

**Large and Unknown Implicit Liabilities:
Policy Implications for the Eurozone**

Charles Wyplosz
Graduate Institute of International Economics and CEPR

October 2004

Paper prepared for the workshop on ‘Fiscal Policy in EMU: New Issues and Challenges’ organized by the European Commission (Directorate General for Economic Affairs) in Brussels on 12 November 2004.

1. Introduction

The upcoming demographic transition has set the spotlight on unfunded implicit public liabilities. The size of some of these liabilities, reasonably well understood, is such that the issue cannot be ignored, and it is not. Yet, with some exceptions, policy responses are partial at best. As the time of the transition nears, the need to act grows, but so does resistance to potentially sweeping responses. Yet, it is in no one interest to delay action, quite to the contrary. So why do we see so little progress?

The first conventional answer is that implicit liabilities first and foremost involve an issue of intergenerational redistribution. The more the current generations delay action, the more they transfer the burden to future generations. On the surface of it, this is true, but it needs to be the case. To start with, the currently younger generations will not be able to escape the demographic transition shock. In addition, even if altruism towards one's children is empirically found to be limited, it may not be absent altogether. After all, not all bequests are the undesired result of savings in excess of needs during old age and of shorter than planned life time. Finally, even the baby boom generation has good reasons to believe that it will get caught somehow; removing the uncertainty must have some advantage for them as well.

A second reason for stalemate is that the demographic transition does not only raise intergeneration redistribution issues, it also involves some intragenerational transfers. At unchanged policies, most governments are in effect bankrupt. Any solution must combine lower pension benefits and higher taxes. Within each generation, present and future, the state will have to protect the poor who have not accumulated enough savings to deal with the reduced pensions. Who will pay for the taxes? Where the line separating the needy and the better off will be drawn? These are the kind intragenerational issues that are traditionally divisive. It may well be that this is where much of the resistance to reforms originates.

In addition, this is a new problem, not an easy one to fully analyze. The professional literature has grown enormously over the last decade. It involves such concepts as Ricardian equivalence, altruistic behavior, or life time uncertainty that cannot be easily be brought into the public debate. As a result, policymakers may feel that they have not yet been presented with tested solutions that they can explain to their electors.

Finally, except for Japan, Europe is where the ageing problem is most acute and coming fastest, so this is where experimentation must first take place. At the same time, the European Monetary Union operates the Stability and Growth Pact, which is meant to constrain budgets and bring about a reduction in public debts. But the demographic transition may require larger deficits and result in considerably higher public debts, even if adequate policies are put in place soon enough. This calls for a collective reconsideration of the pact, precisely at a time when the existing arrangement's limits – unrelated to the demographic transition – have become visible. The task may seem insurmountable.

The present paper attempts to make the inescapable debate as simple as possible. Section 2 reviews the existing literature to document the size of the demographic transition shock. The numbers are large, yet not necessarily unmanageable. Section 3 looks at the theoretical aspects. Its main aim is to derive robust implications. Section 4 turns to policy. It argues that the first best option is to raise private savings. Noting that governments have good and bad reasons to delay action, it examines how incentives can be modified, both for the governments themselves and their citizens. The last section wraps up the key conclusions.

2. Magnitudes

A very substantial literature has been devoted to the estimation of the implicit liabilities associated with the demographic transition. The task is complex because it involves two major questions for which there is no precedent: pension benefit financing in the presence of an increase in the old age dependency ratio and the evolution of medical costs for

populations with longer-living people. This section briefly reviews the existing literature, emphasizing the methodological aspects.

2.1. Pensions

The broad outlines of the impact of an ageing society on the costs of its pension systems are well-known and easily described. Much harder is to limit the range of estimates given the large number of crucial assumptions that must be made when producing estimates.

The first step involves a forecast of the dependency ratio. This is a standard problem in demographics, which can be approached in fairly mechanical way. Unless birth rates significantly change, the results are quite robust and, indeed, the various estimates are quite similar. They document the rise of the dependency ratio and of longer lifetime. Table 1 provides a sample of recent estimates of the ratio of elderly people (older than 60 or 65) to a conventional definition of the active population. As is often the case, the definitions vary with country coverage, but the message is clear: the dependency ratio is expected to double over fifty years. Estimates of the ratio of “oldest old” to the active population (not shown) foresee a threefold increase, a reflection of expected increases in life length. These forecasts are likely to be reasonably precise with one important caveat, immigration, which is briefly discussed in Section 4.4.

Table 1. Estimated Dependency Ratio (Europe)

Source	Definition ^a	Now (year)	Mid-21st century (year)
US Census Bureau	$P^{\geq 65} / P^{20 \text{ to } 64}$	27 (2000)	57 (2050)
Gokhale and Raffelhüschen (2000) ^b	$P^{\geq 60} / P^{20 \text{ to } 59}$	37 (1995)	69 (2055)
Economic Policy Committee (2001)	$P^{\geq 65} / P^{15 \text{ to } 64}$	24 (2000)	49 (2050)

Notes: (a) $P^{\geq 65}$ indicates the size of the population 65 years old and older.

(b) Active population-weighted average of national measures.

The second step is to use the foreseen demographic trends to produce forecasts of pension liabilities. This requires making assumption on the evolution of benefits as well as on the evolution of employment and capital accumulation, which affects wages, savings and tax revenues. Most studies produce a baseline projection that assumes that current benefit rules remain unchanged, as shown in Table 2, and then explore the effects of rule changes.

The different results reflect the complexity of the exercise but also the interpretation of the estimates. Turner et al. (1998) use a large scale macroeconomic model that allows for changes in labor supply, savings and investment and capital flows. They then track down the evolution of all macro variables to project the budget effect over time. Taxes required to finance pensions are found to increase by some 4% of GDP, peaking during the period 2040-50. Economic Policy Committee (2001) uses a simpler technique; it tracks down the evolution of all age groups and infers the corresponding of pension costs assuming that they remain unchanged from current levels for each age group. The estimated increase of pension costs is about 3% during the peak years 2040-50. Gokhale and Raffelhüschen (2000) adopt a similar approach based on generational accounting: they also track down the evolution of all age groups and compute the present value of the increase in pension payments.

Table 2. Estimated Budgetary Impact of Pensions in the EU^a
(% of GDP)

	Budget balance	Peak year for budget	Debt	Peak year for debt
Turner et al. (1998)	-4	2040-50	40	2050
Gokhale and Raffelhüschen (2000) ^b	-4.3	n.a.		2055
Economic Policy Committee (2001)	-3.2	2040		2040

Notes: (a) Assuming unchanged benefits.

(b) GDP-weighted average of national impacts.

In the end, the estimates do not differ as much as could be expected given the long horizon and the numerous assumptions made along the way. The “pension shock” is known with reasonable accuracy – compared, for example, with the likely evolution of other items in the budget – and the numbers seem to be manageable. Indeed, small changes in the generosity of the benefits make important contributions. For example, delaying retirement age by a couple of years comes close to halving the estimates of cost increases. On the other hand, the results are quite sensitive to the assumed evolution of real interest rates.

2.2. Health Care

The considerable increase of the proportion of older people, who are also expected to live longer, suggests that spending on health, including care for the oldest elderly in specialized institutions, will rise significantly. The estimates presented in Table 3 are reasonably similar. These numbers hide an important result that seems widely accepted: the demographic transition in and by itself will not raise health expenditures. The reason is that people will live longer but will also be healthier. Most health costs are incurred over the last years of life, irrespective of when life ends. The cost increases reported in Table 3 mainly reflect the assumption that the unit costs of health services will rise, not an increase in health provision per person.

Table 3. Estimated Budgetary Impact of Health Care in the EU
(% of GDP)

	Budget balance	Peak year
Turner et al. (1998)	-3	2040-50
Economic Policy Committee (2001)	-2.2 to -2.7	n.a.

The result that the increase in health spending is not related to the demographic transition is important and a source of concern. First the projections are more uncertain than those concerning pensions. Indeed, it is indeed nearly impossible to form a view of the evolution of medical techniques and costs. Second, health-related expenditures are likely

to keep growing as a proportion of GDP beyond the demographic transition. In present value terms, in contrast to the estimates shown in Table 3, health-related expenditure increases may well dwarf the planned increase in pension costs. As a result, the policy implications may be politically more difficult. At stake is the public commitment to provide all citizens with top-level public health services, not just in terms of medical services but also in terms of assistance to the sick and the elderly. Public demand is and will remain acute. On the other side, the well-known moral hazard problem is bound to call for unpopular measures.

2.3. Other Liabilities

The demographic transition sheds light on the issue of implicit liabilities but there are many other items that need to be taken into account. These includes various social transfers, including future unemployment benefits, various subsidies to ailing firms, including failed banks and other financial institutions, implicit commitments to fund state-owned firms and future recurrent public investments. In fact, the implicit liabilities associated with the demographic transition are the easiest to deal with since they are foreseen and reasonably well measured.

The recent history is replete with examples of massive unforeseen injections. The list includes Credit Lyonnais (mid-1990s), Holtzmann (1999), Alitalia (2004) and many more. Interestingly, these injections of public money often concern state-owned firms but not always. “Too big to fail” is a powerful incentive. Such interventions may be seen as a misguided form of industrial policy, but they may also be justified by externalities with sizeable social and political implications. Whether they are justified or not is controversial, therefore, and there is little doubt that they will happen again. Estimates are impossible to make, and the past is unlikely to be reliable guide. On one hand, the Single Market reduces the scope for public support to ailing firms, but the experience shows that they cannot be prevented, especially the biggest ones. On the other hand, any acceleration of the globalization process is bound to force more structural adjustments, the most common source of corporate failures. Fully integrating nearly half of humanity (China

and India) into the world economy should significantly increase global welfare, but it is also bound to result in sizeable reallocation of economic activities.

In addition, even in countries that have moved some way from pay-as-you-go (PAYG) to fully-funded pension systems, potentially significant implicit liabilities remain.

Investments by pension funds may fail to generate currently expected returns. If sustained, low bond yields and poor stock market performance – as has been observed over 2001-3 – are bound to adversely affect pension funds when benefits are defined. Even for defined-contributions system, should realized returns turn out to be lower than currently expected, governments are not likely to be able to stand back and allow large numbers of pensioners live in poverty, if only because the demographic transition will provide pensioners with strong voting weights. Recapitalizing these funds could be very expensive.

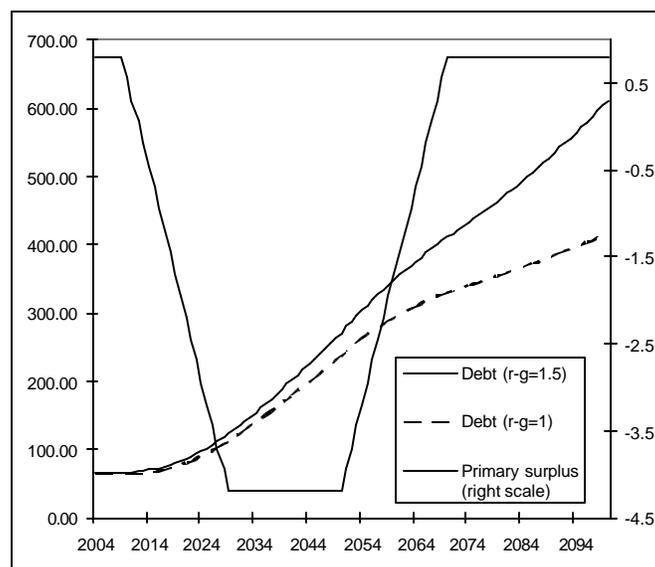
3. Theoretical Implications

3.1. Unpleasant Budgetary Arithmetics

It is very easy to show how frightening the outlook could be. Debt processes are inherently unstable when the interest rate exceeds the rate of economic growth, which seems to be the case in the long run. This is easily illustrated in Figure 1 which presents a simulation of the evolution of the Eurozone's gross public debt from 2004 to 2100. It starts with the Eurozone's debt and primary account in 2004 (in percent of GDP, 66 and 0.8, respectively). It assumes that, starting in 2010, the primary budget balance declines by 0.25% per year for 20 years, remains at a plateau of -4.2% over the following 20 years and starts improving in 2050 by 0.25% per year until 2070 when it returns to the 2004 surplus. The simulation assumes that current fiscal policies remain unchanged, so that the cost of the demographic transition (5% of GDP) is fully absorbed through a deterioration of the budget balance and then gradually erased after 2050. The figure shows the resulting evolution of the public debt under two alternative assumptions regarding the difference between the interest and GDP growth rates: 1% and 1.5%.

This kind of simulation – often carried out with more elaborate assumptions, including the evolution of saving and investment – is a frequent feature of the debate. It conveys a simple message: if nothing is done, debt to GDP ratios could increase by 2050 to levels like 400%, and would keep increasing forever because of the debt service. The general lesson is that keeping current fiscal policies unchanged, and letting the budget fully absorb the extra spending, is unsustainable. Thus, even though ageing is a temporary problem, the effect would be a permanently exploding debt. There are a few more lessons to draw from this simple exercise.

Figure 1. Simulated Evolution of the Eurozone’s Gross Public Debt (% of GDP)



Source: author’s calculations (see text)

First, the evolution of the debt is quite sensitive to small changes in the assumptions. A small permanent reduction in the difference between the interest and GDP growth rates has a strong effect. Boosting growth by half a percentage point is not wildly impossible if adequate reforms are enacted. This should provide yet another powerful incentive to do so.

Second, the debt/GDP ratio is non-stationary when the difference between the interest and GDP growth rates is 1.5%. Even with the smaller 1% difference, the ratio will be

non-stationary by the end of the demographic transition in 2070 since, with a debt at some 330%, the primary surplus required to just stabilize such a debt ratio is 3.3%, far higher than the assumed 0.8%.

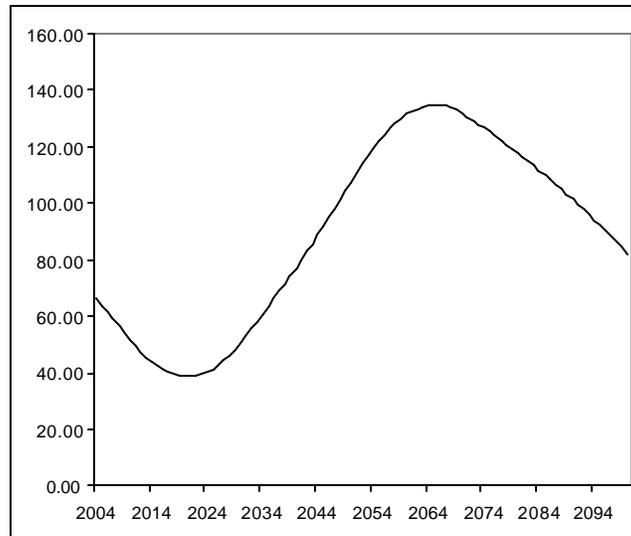
This, in turn, leads to the third observation, one that enjoys enormous popularity even though it is not altogether correct as noted in Section 3.2.1: since a fiscal correction is unavoidable, the earlier it is done, the easier it will be. For example, if the objective is simply to stabilize eventually the debt to GDP ratio at the level reached at some point in time, under the assumption that the difference between the interest and GDP growth rates is 1.5%, the primary budget needs to improve by 1% of GDP if the correction takes place in 2004, by 1.3% in 2002, 4% in 2050 and 6% in 2070. The correction needed to bring the debt down increases even faster.

Fourth, the size of the increase in costs matter relatively little. For example, with a 1% difference between the interest and GDP growth rates, a cost increase of 4% of GDP, instead of the 5% assumed in the previous simulations, leads by 2100 to a debt of 350% of GDP, instead of 415%. This is not a trivial effect, but it does not change the explosive nature of the process. Many discussions under way emphasize the need to contain the costs of the demographic transition. While any additional saving will be welcome, modest amounts will not be enough to stabilize public debts.

In the end, any arithmetic exercise shows that large budget improvements will have to be adjusted to eventually stabilize the debt, but that some significant debt buildup is unavoidable. As an example, in the worst case where the difference between the interest and GDP growth rates stands at 1.5%, a permanent improvement of 2.5% of GDP, half of the assumed peak-year cost of 5%, implemented as soon as 2004, delivers the path shown in Figure 2. The process is stable but the onset of the demographic transition is marked by a sharp increase in the debt. This kind of calculation vindicates the generally held view that the demographic transition requires an improvement in the current budget balance, enacted as soon as possible. It also shows that it is possible to avoid an unstable

debt process while allowing the debt to GDP ratio to increase very significantly, and quite fast as well, during the first half of the 21st century.

Figure 2. Simulated Evolution of the Eurozone's Gross Public Debt With a 2.5% improvement in the Primary Budget Balance (% of GDP)



Source: author's calculations (see text)

3.2. More Complex Arithmetics: The Generational Accounting Perspective

In drawing the lessons from budgetary arithmetics, two issues must be kept separate. The first one concerns the sustainability of public finances, the second one deals with the debt burden. These issues are not fully separable, of course. Any unstable debt process will have to be met by an adjustment at some point in time, even if the adjustment takes the form of a default, i.e. a tax on bondholders. In that sense, pushing forward the day of reckoning really means passing the burden to future generations. This is what the generational accounting literature examines by assuming that the debt will be eventually serviced.

3.2.1 Burden shifting

The demographic transition implies either an increase in taxes per capita on some generations or a decline in payments to the elderly of all generations. At any rate, a decline in welfare is unavoidable. Policymakers cannot escape the fact that the future will be harder than the past and they will have to design and implement the corresponding policies. The only available choice is how to spread the burden, both across generations and within generations.

A key lesson from the generational accounting literature¹ is that one has to be very careful not to be unduly influenced by the terminology. Raising taxes to finance the PAYG system or adopting a funded system based on compulsory contributions does not affect directly the intergenerational accounts.² Furthermore, if the pension funds invest their assets in Treasury papers, there is no difference with debt accumulation. The key difference between savings and taxes concerns capital accumulation, as discussed in Section 3.2.3.

Clearly, any delay in reducing spending and/or raising of taxes only results in the kind of public debt buildup displayed in Figure 1. This buildup does not necessarily signal unsustainability but it illustrates the extent of intergenerational shifting. Unsustainability would occur if the eventual tax increase is economically or politically unbearable, which means a default and concentrating the burden upon bondholders at the time of default.³

On the other hand, the path shown in Figure 1 may exaggerates the intergenerational burden shifting because it compounds the debt stock at the assumed real interest rate. If taxes are not raised for a while, disposable income remains higher and so is saving, which

1 For a succinct and elegant presentation, see Kotlikoff (2003).

2 The main difference is the treatment of the currently older generations who may have to both pay taxes and contribute to the fund.

3 Under such a scenario, future governments are highly unlikely to be able to choose the time of default. Markets will enforce it earlier than wished.

means more accumulation of capital and a higher GDP along with higher wages and lower real interest rates. Obviously, eventually the eventual tax increase must be larger, but the balance of effects is not clear cut although the presumption must be that the growth enhancing effect is unlikely to be large enough to overcome the debt buildup effect.

3.2.2 Saving and Ricardian equivalence

The intergenerational accounting literature further draws the attention to the response of each generation to the conditions that it foresees. A useful benchmark to start from is Ricardian equivalence. In that case, the intertemporal budget constraint is essentially irrelevant because it is internalized by households. To see this point, consider Figure 1. When presented with such a ‘forecast’, current and future generations will increase their savings. They will not take the ‘forecast’ as a given, since it clearly violates the intertemporal budget constraint and will rather aim at a path of the kind displayed in Figure 2.

In doing so, they will not directly change the path of the primary budget surpluses, since this is a decision made by the government. Instead, they will accept that either public spending will have to be cut or that taxes will be raised. In the first case, they will save to purchase privately the welfare services currently publicly provided, in the second case they will save to pay future taxes. In both cases, the government decision is irrelevant, at least at this general level of reasoning which ignores distribution effects.

As is well-known, the conditions under which Ricardian equivalence holds are restrictive. For example, uncertainty may break down the equivalence. In this case, however, there is no uncertainty about the imminence of the ageing shock and uncertainty about its quantitative aspects is very limited, as discussed in Section 2. The other reason why Ricardian equivalence breaks down is the presence of credit rationing; credit-rationed households do not see private and public borrowing as equivalent. In the present case, however, credit-rationing does not matter because the private sector’s reaction does not

involve borrowing but calls for saving. Thus, the Ricardian equivalence case is a reasonable starting point.

As Kotlikoff (2003) argues, the labeling of deficits and debts is totally arbitrary in such a Ricardian world. It matters little⁴ whether households save on their own or whether the government reduces its debt. Adding a bequest motive to household's behavior even strengthens the result, since it implies that even current generation members who do not expect to be alive when the demographic transition will occur, will still raise their savings. The bequest motive implies that the intergenerational redistribution issue is moot.

This leaves the intragenerational redistribution issue, in particular the serious concern that poor people do not, or cannot save. It is reasonable to expect that they – the current and future poor – will be spared both higher taxes and reduced benefits. This is where Ricardian equivalence fails. The result is an implicit liability that creates a burden affecting the better-off people in each generation, through lower benefits or higher taxes. But once this is understood, the better-off realizes that the burden is heavier and they will further save to make up for lower pensions or pay taxes to maintain the pensions of both the poor and the better-off. Ricardian equivalence reasserts itself.

This analysis may be seen as suggesting that the debt buildup predicted by budgetary arithmetics is either cosmetic in the sense that it will be matched by equal private savings or that it will be easy to raise taxes and/or cut benefits since this is already factored in by households. Both propositions are counterintuitive, and they are bound to be met with skepticism. A first objection is that the full rationality assumed by the intergenerational accounting approach is unrealistic. A second objection is that intragenerational redistribution is at the heart of the political difficulties faced by governments as they try to face the demographic transition.

⁴ 'Little' because the actual evolution alters the traditional welfare costs of taxation (the Harberger triangles), which has presumably second-order effectiveness effects.

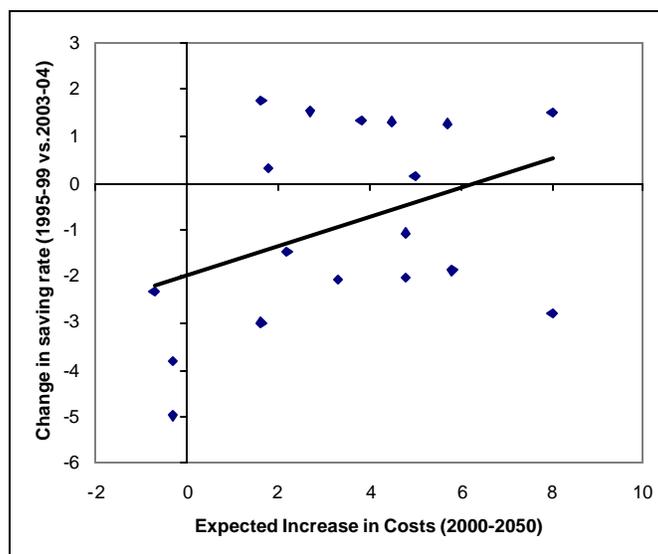
One simple way of checking how serious are departures from the rationality assumption that underpins the generational accounting approach is to examine whether households have changed their saving behavior in view of the impending costs of the demographic transition. Figure 3 looks at the evidence. Assuming that, by the end of the 1990s, the costs of the demographic transition have become common knowledge, the figure examines whether savings have increased. To do so, it compares country by country the difference between average household saving rate in 2003-04 and in 1995-99 with the demographic transition costs estimated by the OECD as reported in Visco (2001). The relationship is positive with a marginally significant ($p = 0.11$) partial correlation coefficient of 0.31. Taken at face value, this suggests that households have already factored in about one third of the predicted debt buildup, and could do more in the coming years. Another possible conclusion, of course, is that this relationship is too weak to draw any firm conclusion.⁵

Assuming, for the time being, that Ricardian equivalence cannot be ruled out or, at least, that a sizeable proportion of future costs will be met by higher household savings, the intergenerational accounting perspective implies that we should not rush to accept blindly the implications of the budgetary arithmetics. Large savings are likely to lead to higher bequests, thus reducing the intergenerational burden shifting. In the limit case of full Ricardian equivalence and operational bequest motive, future generations are entirely protected from the demographic transition.⁶ In this case, the burden is met by taxes, a reduction in public pensions or debt become irrelevant.

⁵ Longitudinal studies could shed light on this issue.

⁶ 'Almost' because the temporary increase in costs – or the increase in the dependency ratio – leaves an aggregate intertemporal burden.

Figure 3. Expected Costs of the Demographic Transition and Change in the Saving Rate (% of GDP)



Sources: Expected costs are from Visco (2001). Household savings Rates are from Economic Outlook, OECD.

Note: The sample countries are Australia, Austria, Belgium, Canada, Germany, Denmark, Spain, Finland, France, the United Kingdom, Italy, Japan, the Netherlands, Norway, New Zealand, Portugal, Sweden and the United States.

In the real world, neither Ricardian equivalence nor intergenerational altruism apply, for the reasons previously noted. Yet, both characteristics exist to some extent. For policy purposes, it is important to note that saving is the first best response to the demographic transition shock. Rather than focusing on second best (or much worse) policies, a good question is whether it is possible to enhance the underlying Ricardian features. This idea is pursued in Section 4.1.

3.2.3 Taxation and Capital Accumulation

The reasoning so far has ignored the impact of saving on capital accumulation. If the additional saving is channeled into productive investment, income per capita will be higher and the real interest rate at which the debt cumulates will decline. Higher incomes undo some of the welfare losses of the demographic transition while lower real interest rates reduce the present value of the costs and the instability of the debt process. Could

that be the silver lining of ageing societies? Several recent studies suggest that this is not the case, although for different reasons.

Canton et al. (2003) and Borsch-Supan et al. (2003), although they disagree on the size of the effect, find that saving will actually decline. The reason is that their models consider that the elderly dissave; when the proportion of older people rise, aggregate saving declines. Borsch-Supan et al. (2003) further examines the effect of announcing and implementing a reduction of old-age benefits and find that this raises the saving rate, the result of life-cycle behavior.⁷

Fehr et al. (2003) use the generational accounting framework and a host of realistic assumptions like income heterogeneity and uncertain life span and they also assume intergenerational altruism. They consider the case where there is no public borrowing, so that all the costs of the demographic transition translate into higher taxes. Payroll taxes increase to pay for pensions and wage taxes rise to pay for health costs. In their model, the world is made up of three areas, the US, Europe and Japan, all of which face a demographic transition. Higher savings lead to more capital accumulation, lower real interest rates and higher real wages. But since taxes need to rise considerably, household income declines, and so does saving, more than offsetting the positive effects of higher wages and lower interest rates. In fact, in their model, the decline in saving is considerable, leading to a worldwide capital shortage, severe increases in real interest rates and sharp declines in real wages. Capital flows from the US to Europe and Japan, since the demographic transition is less severe in the US, partially offsetting the capital shortage in the latter countries, while deepening it in the US. This analysis further shows that boosting savings, as an alternative to raising taxes, is the way to avoid the capital shortage and the associated decline in standards of living. The policy solution studied by Fehr et al. (2003) is the gradual privatization of pension systems.⁸

⁷ Both papers rightly emphasize the importance of capital flows among countries with different demographic changes. This issue is not pursued further here.

⁸ In the study, the transition to a fully-funded system requires a rise in consumption taxes. This implies a sizeable transfer from the current older people, especially in the 'middle class'.

3.2.4 Assessment

The key message from the intergenerational accounting approach is that the most efficient way to deal with the demographic transition is to make sure that savings rise. Whether these savings directly finance the increase in old-age costs (pensions and health) or compensate via bequests the tax burden passed over to future generations is not irrelevant, since it affects capital accumulation and therefore overall output, as shown in Canto et al. (2003), Borsch-Supan et al. (2003) and Fehr et al. (2003).

From that viewpoint, reducing the role of tax increases – now and in the future – should be a major objective. This implies that the debt buildup should be restrained and that most of the political effort should be devoted to credibly reduce pensions in order to elicit savings. Ideally, all of the burden should be absorbed by higher savings, leaving taxation to deal only with intragenerational transfers designed to protect the poor that cannot adequately save. In other words, the reduction in pensions should be accompanied by the establishment of a safety net that would prevent old-age poverty.⁹

3.3. Uncertainties

The reasoning so far assumes that the implicit liabilities that we face are well known. Of course, this is not literally true, even in the case of the demographic transition. In addition, many other implicit liabilities are implicit on unpredictable events. This section examines the consequences of two kinds of uncertainty: when the size of the liabilities is inaccurately known and when the liabilities themselves are unknown.

3.3.1 Known Liabilities, Unknown Sizes

The major known implicit liability is associated to the demographic transition. While cost estimates fall within a reasonable range, it is safe to consider that the actual costs will

⁹ As any other safety net, this one creates a moral hazard as it will discourage saving. The solution must probably take the form of means-testing where means should be based on lifetime earnings and not the resources available upon retirement.

eventually prove to be significantly different. The best that we can hope for is that the current estimates are unbiased, but the margin of error cannot be ascertained with much confidence.

The first question concerns the savings response by households. Risk aversion suggests precautionary saving i.e. that households save for the rainy day (Weil, 1993). If the costs turn out to be smaller than provided for by precautionary saving, the result will be excessive capital accumulation. Future generations alive when this conclusion is reached will enjoy a windfall gain; they will be able to increase consumption as saving is temporarily reduced to allow capital decumulation. In other words, these generations will turn out to be the beneficiaries of an intergenerational transfer from the previous generations. If, instead, the costs turn out to be more than planned, future generations will have to reduce spending, implying the opposite intergenerational transfer. Overall, if the expected cost estimates are unbiased, the expected direction of the transfer is from current to future generations since precautionary saving implies that household plan for more than the expected costs, making the first outcome more likely than the second. The risk is undiversifiable.

The second question concerns the fiscal policy response. Inasmuch as some of the liabilities will be publicly assumed – either because of intragenerational transfers or because of non-Ricardian behavior – the question is how to deal with uncertainty. It seems reasonable to follow the reasoning in the previous paragraph and to conclude that the government should plan for a possible transfer to future generations. Taxes should rise more and debt should be more restrained now than in the absence of uncertainty.

3.3.2 Unknown Liabilities

The other source of uncertainty concerns events currently unforeseen. These events are catastrophic in nature, ranging from major corporate failures (like Credit Lyonnais) to natural disasters or armed conflicts. Here again, we first imagine household behavior under Ricardian equivalence and then draw the policy implication.

Precautionary saving implies that households accumulate some savings to deal with the expected value of unplanned expenditures. When and if these expenditures arise, optimally accumulated savings are unlikely to be sufficient; the response then is to borrow and reimburse later. On average, if expected catastrophic expenditures are correctly assessed, accumulated precautionary savings should match actual average catastrophic spending. But there will be instances where catastrophic costs exceed savings. The less well-off may not be able to cope on their own and this gives rise to implicit liabilities.

The implication for fiscal policy is that governments should operate a fund for catastrophic spending. Since, however, all governments are in debt, such a fund makes little sense except in the trivial sense that less debt is better than more. The policy response then is to borrow in bad years and save in good years, the usual prescription.

4. Policy Implications

4.1. Private savings

It has been argued in Section 3 that the first-best response to implicit liabilities is higher private savings. This conclusion is somewhat too simple for policy purposes. For instance, in the limit, the reasoning would imply that pensions should all be privately financed by household savings. This is not what is generally observed, for good reasons. To start with, as noted in Section 3.2.2, the poor cannot adequately save; this is why some minimum pension level is usually publicly provided, often as the first pillar in multi-pillar schemes. In addition, where pensions are funded, individual savings are deposited into dedicated and regulated funds. In addition to being a saving vehicle, pension funds provide a form of insurance to take into account the uncertainty of life time. More importantly, contributions towards pensions, either in PAYG or funded systems are, partly at least, compulsory because society's intolerance of old age poverty generates a moral hazard.

The upshot is that we cannot rely on voluntary private savings to deal with the transition shock and other contingent liabilities. More generally, private saving is unlikely to internalize implicit liabilities, whether widely expected as the transition shock or unforeseeable. Moral hazard and externalities imply that governments must intervene.

Enhancing the odds of Ricardian equivalence.

Public interventions should first and foremost aim at eliciting the first best response, an increase in the saving rate, limiting tax or debt financing to provide for transfers to the poor. The first task is to set private expectations straight, that is to inform the public of the existence and size of the implicit liabilities.

The main features of the transition shock have been widely disseminated and should now be well understood. Yet, in many countries, what will be the public response has not yet been spelled out. The reason is that the fiscal implications are greeted with widespread resistance. This resistance does not mean that the problem is being ignored or misunderstood, rather it is a reflection of intragenerational distribution conflicts, a classic source of political difficulties. The result is individual uncertainty in the face of collective certainty. Individual uncertainty may elicit precautionary saving, but it also generates moral hazard; the danger is that moral hazard dominates, leaving many people unprepared. Failure to deal with the intragenerational conflicts is, in effect, becoming the source of the implicit liability.

The only solution is for the government to provide a clear view of how it intends to deal with the liability. The problem, of course, is that the liability will come due in many years. Since a government cannot commit its successors, a time consistency problem arises. In this case, however, it may not be as serious a difficulty as usual. Time inconsistency occurs when it is in the interest of a government to renege on earlier pledges. Once a government has decided that the transition shock will be mostly financed privately, and once that private savings have risen accordingly, successor governments will have no incentive to shift back to publicly financed pensions. There always will exist a risk that populist politicians seek electoral success by promising to repeal the earlier

decisions, but the odds will be reduced if the intragenerational aspects are perceived to be fair. This aspect is further discussed below.

The implication is that the decision to forego tax-financing – either through explicit taxation or through a debt buildup – ought to be taken now. Such a decision is bound to be unpopular since it amounts to reducing pension transfers to all future beneficiaries, even though their tax liabilities decline in proportion. Politically, the current government must invest a huge amount of political capital while the returns will accrue to its successors. Thus, we move from the need of providing adequate economic incentives to raise private saving to the need of providing adequate political incentives to current governments, an issue taken up in Section 4.2 below.

Intragenerational aspects

Political acceptability is essential. As previously noted, this implies that the poor who cannot adequately save for old age be provided with decent means when retiring. For this population segment, the policy response implies choosing between future taxes as in PAYG systems and the constitution of a fund that offers defined benefits. This political requirement effectively constitutes an implicit liability that must be paid for by the better off in each generation.

From an intergenerational viewpoint, the two approaches are equivalent. Given that the first best approach consideration rests on providing households with proper incentives to save, the solution must be to make this liability explicit i.e. transparent. The PAYG solution may seem more opaque but the defined benefits aspect of the dedicated fund also leaves open an implicit liability.

Promoting savings

Any decision – present or future – to reduce the generosity of existing pension benefits is likely to be politically easier if adequate additional saving is already being privately accumulated. For political reasons, therefore, private savings become an externality. This justifies two forms of intervention: subsidies and forced saving. Many countries offer

subsidies – often in the form of tax rebates – for pension-related savings, apparently with some success. A more radical alternative is forced saving into dedicated funds. Both approaches may help, but some pitfalls remain.

As noted before, these funds incorporate an insurance aspect, which may result into an implicit liability. Two risks are involved: at the collective level, the return on savings and, at the individual level, uncertainty about life time. Insurance is almost complete in the case of defined benefits; what is left uninsured is the possibility that the benefits prove to be insufficient to provide for adequate living conditions. If, as is likely, the government steps in to protect those worst affected, the insurance is complete. Defined contributions reduce considerably the insurance component, but they do not eliminate it completely since, here to, bad outcomes will force the government to protect the poor and those who end up living much longer than expected. The main difference, a sizeable one, between defined benefits and defined contributions is that the latter limit the budget's exposure to society's will to protect the needy. In both cases, however, there remains an implicit insurance, which is a source of an implicit liability. This implicit insurance, in turn, may encourage strategic behavior (insufficient saving), which needs to be addressed. This is where forced contributions may be needed.

Forced savings can be linked to incomes or take the form of a flat amount per capita. Income-linked forced saving closely resembles explicit taxation, with the associated deadweight losses. In addition to minimizing deadweight losses, a flat amount system has the advantage of providing those who can afford it with incentives to top up in the form of voluntary saving into fund schemes that also provide insurance regarding uncertain life time.

In practice, three-pillar systems combine the various possibilities. The first pillar is usually based on defined benefits. It is a forced-saving scheme in the spirit of a flat amount designed to provide minimum retirement income. The second pillar is forced-saving linked to wage earnings and invested in funds chosen by the employers. The third pillar is voluntary. It seems difficult to imagine a better arrangement.

Forced-saving funds

Forced savings are often directly withheld from salaries and invested into funds that firms choose or even manage themselves. This is often how the second pillar in some three-pillar systems is financed. Except for the convenience of collection, this approach carries many disadvantages. Firm-specific funds tend to invest in the firm themselves, thus severely concentrating risks: in the event of a firm failure, employees lose both their incomes and their pension benefits. When the firms instead invest the proceeds in external funds, they often set up industry-wide funds, which again concentrates risk, or they shop among many competing funds, which can be too small for adequate diversification. More importantly, linking job and funds may act as a barrier to labor mobility.

Flat forced-saving schemes, on the other side, are established per capita and thus sever the link between earnings and savings. They encourage family-level contributions and therefore the choice of “generalist” funds. These funds are not subject to pressure to choose particular investment vehicles and are therefore more likely to be well diversified.

At any rate, two pitfalls must be avoided. First, there should be no explicit or implicit state guarantee for the funds that receive the savings. What is needed is regulation and appropriate supervision, along with a clear understanding of the risks involved so that some alternative precautionary saving takes place. Second, the proceeds must be diversified. In particular, they should not be invested in assets that are likely to be adversely affected by the democratic transition. This would probably require that the funds acquire mostly assets issued by foreign entities, public debts and stocks, located in countries that do not face a simultaneous demographic transition. This may run against the common practice of requiring that public funds be invested in domestic assets.

4.2. Budgets and Debts

The demographic transition is bad news for current and future generations. Since it means more taxes or less generous pensions, most likely both, it is also bad news for

governments. The natural incentive for governments is to pass this thorn to their successors, quite possibly very distant ones. The result of delayed responses is a further deterioration of welfare unless private savings rise as predicated by the Ricardian view. But, as argued in Section 4.1, Ricardian behavior requires an early clarification of the public response to the demographic transition, so that public inaction stunts this possible solution. This is so, in particular, because the policy response will also have to include intragenerational transfers. Until this issue is clarified, moral hazard may discourage saving, especially among the less well-off, which is bound to further worsen policy options later on, with an additional negative impact on welfare, in particular for the poor. Delaying tactics are simply disastrous.

The conclusion is that it is essential to change the incentives that shape government responses to the demographic transition. Ideally, public opinions should weigh on governments, and this may explain some significant changes already decided in some countries, e.g. the Nordic countries. Elsewhere, public opinions seem to pay more attention to intragenerational transfers among current generations in what increasingly looks like a war of attrition.

The implication is that the intragenerational issue has to be tackled first. Once this is done, ignoring for the time being the time inconsistency issue, it should be easier to deal with the intergenerational aspect. Indeed, even if altruism towards future generation may be limited, it is not altogether absent and the intergenerational issue can be relatively easily presented and understood.

The intragenerational issue belongs to the classical realm of transfers. As such, there is no general recipe applicable to every country. The question of interest is how incentives can be built up to encourage governments to deal with the issue as soon as possible. Two preliminary observations are warranted. First, broad outlines of the policy response are reasonably clear: the poor need to be fully protected and the costs will be borne by the better-off, and all others will have to save to make up for reduced pension and possibly health benefits. Second, the earlier the decision is taken, the more its implementation can

be delayed and, therefore, the less acute is the political conflict. It means agreeing now on welfare transfers and their financing ten years or more later.

Nothing really forces current governments to open up this divisive debate. In countries where a consensus is traditionally difficult to achieve, the only way to bring decisions forward is to change institutions.¹⁰ Someone has to speak for future generations and their governments. The traditional approach to this question involves the setting up of wisemen committees. Such non-political committees would be entrusted with the task of presenting and quantifying the demographic transition, outlining policy responses and issuing recommendations. Importantly, these committees should be in direct contact with their national parliaments, which would have to debate once a year, possibly within the budgetary process, on the recommendations.

As is well known, current debt data do not include future liabilities. While experts debate at great length of various ways of improving budgetary reporting on magnitudes that rarely come close to 0.1% of GDP, the massive implications of the demographic transition are conspicuously ignored. The reason, of course, is that the estimates of the kind discussed in Section 2 are known to be highly imprecise. Even a large-scale effort would not reduce much the margin of uncertainty. Thus it is feared that recognizing the implicit liabilities would pollute the existing indicators, in effect removing the incentive to improve the quality of explicit liabilities data. This is a classic issue, with the classic outcome that it is decided to improve the precision of what we know while ignoring the more important information because it is imprecise.¹¹ Here again, the wisemen committees could make a contribution.

¹⁰ The importance of institutions for improving fiscal policy performance has recently been pointed out by many authors, e.g. von Hagen and Harden (1994), Wyplosz (2002), Eichengreen (1993), Jonung and Larch (2004) and Buti and Pench (2004).

¹¹ Oksanen (2004) provides useful indication on how implicit liabilities could be included into national accounts.

4.3. The Stability and Growth Pact

The intended role of the Stability and Growth Pact is to ensure fiscal policy sustainability. The irony is that, at unchanged policies, fiscal policies in most European Union member countries are not sustainable, as Figure 1 illustrates. Of course, the demographic transition is systematically mentioned when national budgets are being evaluated, but the problem is not formally recognized in a way that would encourage immediate attention. There are two reasons for this state of affairs. First, so far at least, the pact has focused on annual budget deficits. Second, the much under-rated debt figures only include explicit liabilities.¹² As an international institution designed to bring about fiscal sustainability, in the coming years the key objective of the pact ought to be to provide national governments with the incentive to face up to the demographic transition challenge.

Budget balances vs. public debts

Many analysts have suggested that the pact should emphasize public debts and pay little or no attention to annual budget balances (e.g. Wyplosz, 2002). This conclusion, rooted in the definition of fiscal discipline, assumes that public debts are adequately measured. Since this is not the case, by a far cry, this conclusion may need being revisited. Under the assumption that some governments will not be able or willing to deal with the demographic transition in due time, starting around 2010 they will observe a gradual deterioration of their budget balances, feeding slowly into a rising debt to GDP ratio. In such a situation, continuing attention to annual budget deficits will have the advantage of encouraging governments to face up the demographic transition as soon as it starts taking effect. Of course, redefining debts to include known – if imprecisely estimated – implicit liability is the better solution but, if it proves impossible to do, a second-best approach is to retain the budget deficit as a key indicator of the Stability and Growth Pact.

¹² The September 2004 Communication of the European Commission includes some important proposals that are likely to improve the Stability and Growth Pact, but it largely leaves out the implicit liabilities.

Public pension funds

One approach to implicit liabilities is to establish bond-financed funds, as argued in Section 4.1. Such a step would leave the net public debt unchanged but it would increase the gross public debt. This would run seriously against the rules of the Stability and Growth Pact, especially if, as advocated by the recent Commission Communication, public debts become the key target of the pact. It is essential that the pact does not run against the setting up of bond-financed public pension funds.

More generally, under the most optimistic assumptions, public debts are likely to follow a path similar to what Figure 2 describes. This is simply the nearly unavoidable implication of the demographic transition, quite possibly the optimal response. The Stability and Growth Pact must recognize this fact of life. It is not easy to distinguish between “good” and “bad” public debt buildups, where the earlier merely copes with the demographic transition and the latter is the consequence of classic fiscal indiscipline. The tell-tale signal of “good” debts is that they finance pension systems to support the poor. Thus not only should the pact allow for gross debt increases where the proceeds are entirely used to finance public retirement funds, it should actually encourage them. The issue would be moot were the pact to monitor net public debts. Here again, we face the question of imprecise measurement of public assets, and here again the natural tendency is to ignore the problem and produce accurate irrelevant data rather than possibly inaccurate but relevant budgetary figures.¹³ Fortunately, it is easy to explicitly specify in the Stability and Growth Pact that bond-funded pension funds will not be counted as an increase in the public debt concept being monitored.

Macroeconomic effects

The main conclusion of Section 3.2 is that the optimal response to the demographic transition and to other contingent liabilities involves first and foremost an increase in household saving. This additional saving will eventually result into faster capital accumulation, therefore being approximately neutral as far as macroeconomic

¹³ For a defense of this strategy, see e.g. Balassone et al. (2004)

equilibrium is concerned. Yet, it is easy to envisage a lagged investment response. As the saving rate will rise, consumption will decline exerting a temporary contractionary impact and discouraging corporate investment. The return to macroeconomic equilibrium should involve lower real interest rates, but two pitfalls must be avoided.

First, capital may flow out. Here again, the likely market response is a real exchange rate depreciation, which should enhance firms profitability and trigger the capital accumulation process. It is important that the ECB not stand in the way of these market responses. Lower real interest rates and a real depreciation can easily be mistaken with an excessively accommodative stance. In this case, any indication that the saving rate is durably rising should serve as a warning not to attempt to prevent a decline in real interest rates and to accept the real depreciation.

Second, the transition process may involve a few years of slow growth. Both theory and experience indicate that this is likely to result in deteriorating budget balances and increases in public debts. These effects should be anticipated and fully accounted for in the implementation of the Stability and Growth Pact. Not only should the automatic stabilizers be allowed to fully play their role but some scope should be allowed for the discretionary use of fiscal policy.¹⁴ Here again, this calls for a recognition within the pact procedures that unusual circumstances apply.

4.4. Immigration

Immigration is the obvious antidote to ageing. Immigrants tend to be young and reasonably healthy, and they also tend to have more children. Simulations by Fehr et al. (2003) show that a significant increase in immigration may reduce the impact of the demographic transition. It raises a host of political issues that make it an unlikely item for dispassionate public debates. Little has been said and done on these sensitive issues.¹⁵

¹⁴ The discretionary use of fiscal policy has been questioned on both theoretical and empirical grounds (see, e.g. Buti and van den Noord, 2004). Fine tuning is certainly self-defeating but a case may be made for the occasional use of fiscal policy in the presence of well identified demand weaknesses.

¹⁵ The issue is active in the US (Borjas, 1998) but rarely brought up in Europe (Bean et al., 1998)

Beyond recalling that this may be part of the solution, this section examines one aspect of particular importance to avoid immigration being a source of added difficulties.

While much effort is expended to limit inflows, immigration is likely to continue at a brisk pace. The risk is that Europe turns into a “welfare magnet”, attracting immigrants who intend mostly to receive payments (unemployment benefits, health and retirement). Currently, all officially admitted immigrants are eligible to the same welfare benefits as the other citizens. Public opinion is unlikely to tolerate treating immigrants as second rate residents. This attitude derives from fundamental values regarding human rights. Yet, behind the screen lie two less admirable aspects.

Many immigrants enter Europe illegally. They are then caught in a legal no man’s land, with absolutely no protection, at the mercy of inscrupulous employers and of course with no welfare benefits. One reason for turning a blind eye on their plight is precisely to avoid creating a welfare magnet. It is meant to serve as a deterrent against illegal immigration, even though there is no indication that would-be immigrants are deterred. The other reason is that the principle of equal treatment implies that recognizing the illegal immigrants would either turn Europe into a welfare magnet or require a generalized reconsideration of existing welfare systems. Both options are considered politically impossible.

A very different approach, which is followed in immigration countries such as the US and Canada, would be to attract immigrants that fit the economy’s needs. Given the size of the costs associated with the demographic transition, this would mean attracting young workers. Given current high unemployment rates in many countries, this would mean conditioning eligibility to welfare benefits to holding jobs.

5. Conclusion

The demographic transition is a reasonably well understood source of massive implicit liabilities, chiefly through the costs of servicing pensions to an expending set of retirees.

Pay-as-you-go systems are de facto bankrupt unless contributions are expected to rise very significantly or benefits are reduced, equally significantly, or both. Fully funded systems are not immune either: defined benefit systems may fail to generate the guaranteed incomes while defined contribution systems may fail to provide all citizens with adequate resources.

The transition raises obvious issues of intergenerational transfers. Almost independently of the chosen policy response, fully Ricardian households would respond by increasing their savings, the more so the more they care about their descendants. If taxes are raised, they will do so to supplement dwindling after-tax incomes. If pension benefits are reduced, they will save for old age, and possibly for their children's old age as well.

The transition also implies intragenerational transfers since, inevitably, the better-off will be called upon to protect the poor who cannot save adequately. Keeping these transfers undefined, presumably to avoid confronting politically delicate choices, creates a moral hazard: under the reasonable assumption that old-age poverty will not be tolerated, inadequate savings create a *de facto* public liability that will have to be funded by future tax increases. In this way, the intragenerational conflict spills over into the intergenerational conflict.

Ricardian increased savings is the optimal benchmark that policy should attempt to elicit. A key precondition is that households be presented with as precise information as possible about the future evolution of taxes and transfers. Put differently, the governments' best response is to establish as soon as possible the approach that will be applied, no matter how unpleasant it is, so that households can plan their savings accordingly.

Most governments, however, find it expeditious to postpone hard decisions, in effect passing them on to their successors. Indeed, the main parameters of the demographic transition have been clarified some years ago and only a handful of governments have

come close to defining the policy response. While this may be good politics, it is poor economics.

This observation shifts the debate from the design of policies to the adoption of institutions that will raise governments' incentives to confront the problem earlier rather than later. A solution is to establish highly visible and non-political wisemen committees that will inform the public and their elected representatives of the policy options and warn them of the costs of pursuing delaying tactics.

The Stability and Growth Pact also needs to be amended to improve incentives. Focusing on public debts is the proper way to combat fiscal indiscipline, but currently measured debts are gross and do not include the implicit liabilities. The first best solution is to compute net debts inclusive of implicit liabilities, no matter how imprecise these calculations can be. Failing that option, the second best solution is to retain the budget balance as a key indicator since this were the absence of policy decision will first surface by the end of the decade.

The policy mix must also acknowledge the desirability of raising the saving rate. Monetary policy should not be tightened when, as the result of increased saving, real interest rates decline and the real exchange rate depreciates. Fiscal policy must be mobilized when consumption declines while private investment lags.

References

- Balassone, Fabrizio, Daniele Franco and Stefania Zotteri (2004) “EMU Fiscal Indicators: A Misleading Compass?”, unpublished, European Commission.
- Bean, Charles, Samuel Bentolila, Giuseppe Bertola and Juan Dolado (1998) *Social Europe: One for All?*, London: CEPR.
- Borjas, George J. (1998) “Immigration and Welfare Magnets”, NBER Working Paper No. 6813.
- Axel Borsch-Supan, Alexander Ludwig and Joachim Winter (2003) “Aging, Pension Reform and Capital Flows: A Multi-Country Simulation Model”, Discussion paper 28-03, Mannheim Research Institute for the Economics of Ageing.
- Buti, Marco and Paul van den Noord (2004) “Fiscal Policy in EMU: Rules, Discretions and Political Incentives”, Economic Paper No. 206, European Commission,
- Buti, Marco and Lucio R. Pench (2004) “Why Do Large Countries Flout the Stability Pact? And What Can Be Done About It?”, unpublished, European Commission.
- Erik Canton, Casper van Ewijk and Paul Tang (2003) “Population Ageing and International Capital Flows”, ENEPRI Occasional Paper no 4, Brussels: European Network of Economic Policy Research Institutes.
- Economic Policy Committee (2001) “Budgetary Challenges Posed by Ageing Populations: The Impact on Public Spending on Pensions, Health and Long-Term Care for the Elderly and Possible Indicators of the Long-Term Sustainability of Public Finances”, EPC/ECFIN/655/01-EN final, European Commission.
- Eichengreen, Barry (2003), “Institutions for Fiscal Stability”, unpublished, University of California at Berkeley.
- European Commission (2004) “Strengthening Economic Governance and Clarifying the Implementation of the Stability and Growth Pact”, Communication from the Commission to the Council and the European Parliament, COM(2004) 581 final
- Fehr, Hans, Sabine Jokisch and Laurence Kotlikoff (2003) “The Developed World’s Demographic Transition – The Roles of Capital Flows, Immigration and Policy”, unpublished paper.
- Fenge, R. and M. Werding (2003), “Ageing and the Tax Oplied in Unfunded Pensions: Simulations for Selected OECD Countries”, CESifo Working Paper No. 841.
- Fenge, Robert and Martin Werding (2003) “Ageing and Fiscal Imbalances Across Generations: Concepts of Measurement”, Cesifo Working Paper No. 842.

- Gokhale, Jagadeesh and Bernd Raffelhüschen (2000) "Population Aging and Fiscal Policy in Europe and the United States" Cesifo Working Paper No. 237
- Jonung, Lars and Martin Larch (2004) "Improving Fiscal Policy in the EU: The Case for Independent Forecasts", Economic Paper No. 210, European Commission.
- Kotlikoff, Laurence (2003) *Generational Policy*, Cambridge, MA: The MIT Press.
- Oksanen, Heikki (2004) "Public Pensions in the National Accounts and Public Finance Targets", Economic Paper No. 207, European Commission.
- Turner, Dave, Claude Giorno, Alain De Serres, Ann Vourc'h and Pete Richardson (1998) "The Macroeconomic Implications of Ageing in a Global Context", Economics Department Working Paper No. 193, OECD.
- Visco, Ignazio (2001) "Ageing Populations: Economic Issues and Policy Challenges", paper presented at the Kiel Week Conference, 18-19 June.
- Von Hagen, Jürgen and Ian Harden (1994), "National Budget Processes and Fiscal Performance", *European Economy, Reports and Studies* 3: 311-418.
- Weil, Philippe (1993) "Precautionary Saving and the Permanent Income Hypothesis" *Review of Economic Studies* 60(2): 367-83.
- Wyplosz, Charles (2002) "Fiscal Discipline in EMU: Rules or Institutions?", Discussion Paper No. 3238, London: CEPR.