesis has revealed more on the gap between a rising GDP per capita in the US and Europe in the 1990s than did the so-called lag in communication and information technology. Long-term growth in developed countries is regulated by demography. The real issue for companies is market openings. Europe buys 91% of what France produces. Consider, however, the fact that the European population will stagnate by 2050. Furthermore, Eastern European countries will see a decrease of over 20 million, while the American population will continue growing to add some 65 million more people. If we continue moving east, we can explain Japan's economic downturn in the 1990s by referring to a population aging more quickly.

According to the demographic multiplier hypothesis, demographic differences may explain the spread between developed countries in terms of job creation over the past 25 years [6]. The fact that qualitatively young people learn new technologies easily certainly adds to the multiplier effect. In a comparative study based on an endogenous growth model, Baudry and Green (2000) showed how countries with solid demographic growth had a more rapid spread of modern technology and created more jobs. A test carried out on 18 OECD countries highlights a positive, significant correlation between demographic growth and employment from 1975 to 1999, the very period when new information technologies were spreading.

Anyone clinging to the single-variable method and refusing to see the link between economic growth and demographic dynamics should consider the following question: how can you explain the high and rising productivity of the USA, which is attributed to computer and information technology, and the abysmal drop in their foreign trade deficit (500 million dollars in 2004)? Remember that this all occurred

with a weak American dollar! Obviously the time has come to reconsider the concept of productivity and to destroy the myth which leads us to forget the essential — without human capital any growth is limited for lack of new blood.

Chart 2 – Evolution of Population and Employment between 1975 and 2000

	Evolution of population (in million)	Change in %	Evolution of employment (in million)	Change in %
United States	60	28	49	57
Japan	15	13	12	23
Main european countries *	20	7	12	11

Source: Eurostat
* France, Germany, Italy, Spain and United Kingdom

With the current fertility rate hovering at 1.5, tomorrow's Europe will have generations of young workers which are one-third smaller than today's. Plummeting birthrates in a country resemble decreased investments in a corporation. For a while, the company benefits financially only to pay the price later and the consequences may be costly. Government policymaking on family issues is really a long-term investment.

European countries are like orchards full of trees. After a fruitful life of 40 years, the grove matured without anyone having planted new seeds. If we are to invest and consume, we need to have faith in the future and should prepare ourselves. Unfortunately, these are characteristics that tend to be lost with age.

What underlies the dynamics of economics and demographics may be considered the same: a zest for life that is expressed in an economic initiative and the rearing of children. The corporate spirit is closely related to the family spirit! You can understand the impact of aging on corporations in France if you remember that in 2002, 40% of all entrepreneurs were 25 to 34 years old and two-thirds were under 44. Those over 55 represented only 8% of entrepreneurs. Between 2000 and 2025, those under age 30 will continue to decrease in number but it is the group at the peak of its productive life (age 30-49) that will plummet by 1.6 million. This fact is all the more shocking when you realize that the same group had grown by 4.5 million during the previous 25-year period.

An aging Europe and a demographic implosion in certain large countries paint a picture of grey hair and soft growth. There will be serious tension regarding the labour market and retirement. This will intensify given our collective illusions about the jobs of the future. We should brace ourselves for a shortage of young professionals in manual labour and the service sector. There will also be new territorial divides accentuated by population movements and unequal development of infrastructure. The knowledge society is all well and good as long as it does not break the backs of workers over 55 who are the carriers of that human capital.

Another thing would be to ensure that children finishing primary school can read, write and count properly. Finland managed to meet this challenge, so why not the rest of us?

Knowledge-Based Society and Innovation: Beware Technological Mirages!

Europe became fascinated by the concept of the knowledge-based economy or society at the Lisbon Summit in 2000. In fact the fifteen members of the European Union set themselves the objective of international leadership in this new knowledge society. In other words, an aging Old World reassured itself that the future would be populated by grey-haired sages with youthful spirits who were champions of innovation. After the information society of the 1980s, the new economy of the 1990s, those still mesmerized by the mirage of technology launched a new concept: the knowledge-based society. Some might consider it just another new label for what amounts to more or less the same thing. Knowledge society, knowledge-based economy, Knowledge Management (KM)… all these concepts remain fashionable in business and in the management departments of academia (Pesqueux, Durance, 2004). Yes, the ability of corporations to 'learn' has become a key factor in competitiveness, but companies develop from contrary practices; i.e., urgency and reactivity outweigh anticipation and any project.

Computerized pollution brought to you by the Internet is not enough. More than ever, one must learn to separate the wheat from the chaff. The downsizing or laying-off of workers over age 55, workers who are the carriers of human capital, that popular term, provide ample proof of what is really happening today. Knowledge Management requires managing the knowledge of people which implies respecting rather than rejecting those people.

Knowledge does drive innovation, but that is no reason to pursue the mirage of technology and high-priced R&D. Moreover, innovation is not only technological but also commercial, financial and organizational. Although important, technology cannot constitute the essence of innovation. Let's stop considering R&D expenses as the main hopeful indicator for the future. What counts more than the money is the efficiency? International comparisons show that the most successful companies in a sector are those with average R&D efforts, hence, lower expenses. The same applies to States. Smaller countries make a smaller R&D effort than large ones but enjoy higher GDP growth.

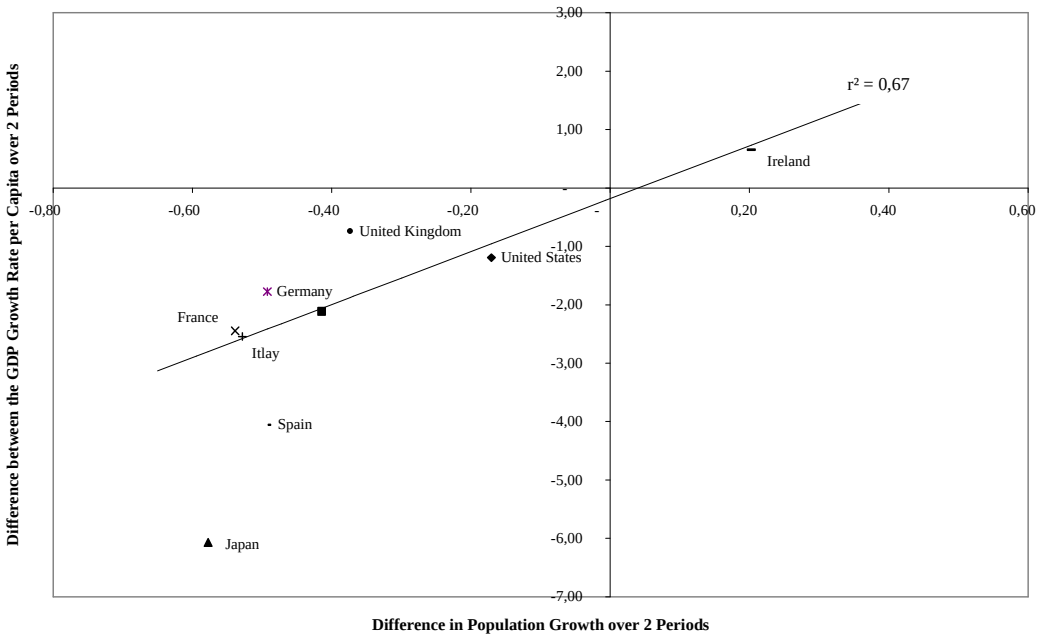
Differences in Economic Growth: 80% Due to Population

From 1980 to 2003, the American population increased by 28% while the European population rose by less than 10% [7]. During that same period, the gap between the two populations widened. Compared to Europe, the rate of demographic growth in the USA was three times higher in the 1980s; four times higher in the 1990s and five times higher in the earlier years of the new millennium (cf. chart 3). This gap of 0.7, 0.9 and 0.8 of a point reveals an equivalent differential in economic growth.

Overall France does stand out. Its annual population growth was lower only by half the American rate from 2000 to 2003. This rate has been higher than that of other European countries since the 1980s with the exception of Ireland, Luxembourg and the Netherlands. The difference between France and America was .4 in the 1980s; .8 in the 1990s; .5 in the early 2000s. In Europe and Japan, GDP growth was higher in the eighties than in the nineties; that is, 2.4% versus 2.2%; 3.9% versus 1.5%. For those two decades, the American GDP growth rate was one point higher than the European. Why? The explanation is essentially demographic because the

gap in terms of GDP growth per capita is only .2 higher than the European rate during the same timeframe.

Graph 4 – Difference in GDP Growth per Capita and in the Population between 1960 and 2003



Source: Rexecode, 2004. For example, in France, the annual average growth per capita and the population are lower by 2.5 and 0.5 respectively in the period from1973 to 2003 compared to the period 1960-1973. The regression does not take into account Japan, where demographic decline has meant economic growth.

During the 1990s, GDP growth in France was either equal to the European average or below it. This result is insufficient given France's better demographic dynamics. For example, the French GDP per capita was 0.3 lower than the EU average during the 1990s. Here Spain and Great Britain overtook France with a GDP growth per capita rate 0.6 higher annually over the past quarter century. Great Britain actually surpassed France in 2002. Of course, we won't dwell upon the American GDP per capita which is now 30% higher than France's. The difference was 20% in 1980.

Chart 3 – Population, GDP, GDP per Capita, GDP per Active Worker
(Annual Growth Rate over the period)

	Population			GDP (1)			GDP per capita (1)			GDP per active worker (1)		
	80/90	**90/2000**	**2000/2003**	**80/90**	**90/2000**	**2000/2003**	**80/90**	**90/2000**	**2000/2003**	**80/90**	**90/2000**	**2000/2003**
United States	0,9	1,2	1,0	3,3	3,3	1,9	2,3	2,0	0,9	1,4	1,8	1,7
Europe (EU15)	0,3	0,3	0,2	2,4	2,2	1,2	2,1	1,8	1,0	1,9	1,6	0,5
Japan	0,6	0,3	0,2	3,9	1,5	0,8	3,4	1,2	0,7	2,7	1,1	1,5
France	0,5	0,4	0,5	2,5	1,9	1,2	1,9	1,5	0,7	2,2	1,2	0,6
Germany (2)	0,1	0,3	0,1	2,3	1,9	0,3	2,2	1,6	0,2	1,8	1,6	0,6
United Kingdom	0,2	0,3	0,2	2,6	2,4	2,1	2,5	2,1	1,9	1,9	2,2	1,3
Italy	0,1	0,1	(0,1)	2,3	1,6	0,8	2,2	1,4	0,9	2,1	1,7	(0,7)
Spain	0,5	0,4	0,3	2,9	2,7	2,6	2,5	2,3	2,3	2,1	0,9	(0,2)
Portugal	0,1	0,1	0,2	3,0	2,8	0,3	2,8	2,6	0,2	1,5	1,8	0,1
Irlande	0,3	0,8	1,2	3,6	7,2	5,6	3,2	6,3	4,4	3,5	3,3	3,7
Netherlands	0,6	0,6	0,5	2,2	2,9	0,4	1,7	2,3	(0,2)	1,4	0,8	(0,5)
Belgique	0,1	0,3	0,2	2,0	2,2	0,8	1,9	1,9	0,6	1,8	1,5	0,6
Luxembourg	0,4	1,4	1,4	5,0	5,5	1,4	4,6	4,0	0,1	4,2	4,2	(0,3)
Suede	0,3	0,3	0,1	2,2	2,0	1,5	1,9	1,6	1,5	1,6	2,8	0,9
Denmark	0,0	0,3	0,3	1,9	2,3	1,0	1,9	2,0	0,8	1,0	2,1	1,1

(1) in 1999 purchasing power parity
(2) reunified Germany

Source: Rexecode, 2004

If France falls behind in its standard of living *vis-à-vis* its main partners, with the exception of Germany, the reason is not demographic but rather the fact the French boast the lowest number of hours worked per capita among developed nations.

Before going into further detail, the main message can be summed up already: the "population growth" variable seems to explain 80% of the differences in GDP growth in Europe and the USA over the past twenty-five years. The remaining gap of 0.2 growth in the GDP per capita may be explained by several factors: improved efficiency, accumulation of capital, greater number of hours worked *per capita*, in other words, multiplier effects of the final demand brought by this demographic dynamic. Generally economists focus their analysis on apparent productivity of labour, which is a consequence of technological change (an exogenous variable) and the process of accumulation of capital. They relate this to growth in the GDP. The apparent productivity rate is measured by a variation in the GDP per active member of the labour force. We can do the same type of exercise and align the gaps in GDP growth per capita and variation in population (another exogenous variable) over two long periods, 1960-1973 and 1973-2003 (see Graphic 4). The correlation appears just as great. The Irish position would seem less extreme if we saw the income per capita (after transfers) and not only the GDP per capita.

Differences in Wealth Produced: Result of Labour Force Size

We will show how this weak French performance may be explained by an overly low employment rate and by active workers with excellent productivity. The fact that the French worker has a productivity rate comparable to the American simply cannot make up for less working time. The average American works 25% more than the average French, Japanese, Spanish and (to a lesser degree) English worker.

Chart 4 – Total Number of Hours Worked Per Capita and Per Active Worker in 1980 and in 2003

	Total Number Hours Worked per Capita		Total Number Hours Worked per Active Worker	
	1980	**2003**	**1980**	**2003**
United States	814	872	1 817	1 792
Europe (EU15)	760	698	1 766	1 588
Japan	1 063	919	2 121	1 801
France	718	597	1 743	1 431
Germany	955	671	1 738	1 446
United Kingdom	786	792	1 769	1 673
Italy	637	613	1 698	1 591
Spain	642	736	2 003	1 800
Netherlands	660	669	1 613	1 354
Denmark	781	755	1 606	1 475

Source: OECD, 2004

Almost everywhere the total number of hours worked per capita has dropped. Obviously a decrease in the number of active workers, employment rate and work period makes for a powerful mix. The only countries providing an exception to this rule are Spain, the United Kingdom, the USA, and the Netherlands. In these four countries, the number of hours per worker stabilized or rose as of 1980. The same countries saw their unemployment rate drop significantly in the 1990s.

Chart 5 – Number of Equivalent Days Worked per Capita or per Active Worker in 1980 and in 2003 (7-hour workday)

	Number of Equivalent Days Worked per Capita		Number of Equivalent Days Worked per Active Worker	
	1980	**2003**	**1980**	**2003**
United States	116	125	260	256
Europe (EU15)	109	100	252	227
Japan	152	131	303	257
France	103	85	249	204
Germany	136	96	248	207
United Kingdom	112	113	253	239
Italy	91	88	243	227
Spain	92	105	286	257
Netherlands	94	96	230	193
Denmark	112	108	229	211

Source: OECD, 2004

France is by far the country with the lowest number of hours worked per inhabitant on an annual basis. Consider 597 hours in 2003 in France versus 671 in Germany, 736 in Spain, 792 in Great Britain and 872 in the United States.

On average, the Americans work 46% more that the French; whereas the Germans work 12% more, the Spaniards 23% more and the English 32% more. Consider also the difference in the GDP per capita (in 2003) expressed in US dollars: $34,900 in America versus $24,379 in France.

The gap is more or less 43%, but the message is that the difference in standard of living (in purchasing power parity) comes from the low number of hours worked and not from the productivity of the worker.

There is a second message here: given that the populations listed have comparable productivity levels, the wealth produced per capital depends first of all on the number of hours worked.

From this point of view, France is far below its potential. Despite a systematically greater increase in its population in comparison with the rest of the EU, France lags behind in terms of GDP growth per capita. If there is a demographic multiplier effect, France is certainly not taking advantage of it.

The French are satisfied with the EU average in GDP growth in terms of volume, in other words, a rate much lower than those who surpass France by using their labour force more intensely.

Chart 6 – Total Number of Hours Worked per Capita and per Active Worker in 2003, base 100 France

	Hours Worked per Capita	Hours Worked per Active Worker
United States	146	125
Europe (EU15)	117	111
Japan	154	126
France	100	100
Germany	112	101
United Kingdom	133	117
Italy	103	111
Spain	123	126
Netherlands	112	95
Denmark	126	103

Source: OECD, 2004

Question: What would the French standard of living be if the French worked as much as the Americans? Answer: 8,000 € per capita more

The wealth produced per capita expressed in terms of a standard of living depends on the number of hours worked per person and the hourly productivity rate. What would the GDP be in France and in European countries if Europeans worked as much as Americans to change the potential gap in the GDP per capita rate? This standard of living could be reached if the French worked as much as the Americans did back in 1980.

Let us try calculating the GDP per capita using a multiplier as a coefficient. This 'multiplier' corresponds to the number of hours worked per person in the USA in 1980 (base 100) over the number of hours worked in France in a given year.

Chart 7 – GDP per Capita and Potential GDP per Capita in 1980 and in 2003 (US$, 1999 PPP), base 100 USA 1980

	GDP per Capita		Potential GDP per Capita	
	1980	2003	1980	2003
United States	22 183	34 908	22 183	32 613
Europe (EU15)	16 186	24 667	17 336	28 759
Japan	16 210	25 866	12 418	22 906
France	17 076	24 379	19 371	33 263
Germany	17 498	25 446	14 922	30 866
United Kingdom	15 545	25 937	16 111	26 664
Italy	17 192	25 349	21 987	33 690
Spain	12 058	20 676	15 301	22 867
Netherlands	18 452	27 165	22 772	33 077
Denmark	19 276	28 974	20 088	31 253

Source: OECD, Rexecode, 2004

This calculation provides a wealth of information. If we worked as much as the Americans did in 1980 — which is less than they are working now — France would have a GDP per capita of approximately $33,000 US instead of $24,400. This represents an increase of 37% (cf. chart 7). The difference of some $11,000 in the purchasing power of the average French citizen (about 8,000 €) is the exact measure of the value added that we do not create by working less than the Americans. If we compare the gap in the growth rates of the real GDP per capita with the potential GDP, we could find a difference of 1 point in the 1980s, i.e., 3% rather than 2%, a half-point more for the 1990s (2% versus 1.5%) and 1.2 points more in the growth registered since 2000 (1.9% versus .7%).

We should point out that the average American worked 7% more hours in 2003 than in 1980. This means that Uncle Sam's potential GDP base 100 in 1980 lower by 7% than the reality of 2003.

Conclusion: Productivity is an Indicator of Exclusion, to Be Corrected through Employment Rate

The countries with the lowest unemployment rates are also those with the longest hours and longest active working lives. In sum: activity creates jobs. For everyone to work, we must work more. Reducing the work week made the French people forget that you don't get ahead faster by rowing less. It is worth remembering that the GDP is equal to the GDP per active worker multiplied by the number of active workers in the population. It so happens that the GDP per active worker is 20% higher in the USA than it is in France and that the average American active worker puts in the equivalent of 50 days more annually, and the employment rate is higher in the USA than in France (cf. chart 5).

Chart 8 – Employment Rate in 1980 and in 2003

	Employment rate	
	1980	**2003**
United States	67.7	72.8
Europe (EU15)	67.0	66.3
Japan	74.4	75.7
France	64.7	64.3
Germany	82.9	69.4
United Kingdom	69.4	72.4
Italy	58.3	57.1
Spain	53.2	61.2
Netherlands	61.8	73.2
Denmark	75.2	77.2

Source: OECD, 2004

The French cock crows about hourly productivity measurements which, after the most reliable calculations [8] stand at 8% of the American and 16% of the EU average. The French perform "better" than the Americans on average, but in the USA the employment rate is ten points higher than that in France. The French figure is

based on 100 people of working age in the 15 to 64 age bracket of whom only 64% have a job versus 72% of their American counterparts and 66% of their EU cohorts. In sum, we are so good that we can work less (those famous 35 hours!) while producing as much as the others. Well, if we rolled up our shirtsleeves and used our brains, we could become the world champions!

Let's get back to basics here. Productivity, previously known as the "apparent" productivity of labour, has lost the adjective and concept of apparent which served to remind us that productivity is measured very roughly by dividing the GDP per number of employed active workers. Without the word apparent, productivity appears less tentative, but appearances may be deceiving. Imagine schoolchildren running a 100-meter race. If the entire class participates, their average speed will be lower than it would be if the fastest half of the class ran.

The paradox of France's high apparent productivity disappears once we remember that there are just a few runners who are very productive because we only hang onto the best. The others are replaced through outsourcing or automation. Perhaps the time has come to stop glorifying our apparent productivity rate which is actually a statistical consequence of a loss of productive means; in other words, people unemployed because of the high cost of labour. If we wish to increase the employment figures, we need to accept a temporary decrease in the average productivity rate. Insertion on the job market is a form of training in itself which acts as a lever to develop skills in individuals and in the end, improve their productivity. This is the way in which a society increases its wealth while reducing exclusion or marginalization. In the productivity race, as in any sport, the coach does not want to select the champs simply in order to eliminate those who don't meet Olympic standards. On the contrary, each one must enter the race and progress according to his (or her) own level. From this perspective, we need to insert rather than assist, avoid distributing funds without some form of activity in return and, overall, revive part-time work, which has decreased in France and remains two points below the EU average.

During the 1980s and 1990s, economic growth in the United States remained constant at 3.3% annually. The rate of growth in terms of standard of living went from 2.3% to 2% annually. The effect of new communication technology on productivity, which many studies claim played a major role in American labour statistics during the second half of the 1990s, did not lead to an increase in the standard of living in comparison to the rates seen during the 1980s.

The above leads to several questions: where is the impact of the New Economy? Are we not really witnessing one of the benefits of the demographic dynamics on growth during the 1980s? How much of the losses or gains in productivity (GDP per active worker) in a country can be explained by variations in the employment rate? Let's begin with the last question.

The GDP per active worker, a measurement of apparent productivity, presents more contrasts than the GDP per capita. Despite greater GDP increases than the EU average, (3.3% versus 2.4%), the United States with its 1.4% increase in productivity

in the 1980s was dragging behind. However, the US created many more jobs than did Europe with its productivity rate of 1.9%. In the 1990s, the United States retained its lead of one point but beat Europe by only .2% annually in productivity. The most recent statistics (2000-2003) show the USA far ahead with growth of 1.7% in productivity. This rate is comparable to the 1990s. Europe, on the other hand, has only .5%! Is that American lead a result of greater penetration of information technology in the USA? No, but we come back to definitions to avoid comparing apples and oranges [9].

Actually comparing apparent productivity among countries is always a delicate exercise. It can never be a simple case of raw data; for example, the GDP per active worker (apparent productivity again) is closely linked to the employment levels of the country being considered. A decrease in this level generally translates to an increase in productivity in an inverse fashion through the selection of the most productive. As a result, when comparing GDP per active worker we must take into account the differences in employment levels.

In concrete terms, we calculated the GDP per active worker adjusted according to the employment level. The coefficient of this correction is obtained through the ratio of the national employment rate and the employment rate of the USA in 1980 (base 100). Obviously with comparable employment rates, one should have a higher productivity rate and inversely, with comparable productivity, the employment rate should be greater.

Chart 9 – GDP per Active Worker and GDP per Active Worker Adjusted according to the Employment Rate of 1980 and 2003 (in '000 US$, 1999 PPP), base 100 USA 1980

	GDP per active worker		GDP per Active Worker Adjusted according to Employment Rate	
	1980	**2003**	**1980**	**2003**
United States	50.9	73.8	50.9	79.3
Europe (EU15)	39.7	57.1	39.3	55.9
Japan	34.2	52.3	37.6	58.5
France	42.8	61.0	40.8	57.9
Germany	38.8	55.4	47.4	56.7
United Kingdom	35.0	54.6	35.9	58.4
Italy	46.8	66.7	40.3	56.2
Spain	38.1	50.9	29.9	46.0
Netherlands	50.3	61.8	45.9	66.8
Denmark	40.7	57.4	45.2	65.5

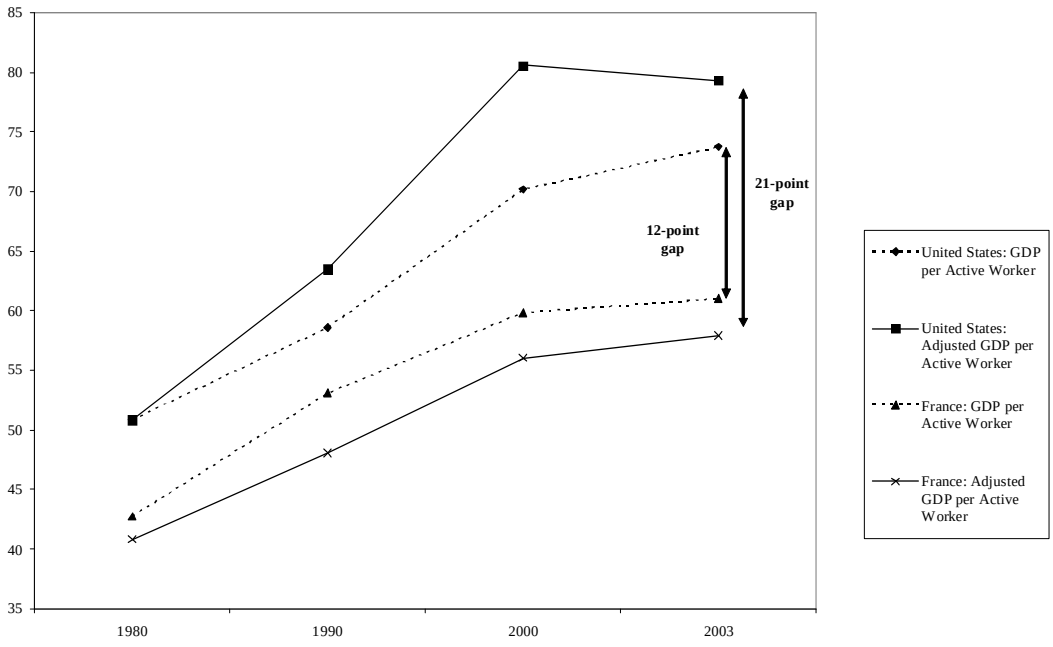
Source: OECD, Rexecode, 2004

In 2003, the USA enjoyed an employment rate 9 points above the French rate with a GDP per active worker higher by approximately 13%. The GDP per active worker in France, adjusted with the standardized employment rate, drops by 3% while the American rate rises by 6% because the employment rate there in 2003 had dropped since 2000 while remaining 5% higher than the 1980 rate. In the end, the USA has a GDP per active worker (adjusted with the standardized employment rate)

21% higher than that in France (79.3 versus 57.9 in thousands of dollars and in 1999 purchasing power parity).This amazing result may be explained by the growth in productivity in labour (adjusted according to the employment rate) which was greater by .6% than that in France during the 1980s and .8% higher during the 1990s. During the 1990s, the USA registered the equivalent of one point gains in productivity annually. Something must have happened in those 51 states in the second half of the 1990s, the era of the new economy, but then the tide receded.

The most recent period for which we have statistics (2000-2003) reveals plummeting employment rates in the USA, where the annualized growth rate is –2.2%, while the employment rate rose slightly in Europe (+.5%), notably in France (+.4). Productivity gains in the USA, if compared to France and Europe, should be measured according to variations in employment within those zones. Furthermore, correcting the effect of varying employment rates leads to a drop in the GDP per active worker in the USA (still adjusted to reflect variations in employment rates) between 2000 and 2003. This last figure is taken with an annual growth rate of -.5% whereas the European rate is +1% and the French rate is +.5%. In a nutshell, apparent productivity, with comparable employment rates, did drop in recent years in the United States.

Graph 5 – GDP per Active Worker and Adjusted GDP per Active Worker for France and the USA (in '000 US$, in 1999 PPP)



Source: OECD, Rexecode, 2004

While the gap in apparent productivity (GDP per active worker) between France and the USA is 12.7 points, this difference nearly doubles when the GDP per active worker is adjusted according to the employment rate, to the level of 21.4%) (see Graphic 5).

When the GDP per active worker is recalculated using a base of 100 (France 2003, cf. Chart 10), we see that the United States has an adjusted or corrected productivity level some 37% greater than the French figure (79.3 versus 57.9). France barely surpasses the EU averages, following the example of Italy and Great Britain. There is little, therefore, to crow about when it comes to the French hourly productivity rate which stems from our weak employment figures and the effect of selection. The French need to remain as productive as the Americans while working as much as the Americans do. That way we would each have the equivalent of 8,000 Euros more in our pockets.

Chart 10 – Adjusted GDP per Active Worker by Country in comparison with France in 2003

	Adjusted GDP per active worker
United States	1.37
Europe (EU15)	0.97
Japan	1.01
France	1.00
Germany	0.98
United Kingdom	1.01
Italy	0.97
Spain	0.79
Netherlands	1.15
Denmark	1.13

Source: OECD, Rexecode, 2004

Of course not all the population is active, but the number of hours worked essentially explains the difference in the level of productivity. Americans work 46% more than the French annually. If they work, it is because there is a market demand to meet. Perhaps that demand is more substantial because the USA is also in demographic expansion. As always, this hypothesis comes back as a question which merits more specific research on the demographic growth multiplier. Perhaps researchers will hear this appeal and join us in shaping the Europe of the future.

Notes:

1. In 1939, the House which voted for the Family Code was made up of members of the Popular Front who were continuing a struggle begun in 1898 with the creation of the "Alliance Population et Avenir", a group concerned about the population and the future which had been started by Republican lay persons at the time of the nineteenth-century French novelist Emile Zola's book *Fécondité*.
2. This letter can be found in French on the Elysée website (http://www.elysee.fr).
3. We had already revealed this "Japanosclerosis" linked to the rapid aging of Japanese society in Giraud, P.-N. and Godet, M. (1987), Radioscopie du Japon, Economica, coll. CPE-Economica

4. Between 1998 and 2003, Spain took in 1.1 million newcomers of whom 485,000 were Latin-American; 205,000, North African; 190,000, Eastern and Central Europeans; 55,000 Subsaharian Africans and various other origins. Spain thus became the most attractive country in the EU for immigrants during the period 2000-2004. In fact, Spain surpassed the United Kingdom for overall immigration.
5. However, analyses of the GDP reveal that the demographic factor is vital to growth in developed countries.
6. Naturally this comparison is valid only for developed countries in which there is a high investment in human capital. It is not applicable to developing countries in which the relationship between the demographics and economics may be negative if the conditions which promote growth, e.g., level of education, confidence, are not present.
7. Not taking into account the German reunification.
8. See the two reports prepared by the Economic Council advising the French Prime Minister (CAE) presented on February 27, 2004 (Cette, Artus, 2004) ; (Debonneuil, Cahuc, 2004).
9. This question is asked in light of the latest estimates made available. Actually, the initial results for the period from 2000 to 2004 seem to reveal a clear-cut difference between the USA (apparent productivity rising at more than 2% annually) and the European Union of Fifteen (apparent productivity under 1% annually). We have put forth the hypothesis that this latter factor is playing a key role as the demographic gap is widening more than ever.

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