

Session 4

REFORMING PUBLIC EXPENDITURE PROGRAMMES

THE REFORM OF PUBLIC EXPENDITURE MANAGEMENT SYSTEMS IN OECD COUNTRIES

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1. Introduction

There are three major determinants of the fiscal outcomes of OECD member countries. The first is of course the general performance of the economy. There is no factor more responsible for the fiscal outcome than this. The second is the political commitment to fiscal discipline. The third major reason – and the focus of this paper – is the institutional arrangements for budgeting.

There are many examples of countries that have had a combination of economic growth and a political commitment to fiscal discipline but have not experienced successful fiscal outcomes.

The member countries which are currently experiencing the best fiscal outcomes are generally the same countries that have been the most active in reforming and modernizing their budget processes. The countries that started the earliest were the first to experience these successful fiscal outcomes, the ones that did the most comprehensive reforms are the ones that have had the most sustainable track record in this respect.

This paper identifies seven key institutional features that we believe play a key role in effectively controlling public expenditures:

- medium-term expenditure frameworks
- prudent economic assumptions
- top-down budgeting techniques
- budget transparency
- relaxing central input controls
- focus on results
- modern financial management practices.

The remainder of this paper is devoted to a discussion of them. Although they are identified as seven separate features, they do in fact build on each other and must be seen as a package. Each of these features is discussed below in detail.

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2. Medium-term expenditure frameworks

Medium-term budget frameworks form the basis for achieving fiscal consolidation. They need to clearly state the government's medium-term fiscal objectives in terms of high-level targets such as the level of aggregate revenue, expenditure, deficit/surplus and debt. They then need to operationalize these high-level targets by establishing hard budget constraints for individual ministries and programmes over a number of years. This lends stability and credibility to the government's fiscal objectives.

By their very nature, high-level fiscal targets are set in a medium-term context. They aim to achieve a certain fiscal outcome over a number of years. Budgets are however enacted for a time period of one year, and are notorious for their short-term focus. This short-term time horizon is often criticised for impeding effective expenditure management; decision on resource allocation are said to be made on an *ad hoc* or piecemeal basis with the implications of past and present decisions beyond the next year being neglected. This is not a new criticism. Medium-term budget frameworks aim to bridge this gap. Their successful implementation has been nothing short of a "cultural revolution" in governments.

Although the level of detail of such frameworks varies from country to country, they generally mirror the format of the budget, *i.e.* the medium-term frameworks are at the same level of detail as the annual budget. This means that a formal framework (or hard budget constraint) exists for each and every appropriation, most often for three years beyond the current fiscal year. These are rolling frameworks that are presented with the budget each year; year $t+1$ in the previous year's framework becomes the basis for the budget in $t+1$ and a new year $t+3$ is added. This has greatly increased the effectiveness of planning and eased the annual budget process. These frameworks are not, however, enacted into legislation; they are planning documents that reflect the political commitment to fiscal discipline.

It should also be emphasized that these are living document. The fact that a three-year budget framework is in place does not mean that no changes can be made to the document. In fact, shifting appropriations within ministries is key to successful fiscal discipline as is described in a later section of this paper. It is, however, imperative that all such changes be clearly depicted and explained, *i.e.* whether the changes are the results of changed economic circumstances or new policy decisions. Countries should publish detailed reconciliations between year $t+1$ in the previous year's framework and the current budget proposal.

The frameworks also serve to deter expenditures by illuminating the budget implications of decisions in next year's budget whose expenditure may not be fully reflected in the budget. This can refer to:

- 1) the operating costs of various capital projects being launched,
- 2) programs that come into effect late in the budget year thus not exposing their full costs in the initial year,

- 3) programs whose spending implications may not be fully reflected under the circumstance prevailing during the budget year but will become more actual in out-years.

These are all classic examples of budgeting games in member countries, which the medium-term frameworks aim to end.

From the point of view of agency managers, medium-term frameworks enable them to be in a better position to plan their operations as they have some indicative level of funding beyond the next budget. This is especially relevant when resources are being reduced. Many downsizing options involve more than one year in order to reap the full benefits. Prior to the advent of medium-term frameworks, such options were often not considered as the time horizon only extended to the next budget year.

2.1 Problems with medium-terms expenditure frameworks

Medium-term expenditure frameworks themselves are, however, not without their own problems. It is worth noting these. The United Kingdom was a pioneer in the area of multi-year budget forecasts in the Sixties and Seventies and encountered significant problems. These problems can be divided into three groups. Most of these problems have been experienced by other member countries as well.

- First, there was a tendency to overestimate the growth potential of the economy when making the multi-year forecasts. This made excessive resources available in the forecast period and created an upward pressure on public expenditure.
- Second, ministries and departments viewed their resource allocations in the forecast period as an entitlement. This made subsequent downward revisions in expenditures difficult, even when it became clear that the basis on which the allocations were made was not correct.
- Third, the multi-year budget forecasts were made in real terms rather than in nominal terms. In the Seventies, when economic growth subsided and inflation accelerated rapidly, the expenditure forecasts were adjusted automatically for increases in prices while revenues suffered. This created further pressure on public finances.

The above experience caused many to view medium-term expenditure frameworks with some suspicion. It must, however, be observed that the early medium-term frameworks took place in an environment of rapid expenditure growth, not expenditure retrenchment as is the case today. Regardless, action has been taken to rectify the specific problems identified above. First, member countries are systematically making use of more “prudent” economic assumptions in order to avoid having excessive resources made available. (This is discussed in the next section of this paper.) This has tended to eliminate the second problem identified above. Third, medium-term budget frameworks are now invariably made in nominal terms, not real terms.

Finally, it must be noted that there are examples of countries where the implementation of medium-term expenditure frameworks has been so poor as to essentially undermine them. This is the case when the budget and the medium-term expenditure frameworks are on “separate tracks”. In-year changes to the budget are not reflected in the frameworks, either in the current year or out-years and the annual budget process starts without reference to the medium-term frameworks. In essence, a new medium-term framework is created each year. For them to operate effectively, the annual budget must be driven from the medium-term expenditure frameworks, and not vice versa.

3. Economic assumptions

Deviations from the forecast of the key economic assumption underlying the budget are the government’s key fiscal risk. There is no single factor more responsible for “derailing” fiscal consolidation programmes than the use of incorrect economic assumptions. Great care must be taken in making them and all key economic assumptions should be disclosed explicitly. Sensitivity analysis should be made of what impact changes in the key economic assumptions would have on the budget. Furthermore, a comparison should be made between the economic assumptions used in the budget and what private sector forecasters are applying for the same time period where practicable. The establishment of an independent body to recommend the economic assumptions to be used in the budget may be considered as well. All this serves to place safeguards against the use of unrealistic, or “optimistic”, economic assumptions.

Two member countries, Canada and the Netherlands, have had especially harrowing experiences with the use of economic assumptions and have established safeguard features that are leading-edge practices among member countries.

In Canada, the government started using systematically-biased “prudent” economic assumptions and incorporating a contingency reserve. The previous perception of “optimistic” economic assumptions being used in the budget had significantly downgraded the believability of government-generated economic forecasts. Rather than relying on internally generated economic forecasts to be used in the budget, the government started employing the average of forecasts made by private sector economic forecasters – and then adjusting them downwards. This was done in order to achieve credibility, both in the eyes of the public and in the eyes of financial markets.

The Canadian Department of Finance systematically revises the private sector forecasts downwards as a further measure of prudence. This takes the form of the government adding 50-100 basis points (0.5-1.0 percentage points) to the average private sector economic forecasts for interest rates and then feeding this through its entire econometric model, thus producing lower forecast economic activity. This provides a buffer in order to maintain the government’s fiscal objectives. As a further buffer, the government established a significant contingency reserve fund –

2.5 billion-3.0 billion Canadian dollars each year. This fund can only be used to compensate for forecasting errors and unpredictable events. It cannot be used for any new policy initiatives. Recourse has never had to be made to the contingency reserve funds and they have been applied to deficit reduction (surplus) in their entirety in each year.

In the Netherlands, the government shifted its focus from controlling the level of deficits to controlling the level of expenditures. These expenditure caps were based on cautious economic assumptions for the economy. This was viewed as an “insurance policy” for shifting the focus from the deficit to expenditures, *i.e.* the risk of the budget outturn being worse than expected is mitigated. Any “surprises” are likely to be positive. The economic assumptions are made by the independent Central Planning Bureau (CPB). The CPB will present two economic scenarios to the government. The first one is what it considers to be the most likely level of economic growth. The second one is what it considers to be a cautious level of economic growth that should be used for budget policy purposes. The government then applies the cautious scenario. In political terms, the government would rather be faced with “good surprises” rather than with “bad surprises”.

Both these cases were the direct results of acknowledged use of poor economic assumptions in the past. The sustainability of using such special prudence factors can be called into question as time passes and they become internalised in the budget process. This is already happening in Canada.

4. Top-down budgeting techniques

Budgeting has traditionally operated on a bottom-up principle. This means that all ministries send requests for funding to the finance ministry. These requests greatly exceed what they realistically believe they will get. Budgeting then consists of the finance ministry negotiating with these ministries and agencies until some common point is found. This bottom-up system has several disadvantages to it. First, it is very time consuming and it is essentially a game; all participants know that the initial requests are not realistic. Second, this process has an inherent bias for increasing expenditures; all new programs, or expansion of existing programs, are financed by new requests; there was no system for reallocation within spending ministries and there were no preset spending limits. Third, it was difficult to reflect political priorities in this system as it was a bottom-up exercise with the budget “emerging” at the end of this process. This manner of budgeting is now being abandoned and replaced with a new top-down approach to budget formulation. This has been of great assistance in achieving fiscal consolidation.

The starting point for the new system is for the government to make a binding political decision as to the total level of expenditures and to divide them among individual spending ministries. This decision is made possible by the medium-term expenditure frameworks which contain baseline expenditure information, *i.e.* what the budget would look like if no new policy decisions were made. The political

decision is whether to increase expenditures for a high-priority area, for example education, and to reduce expenditures, for example transport programs. Only the largest and most significant programs reach this level of political reallocation. The key point is that each ministry has a preset limit on how much it can spend.

Practices vary on the specificity of these preset limits. In some countries, there is one aggregate limit per ministry encompassing all expenditures. In other countries, there may be sub-limits on operating expenditure (sometimes divided into salaries and other operating expenditures), transfers and capital expenditures. This is to prevent transfers and capital expenditures from being shifted into operating expenditure, especially salaries.

Once this decision on spending limits is taken, the finance ministry largely withdraws from the details of budgetary allocations for each ministry. The finance ministry concerns itself only with the level of aggregate expenditure for each ministry; not the internal allocations. "Each minister is his own finance minister", is the saying in some countries. Each ministry has a total amount and it can freely reallocate that money among its various agencies and programs. This has several advantages to it. It serves to hamper creeping increases in expenditures as new policies are funded by reallocations from other areas within the ministry. It creates ownership in the respective ministries for the actions that are taken. Decisions are also better informed as spending ministries are in the best position to judge the relative merits of their programs. The role of the Ministry of Finance is to verify that the offsetting cuts to finance new programs are real.

This is a remarkably simple budgeting system once it is in place. It does however involve considerable time to establish because the entrenched traditions of both spending ministries and finance ministries work against it. The finance ministry may be very suspicious of the real motives of spending ministries and have a tendency to exert their influence on the detailed allocations within spending ministries. This serves to undermine the basic premise of the system. Spending ministries on the other hand fear that any cuts in programs they make will be accepted by the finance ministry, but not the corresponding reallocations for new initiatives. This leads to spending ministries proposing unrealistic cuts in programmes that they know will not be accepted by parliament (or the finance ministry), and then the whole old-style bargaining starts again. Trust needs to be built between the two and this has varied greatly in different countries whether that is possible and how much time it takes. The end results however clearly indicate that it is well worth the effort.

5. Relaxing central input controls

Relaxing central input controls is another feature of successful fiscal consolidation strategies in member countries. This is based on the simple premise that the heads of individual agencies are in the best position to choose the most efficient mix of inputs to carry out the agency's activities. The end result is that an

agency can produce the same services at less cost, or more services at the same cost. This greatly facilitates fiscal consolidation strategies by mitigating their effects on services.

Relaxing central input controls operates at three levels. First, the consolidation of various budget lines into a single appropriation for all operating costs (salaries, travel, supplies, etc.). Second, the decentralization of the personnel management function. Third, the decentralization of other common service provisions, notably accommodations (buildings). This can be seen as the public sector's version of "deregulation".

The consolidation of budget appropriation lines is rather straightforward and simple. It is now common for agencies to receive one single appropriation for all of their operating expenditures. (It should be clear that this does not apply to transfers or capital appropriations, only to operating expenditures). This single appropriation is, however, not enough to generate managerial flexibility as various central management rules inhibit this flexibility.

It is in the area of human resource management where most of the central management rules exist. The cost of staff is generally the largest component of operating expenditures, and it makes little difference to consolidation budget lines if central rules in this area prevent any flexibility. All countries are increasing flexibility in this area, although to significantly varying degrees. The country that has gone the furthest in this area is Sweden.

Personnel management in Sweden has historically been decentralized with the outstanding exception of collective bargaining arrangements. Directors-general of agencies are, and have been, responsible for the recruitment, grading and dismissal of their staff. There are no restrictions on whom they may hire. There is no "civil service" encompassing the government as a whole. Vacancies are generally advertised in the press with all qualified applicants being treated equally. Staff are not tenured in Sweden. They can typically be dismissed at two- to twelve-month notice depending on how long they have been employed by the agency. In fact, there are essentially no differences between the labor legislation governing the public sector and the private sector in Sweden.

In 1994, collective bargaining was totally devolved to the agencies and is now the responsibility of the director-general of each agency. The cost of personnel is now one of the many items of expenditure that directors-general must manage within the limit of their single operating appropriation. There is no longer any automatic adjustment to their budgets to compensate for pay agreements that are concluded. The Ministry of Finance and Parliament no longer have any direct influence on the contents of the collective agreements establishing the salaries and other conditions of employment for government staff. The agreements are negotiated entirely by the agencies.

The experience with this new framework is predominantly positive. The agencies have welcomed their increased responsibility for wage formation, and employer policies in general. The pay agreements that have been reached have been

within the cash limits of agency appropriations. This is attributed primarily to the “immense” peer pressure that directors-general exert on each other for responsible settlements. There are, however, significant variations between agencies and it is estimated that over 90 per cent of government employees in Sweden now receive individualized salaries, *i.e.* based on their personal performance. Public sector unions have been constructive partners in this area.

Accommodations (buildings) is another area where common service provisions are being relaxed or abolished. In New Zealand, for example, agencies now have the freedom to choose their accommodation. They can simply give notice and get their accommodations supplied by the private sector. The freedom to choose accommodations, however, cannot be enjoyed equally by all agencies. Some agencies occupy very special accommodations, prisons and museums being outstanding examples. This can also create a conflict of interest between the agencies viewed in isolation (as they move to private sector accommodations) and the government as a whole (which may be left with surplus accommodations). This is especially the case when there is a downturn in the private sector property market. These problems should, however, not be overestimated and are in any case temporary transition costs on the way to a more efficient system in the long term.

Relaxing central input controls have as the goal to empower directors-general to operate their agencies in the most efficient manner possible. No longer can they claim that their poor performance is due to the fact that a budget, which was too detailed, or a set of central management rules, which were overly prescriptive, impeded them in the running of their agencies. Now, they have the power and they must deliver. The experience overwhelmingly shows that they have done so; agencies have become more efficient thus making fiscal consolidation efforts “less painful” from the point of view of customers of government services.

It is worth noting that detailed budgets and central management rules originally came into place to prevent corruption in government. The countries that have gone the furthest in reducing them are the smaller members countries where this is less of a potential problem than perhaps in other member countries. In other words, this reform may not work in all environments.

6. An increased focus on results

An increased focus on results is a direct *quid pro quo* for relaxing input controls as described above. Accountability in the public sector has traditionally been based on compliance with rules and procedures. It didn't matter what you did as long as you observed the rules. Now, when the public sector is deregulated, a new results-based system is needed to hold managers accountable. This is a fundamental change: holding managers accountable for *what* they do, not *how* they do it. Effectively implementing this is, however, very difficult in practice. The difficulties can be divided into several groups of issues.

At the most basic level, some government activities simply lend themselves to results measurement much more readily than others. For example, an agency that produces a single or a few homogenous products or services can be rather easily measured. An agency that issues passports is a good example. On the other hand, agencies that produce heterogeneous and individualized services can be very difficult to measure. The majority of government services fall into the latter category. Various social services are the outstanding example.

We are also faced with the choice of defining results either in terms of outputs or outcomes. Outputs are the goods and services that government agencies produce. Outcomes are the impact on, or the consequences for, the community of the outputs that are produced. An example highlights this. A government may wish to reduce the number of fatalities on highways caused by drunk drivers. This would be the outcome. In order to achieve this, it may launch a series of advertisements in the media highlighting the dangers of drink driving. It's easy to measure the output, *i.e.* that the prescribed number of advertisements were in fact shown in the media. Let's, however, assume that at the same time the number of fatalities went up, not down. The link between the advertisements and this outcome is very unclear, since many other factors than the advertisements would impact on the outcome. But what lessons do we draw from this. Do we abandon the advertisement campaign? Do we expand it? Do we try other outputs? Do we wait to see if this is a one-off or a sustained trend?

From an accountability point of view, the question arises whether you hold managers responsible for outputs or outcomes. Outputs are easier to work with in this context; but outcomes are what matters in the final analysis. Do we want an accountability regime based on outputs even though the outputs may not be contributing to the desired outcome? Or do we have an accountability regime based on outcomes, even though a number of factors outside the control of the director-general of the agency may have contributed to it? Of course, a combination of the two is the optimum choice, but experience in member countries shows that one will always dominate.

It is a well known phenomenon in management that "what gets measured, gets managed". As noted above, some activities lend themselves to measurement more readily than others. This also applies within agencies in that certain of their activities are more easily measured than others. If the agency's measurement systems are biased in favor of those activities that are more easily measured, there's every likelihood that management will focus its attention disproportionately on those activities since their accountability is based on that. This may lead to all sorts of unforeseen and undesired consequences. This creates a huge onus on those designing the agency's measurement system to ensure that it captures all aspects of their activities.

Somewhat contradictory to the above point is the problem of information overload. Agencies produce so much information that it's very difficult for outsiders to judge which are the more important pieces of information. The lesson here is for agencies to differentiate between the measurements they do for internal purposes

and those they perform for external purposes. A weighed index of various internal measures may be the optimum solution for an external audience.

The reliability and consistency of the performance information is also of primary importance. In some member countries, the performance information is audited together with the financial information by the Supreme Audit Institution. Time series of performance measurements are often the most revealing pieces of information. It is therefore important to maintain consistency over time, or to restate prior information if a change in the objects of measurement are deemed necessary. Such changes should however be few and far between. It is increasingly recognized as a *prima facie* evidence of there being something wrong with the operations of an agency if such changes are frequently made.

Building on the last point is the issue of whether explicit targets should be set at the beginning of the year, or whether the evolution of time-series data should be used to judge the performance of an agency. There are two schools of thought on this subject. The first says that any target will either be set so low that it's guaranteed to be fulfilled or so high that it can never be attained. The second school believes that target setting is a very important tool to ensure that agencies focus on those aspects of their operations that are deemed high priority from a political point of view. The jury is still out on this.

Notwithstanding these challenges, an increased focus on results is a most definite trend in all member countries. Reducing input controls plays a key role in increasing the efficiency of the public sector, and replacing them with an increased focus on results is the new and necessary basis of accountability. Robust results information is often of great value in improving results allocation as well.

Finally, there are many sceptics concerning this development, as a focus on results is not a new attempt for governments. This has been attempted since at least the Fifties with very mixed results. What gives more hope to it being successful this time is that it is a requisite for eliminating input controls, it replaces them rather than being a new layer of controls as was the case with previous attempts.

The buy-in from politicians is however a continual challenge. Their level of interest in results information is surprisingly little, although there are of course notable exceptions.

7. Budget transparency

Increased transparency in budgeting made significant advances in the late Eighties and early Nineties. This was a period associated with unfavorable budget conditions in most member countries; high annual deficits and increasing levels of outstanding debt. Governments needed to institute large fiscal consolidation programs. These were often painful and getting the public's understanding of the problems was necessary. The most effective manner for achieving that was simply to throw open the books and say to the public: "Look, things are really as bad as we

told you, we're not hiding anything". This may sound a bit sinister at first, but in actuality it is government at its best: Being honest with citizens, explaining the problem to them in order for an understanding to emerge as to the best course of action to take.

This time period also coincided with increased attention being paid to good governance in general. The budget is the principal policy document of government, where the government's policy objectives are reconciled and implemented in concrete terms. Budget transparency – openness about policy intentions, formulation and implementation – is therefore at the core of good governance agenda.

If we take a look at fiscal transparency in concrete terms, we can say that it has three essential elements:

- the first is the release of budget data. The systematic and timely release of all relevant fiscal information is what we typically associate with budget transparency. It is an absolute prerequisite, but it is not enough;
- the second element is an effective role for the legislature. It must be able to scrutinize the budget reports and independently review them. It must be able to debate and influence budget policy and be in a position to effectively hold the government to account. This is both in terms of the constitutional role of the legislature and the level of resources that the legislature has at its disposal;
- the third element is an effective role for civil society, through the media and non-governmental organizations. Citizens, directly or through these vehicles, must be in a position to influence budget policy and must be in a position to hold the government to account.

These three elements work together. The scrutiny of fiscal information by the legislature and by civil society can only take place if the information is released in the first place. Similarly, released budget information is only of value if it is effectively scrutinized by the legislature and by civil society. The legislature and civil society have a very similar function, one is responsible for shaping budget policy and for holding government directly to account while the other performs this role indirectly.

Although conventional wisdom is that a strong role for parliament equates an undermining of fiscal discipline, the experience in member countries simply does not show that to be the case. The OECD strongly believes that an effective role for the legislature is a key ingredient in establishing and maintaining fiscal discipline. It provides the necessary link with civil society and fosters accountability by the executive.

The OECD has recently elaborated a set of Best Practices for Budget Transparency. They are in three parts. Part 1 lists the principal budget reports that governments should produce and their general content. Part 2 describes specific disclosure to be contained in the reports. This includes both financial and non-financial performance information. Part 3 highlights practices for ensuring the quality, integrity and usefulness of the reports. The Best Practices are attached to

this paper in their entirety in the Appendix. The following box lists the major headings of the Best Practices.

The OECD Best Practices for Budget Transparency

1. Fiscal Reports

- 1.1 The Budget
- 1.2 Pre-budget Report
- 1.3 Monthly Report
- 1.4 Mid-year Report
- 1.5 Year-end Report
- 1.6 Pre-election Report
- 1.7 Long-term Report

2. Specific Disclosures

- 2.1 Economic Assumptions
- 2.2 Tax Expenditures
- 2.3 Financial Liabilities and Financial Assets
- 2.4 Non-financial Assets
- 2.5 Employee Pension Obligations
- 2.6 Contingent Liabilities

3. Integrity

- 3.1 Accounting Policies
- 3.2 Systems and Responsibility
- 3.3 Audit
- 3.4 Public and Parliamentary Scrutiny

A final example of the advancement of budget transparency – and its concomitant helpfulness in maintaining fiscal responsibility – comes from Finland. In Finland it was recently ruled that the country's Freedom of Information Act mandated that the original funding requests from spending ministries to the Ministry of Finance be published at the same time as the government's budget proposal is presented to Parliament. This had the impact that original funding requests from ministries became more reasonable. The reason was simple. As their more extreme requests would be rejected in any case, spending ministers did not want them

published since this would reveal them to be either fiscally irresponsible or politically impotent in following through on their initial requests. As a result, the original requests became more reasonable.

8. Modern financial management practices

The modernization of financial management within governments has made great advances in the recent past. The sheer scale of government means that such improvements had a material effect on fiscal outcomes. These include the introduction of accruals, capital charges, carry-overs of unused appropriations, and interest-bearing accounts. Each of these is discussed below.

8.1 Accruals

Cash and accruals represent two end points on a spectrum of possible accounting and budgeting bases. The cash end of the spectrum has traditionally been applied by member countries for their public sector activities. In recent years there has been a major trend towards accruals end of the spectrum in member countries. About half of member countries have now adopted accruals to one degree or another. This is a very rapid migration; it was only in the early Nineties that the world's first accrual basis financial statements and budget were produced by a government (New Zealand).

The objective of moving to accruals is to make the true cost of government more transparent. For example, accruals attributes the pension costs of government employees to the time period when they are employed and accumulating their pension rights rather than having this as an unrelated (and uncontrollable) expenditure once they have retired. Instead of spikes in expenditures when individual capital projects are undertaken, accruals incorporates them into the annual operating expenditures through an allowance for depreciation. Treating loans and guarantee programs on an accrual basis fosters more attention to the risks of default by those who have been granted them, especially if there is a requirement for such default risks to be prefunded. In a cash system, outstanding government debts can be designed in such a way that all interest expenditure is paid in a lump sum at the end of the loan rather than being spread through the years when the loan was outstanding as would be the case under accruals. All of these examples show how a focus on cash only, can distort the true cost of government.

A further objective for adopting accruals is to improve decision-making in government by using this enhanced information. This needs to be seen in a wider context. The countries that have adopted accruals have generally been at the forefront of public management reforms in general. These reforms have been highlighted in this paper. A key aim is to hold managers responsible for outcomes and/or outputs while reducing controls on inputs. In this context, it is expected that managers should be responsible for all costs associated with the outcomes and/or

outputs produced, not just the immediate cash outlays. Only accruals allows for the capture of these full costs, thereby supporting effective and efficient decision-making by managers. In short, when managers are given flexibility to manage their own resources (inputs), they need to have the necessary information to do this. The adoption of accruals is therefore an inherent part of these wider reforms.

There are a number of issues with accruals which are beyond the scope of this paper. This includes to what extent to adopt accruals, (for financial reporting only, or for budgeting as well; or for certain categories of transactions only). How to treat certain types of asset and liabilities that simply do not exist in the private sector (heritage assets, military assets, infrastructure assets and the treatment of social insurance programs). What valuation methods to be used (historical cost or current cost). Who should be responsible for setting accounting standards as a great number of judgements and assumptions need to be made in accrual environment.

It should, however, be noted that a significant number of countries have very serious reservations about the use of accruals. These concerns are on a number of levels. First, the introduction of accruals could undermine fiscal discipline. For example, governments could decide on expensive capital projects whose cost would appear in the budget over a number of years (as depreciation), rather than appearing fully at the same time as the political decision to go ahead with the project was made. Second, accruals depends on complicated technical assumptions that can be easily manipulated. Cash can be manipulated, but only in terms of timing at the margins. Third, accruals is poorly understood by politicians. From a democratic point of view, if politicians do not understand the numbers in the budget, which is the government's premier policy document, then accruals simply should not be in place.

8.2 *Capital charges*

Capital has tended to be viewed as a free good in the public sector. Once an asset was in place, there was no mechanism to track and charge for the cost of capital tied up in the asset. A number of member countries have been making headway in this regard.

Capital charging regimes generally operate as follows. The government decide to levy a charge on the cost of capital tied up in all assets in an agency. For example, if an agency has \$10 million in assets, the government will levy a charge (often equivalent to the long-term government bond rate), of 10 per cent. This means that the agency will have to pay the finance ministry \$1 million dollars annually. When the system is first introduced, the appropriations to all agencies will be increased by the amount of their capital charge, so there's no net impact on agencies or for the government as a whole. However, agencies will in future be allowed to dispose of the assets and thus relieving themselves of the capital charge while retaining the original appropriation to cover it (or part thereof). This creates the incentive. Thus, they could decide to sell excess assets or move from high-priced areas to lower-priced areas and use the amount of the capital charge they save for

other purposes. This has had a great impact on asset management in government, a field that was simply neglected previously.

8.3 *Carry-overs*

All countries operate on the principle of an annual budget. Previously, this meant that all appropriations lapsed at the end of the fiscal year thus creating a great and irrational rush to spend moneys before the end of the fiscal year. Not only because they would otherwise lose the money this year, but also because future years appropriations would take account of this underspending as well. You were losing what you did not spend in one year, permanently. This has now changed with operating expenditures generally being freely transferable (sometimes up to a certain limit) from one year to the next. Only in cases, where an agency continuously, year-on-year, builds up carry-overs does the Ministry of Finance intervene. The advent of medium-term expenditure frameworks also gives a benchmark for agencies to see that their appropriations are in fact being carried over.

8.4 *Interest-bearing accounts*

Some countries have also introduced interest-bearing accounts for agencies. This means, for example, that the appropriation of an agency is divided into twelfth (representing each month) and deposited into an agency's account (either within the finance ministry or with a commercial bank.) If an agency spends at less than this rate, they will receive interest on the difference. If they spend at a faster rate, they will pay interest on the difference. The ability of individual agencies to vary their spending patterns does of course vary significantly but they are now much more aware of cash management practices.

All of these practices – accruals, capital charges, carry-overs of unused appropriations, and interest-bearing accounts – serve to improve the information available for agency heads and giving them increased freedom to act on that information. Although a very technical area, the impact on the government's finances has been great due to its sheer size.

9. **Conclusion**

This paper has highlighted seven key institutional features of the budget process that we believe are essential for achieving sustained fiscal consolidation:

- medium-term budget frameworks,
- prudent economic assumptions,
- top-down budgeting techniques,
- budget transparency,
- relaxed input controls,

- focus on results,
- modern financial management practices.

As noted at the outset, economic growth and political commitment play the primary roles, but they are not enough. The institutional framework must be such that it fosters and reinforces fiscal discipline. This is recognized in member countries and all of them are moving in this direction: Different countries are starting from different positions and are moving at different speeds – but the direction is clear. The journey will take longer in countries with very entrenched traditions in the public sector. But the benefits are significant as shown by the success currently enjoyed by the early reformers.

APPENDIX

THE OECD BEST PRACTICES FOR BUDGET TRANSPARENCY

1. Budget reports

1.1 The budget

- The budget is the government's key policy document. It should be comprehensive, encompassing all government revenue and expenditure, so that the necessary trade-offs between different policy options can be assessed.
- The government's draft budget should be submitted to parliament far enough in advance to allow Parliament to review it properly. In no case should this be less than 3 months prior to the start of the fiscal year. The budget should be approved by Parliament prior to the start of the fiscal year.
- The budget, or related documents, should include a detailed commentary on each revenue and expenditure programme.
- Non-financial performance data, including performance targets, should be presented for expenditure programmes where practicable.
- The budget should include a medium-term perspective illustrating how revenue and expenditure will develop during, at least, the two years beyond the next fiscal year. Similarly, the current budget proposal should be reconciled with forecasts contained in earlier fiscal reports for the same period; all significant deviations should be explained.
- Comparative information on actual revenue and expenditure during the past year and an updated forecast for the current year should be provided for each programme. Similar comparative information should be shown for any non-financial performance data.
- If revenue and expenditures are authorised in permanent legislation, the amounts of such revenue and expenditures should nonetheless be shown in the budget for information purposes along with other revenue and expenditure.
- Expenditures should be presented in gross terms. Earmarked revenue and user charges should be clearly accounted for separately. This should be done regardless of whether particular incentive and control systems provide for the retention of some or all of the receipts by the collecting agency.
- Expenditures should be classified by administrative unit (e.g., ministry, agency). Supplementary information classifying expenditure by economic and functional categories should also be presented.
- The economic assumptions underlying the report should be made in accordance with Best Practice 2.1 (below).
- The budget should include a discussion of tax expenditures in accordance with Best Practice 2.2 (below).

- The budget should contain a comprehensive discussion of the government's financial assets and liabilities, non-financial assets, employee pension obligations and contingent liabilities in accordance with Best Practice 2.3-2.6 (below).

The Best Practices define “government” in line with the System of National Accounts (SNA). This definition encompasses the non-commercial activities of government. Specifically, the activities of state-owned enterprises are excluded from this definition. Although the SNA definition focuses on general government, *i.e.* consolidating all levels of government, these Best Practices should be seen to apply to the national government.

1.2 Pre-budget report

- A pre-budget report serves to encourage debate on the budget aggregates and how they interact with the economy. As such, it also serves to create appropriate expectations for the budget itself. It should be released no later than one month prior to the introduction of the budget proposal.
- The report should state explicitly the government's long-term economic and fiscal policy objectives and the government's economic and fiscal policy intentions for the forthcoming budget and, at least, the following two fiscal years. It should highlight the total level of revenue, expenditure, deficit or surplus, and debt.
- The economic assumptions underlying the report should be made in accordance with Best Practice 2.1 (see below).

1.3 Monthly reports

- Monthly reports show progress in implementing the budget. They should be released within four weeks of the end of each month.
- They should contain the amount of revenue and expenditure in each month and year-to-date. A comparison should be made with the forecast amounts of monthly revenue and expenditure for the same period. Any in-year adjustments to the original forecast should be shown separately.
- A brief commentary should accompany the numerical data. If a significant divergence between actual and forecast amounts occurs, an explanation should be made.
- Expenditures should be classified by major administrative units (e.g., ministry, agency). Supplementary information classifying expenditure by economic and functional categories should also be presented.
- The reports, or related documents, should also contain information on the government's borrowing activity (see Best Practice 2.3, below).

1.4 Mid-year report

- The mid-year report provides a comprehensive update on the implementation of the budget, including an updated forecast of the budget outcome for the current fiscal year and, at least, the following two fiscal years. The report should be released within six weeks of the end of the mid-year period.
- The economic assumptions underlying the budget should be reviewed and the impact of any changes on the budget disclosed (see Best Practice 2.1).
- The mid-year should contain a comprehensive discussion of the government's financial assets and liabilities, non-financial assets, employee pension obligations and contingent liabilities in accordance with Best Practices 2.3-2.6 (below).
- The impact of any other government decisions, or other circumstances, that may have a material effect on the budget should be disclosed.

1.5 Year-end report

- The year-end report is the government's key accountability document. It should be audited by the Supreme Audit Institution, in accordance with Best Practice 3.3 (below) and be released within six months of the end of the fiscal year.
- The year-end report shows compliance with the level of revenue and expenditures authorised by Parliament in the budget. Any in-year adjustments to the original budget should be shown separately. The presentation format of the year-end report should mirror the presentation format of the budget.
- The year-end report, or related documents, should include non-financial performance information, including a comparison of performance targets and actual results achieved where practicable.
- Comparative information on the level of revenue and expenditure during the preceding year should also be provided. Similar comparative information should be shown for any non-financial performance data.
- Expenditure should be presented in gross terms. Earmarked revenue and user charges should be clearly accounted for separately.
- Expenditure should be classified by administrative unit (e.g., ministry, agency). Supplementary information classifying expenditure by economic and functional categories should also be presented.
- The year-end report should contain a comprehensive discussion of the government's financial assets and financial liabilities, non-financial assets, employee pension obligations and contingent liabilities in accordance with Best Practices 2.3-2.6 (below).

1.6 *Pre-election report*

- A pre-election report serves to illuminate the general state of government finances immediately before an election. This fosters a more informed electorate and serves to stimulate public debate.
- The feasibility of producing this report may depend on constitutional provisions and electoral practices. Optimally, it should be released no later than two weeks prior to elections.
- The report should contain the same information as the mid-year report.
- Special care needs to be taken to assure the integrity of such reports, in accordance with Best Practice 3.2 (below).

1.7 *Long-term report*

- The long-term report assesses the long-term sustainability of current government policies. It should be released at least every five years, or when major changes are made in substantive revenue or expenditure programmes.
- The report should assess the budgetary implications of demographic change, such as population ageing and other potential developments over the long term (10-40 years).
- All key assumptions underlying the projections contained in the report should be made explicit and a range of plausible scenarios presented.

2. Specific disclosures

2.1 *Economic assumptions*

- Deviations from the forecast of the key economic assumptions underlying the budget are the government's key fiscal risk.
- All key economic assumptions should be disclosed explicitly. This includes the forecast for GDP growth, the composition of GDP growth, the rate of employment and unemployment, the current account, inflation and interest rates (monetary policy).
- A sensitivity analysis should be made of what impact changes in the key economic assumptions would have on the budget.

2.2 *Tax expenditures*

- Tax expenditures are the estimated costs to the tax revenue of preferential treatment for specific activities.
- The estimated cost of key tax expenditures should be disclosed as supplementary information in the budget. To the extent practicable, a discussion of tax

expenditures for specific functional areas should be incorporated into the discussion of general expenditures for those areas in order to inform budgetary choices.

2.3 Financial liabilities and financial assets

- All financial liabilities and financial assets should be disclosed in the budget, the mid-year report, and the year-end report. Monthly borrowing activity should be disclosed in the monthly reports, or related documents.
- Borrowings should be classified by the currency denomination of the debt, the maturity profile of the debt, whether the debt carries a fixed or variable rate of interest, and whether it is callable.
- Financial assets should be classified by major type, including cash, marketable securities, investments in enterprises and loans advanced to other entities. Investments in enterprises should be listed individually. Loans advanced to other entities should be listed by major category reflecting their nature; historical information on defaults for each category should be disclosed where available. Financial assets should be valued at market value.
- Debt management instruments, such as forward contracts and swaps, should be disclosed.
- In the budget, a sensitivity analysis should be made showing what impact changes in interest rates and foreign exchange rates would have on financing costs.

2.4 Non-financial assets

- Non-financial assets, including real property and equipment, should be disclosed.
- Non-financial assets will be recognised under full accrual based accounting and budgeting. This will require the valuation of such assets and the selection of appropriate depreciation schedules. The valuation and depreciation methods should be fully disclosed.
- Where full accrual basis is not adopted, a register of assets should be maintained and summary information from this register provided in the budget, the mid-year report and the year-end report.

2.5 Employee pension obligations

- Employee pension obligations should be disclosed in the budget, the mid-year report and the year-end report. Employee pension obligations are the difference between accrued benefits arising from past service and the contributions that the government has made towards those benefits.

- Key actuarial assumptions underlying the calculation of employee pension obligations should be disclosed. Any assets belonging to employee pension plans should be valued at market value.

2.6 *Contingent liabilities*

- Contingent liabilities are liabilities whose budgetary impact is dependent on future events which may or may not occur. Common examples include government loan guarantees, government insurance programmes, and legal claims against the government.
- All significant contingent liabilities should be disclosed in the budget, the mid-year report and the annual financial statements.
- Where feasible, the total amount of contingent liabilities should be disclosed and classified by major category reflecting their nature; historical information on defaults for each category should be disclosed where available. In cases where contingent liabilities cannot be quantified, they should be listed and described.

3. **Integrity, control and accountability**

3.1 *Accounting policies*

- A summary of relevant accounting policies should accompany all reports. These should describe the basis of accounting applied (*e.g.*, cash, accrual) in preparing the reports and disclose any deviations from generally accepted accounting practices.
- The same accounting policies should be used for all fiscal reports.
- If a change in accounting policies is required, then the nature of the change and the reasons for the change should be fully disclosed. Information for previous reporting periods should be adjusted, as practicable, to allow comparisons to be made between reporting periods.

3.2 *Systems and responsibility*

- A dynamic system of internal financial controls, including internal audit, should be in place to assure the integrity of information provided in the reports.
- Each report should contain a statement of responsibility by the finance minister and the senior official responsible for producing the report. The minister certifies that all government decisions with a fiscal impact have been included in the report. The senior official certifies that the finance ministry has used its best professional judgement in producing the report.

3.3 Audit

- The year-end report should be audited by the Supreme Audit Institution in accordance with generally accepted auditing practices.
- Audit reports prepared by the Supreme Audit Institution should be scrutinised by Parliament.

3.4 Public and parliamentary scrutiny

- Parliament should have the opportunity and the resources to effectively examine any fiscal report that it deems necessary.
- All fiscal reports referred to in these Best Practices should be made publicly available. This includes the availability of all reports free of charge on the Internet.
- The finance ministry should actively promote an understanding of the budget process by individual citizens and non-governmental organisations.

GOVERNMENT-SPENDING ADJUSTMENT: THE OECD SINCE THE NINETIES

*Zvi Hercowitz and Michel Strawczynski**

1. Introduction

There was a drastic reduction in public spending in the OECD during the Nineties. Primary government expenditures declined from a cyclically adjusted, weighted average of 36.4 per cent of GDP in 1992 to 34.1 per cent in 1998. Since 1999, however, primary expenditures increased once more. Figure 1 illustrates the behavior of the average ratio of government spending to output in the OECD, using PPP adjusted GDP as weights. The solid line represents the ratio of cyclically adjusted primary spending to GDP whereas the dashed line represents that ratio including interest payments. Both reflect the spending cuts of the early Nineties. Towards the end of the sample, the primary spending/output ratio bounces back while the ratio including interest payment remains constant.

Using panel data for 18 OECD countries over the 1980-2003 sample, we analyze the public spending changes since the Nineties, controlling for demographic and cyclical factors. More specifically, we address the following questions:

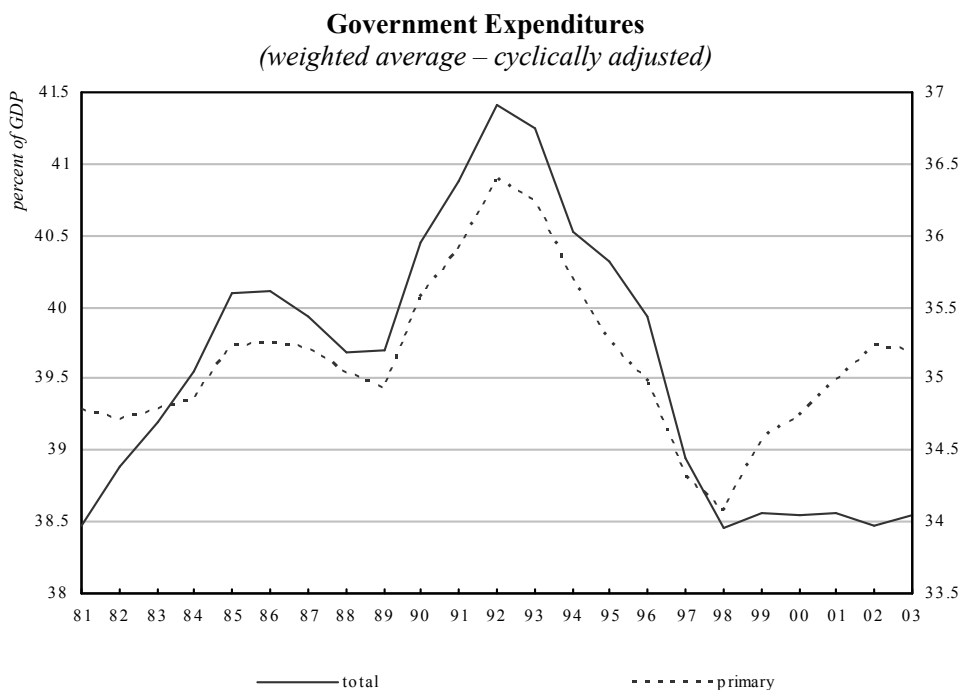
- is the adjustment a general OECD phenomenon, or are there separate effects of the Maastricht Treaty and the Stability and Growth Pact?
- is the adjustment symmetric in expansions and recessions?
- what are the long-run quantitative implications of the adjustment in the different countries?
- how is the composition of government spending affected by the adjustment?
- what are the quantitative implications of reduced interest payments for primary government spending and its composition? In particular, can the reversal of primary expenditures, shown in Figure 1 at the end of the sample, be explained by the reduced burden of interest payments?

We use an econometric model that makes it possible to compute the dynamics of government spending and long-run levels in the different countries for total primary spending and its components: government consumption, transfers and subsidies, and public investment.

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Figure 1



The analysis is fact-finding in nature. The purpose is to characterize the adjustment empirically, rather than to evaluate it normatively, as conducted for example by Buti, Eijffinger and Franco (2003), or to propose changes to the current rules, as in Fatás, Von Hagen, Hallett, Strauch and Sibert (2003). Galí and Perotti (2003) analyze the fiscal implications of the Maastricht Treaty and the Stability and Growth Pact, and find that they did not reduce the ability of governments to conduct countercyclical fiscal policy.

The paper proceeds as follows. Section 2 presents the econometric framework for the analysis of aggregate primary government expenditures as well as the computation of the effects of the fiscal adjustments in the Nineties on the long-run ratios of government expenditures to output. Section 3 reports the empirical results. In Section 4 we extend the analysis by disaggregating primary expenditures into three components: government consumption, transfers and subsidies, and public investment. Section 5 concludes.

2. Econometric framework for aggregate primary expenditure

Consider a panel data set with 18 countries, indexed by i , and a sample of 24 years, indexed by $1980 \leq t \leq 2003$. The ratio of primary government expenditures to

GDP is denoted by $g_{it} \equiv G_{it} / Y_{it}$, and the ratio of public debt to GDP by $b_{it} \equiv B_{it} / Y_{it}$.

In year $1980 \leq t_{a_i} \leq 2003$, country i starts to adjust g_i . The timing of the adjustment process is captured by the dummy variable A_{it} , which is formulated as:

$$A_{it} = \begin{cases} 1 & \text{if } t \geq t_{a_i} \\ 0 & \text{if } t < t_{a_i} \end{cases}$$

Defining $\Delta \ln \tilde{y}_{it} \equiv \Delta \ln Y_{it} - \text{avg}(\Delta \ln Y_i)$ where $\text{avg}(\Delta \ln Y_i)$ is the average growth rate in country i , the possibility of differential adjustment in g_i during periods of high and low growth is allowed by using the dummy variable:

$$d_{it} = \begin{cases} 1 & \text{if } \Delta \ln \tilde{y}_{it} > 0 \\ 0 & \text{if } \Delta \ln \tilde{y}_{it} < 0 \end{cases}$$

The main three factors affecting government spending at the focus of our analysis are:

- The adjustment itself, captured by A_{it} , interacting with d_{it} and $1 - d_{it}$. This interaction allows for differential adjustments during recessions and booms.
- The business cycle, represented by $\Delta \ln \tilde{y}_{it}$, also interacting with d_{it} and $1 - d_{it}$ to capture asymmetric countercyclical policy.
- Interest payments as a fraction of output, denoted by $r_{it-1} b_{it-1}$. Introducing this variable makes it possible to explore crowding out effects of debt servicing on primary government expenditures.

The basic equation for aggregate government expenditures is then specified as:

$$\begin{aligned} \Delta g_{it} = & \alpha_{0i} + \alpha_1 d_{it} A_{it} + \alpha_2 (1 - d_{it}) A_{it} + \varphi_1 d_{it} \Delta \ln \tilde{y}_{it} + \varphi_2 (1 - d_{it}) \Delta \ln \tilde{y}_{it} \\ & + r_{it-1} b_{it-1} + \beta x_{it} + \lambda g_{it-1} + \varepsilon_{it} \end{aligned} \quad (1)$$

$i = 1, \dots, 18$

where x_{it} is a vector of control variables affecting the level of g . Stationarity of the government spending/output ratio requires that $\lambda < 0$. The coefficients α_1 and α_2 are expected to be negative, representing the adjustment of government spending starting at t_{a_i} . If adjustments take place mainly in expansions, then $|\alpha_1| > |\alpha_2|$. The cyclical variables involving $\Delta \ln \tilde{y}_{it}$ are introduced, as in Hercowitz and Strawczynski (2004), to capture cyclical asymmetry in government spending, represented by $\varphi_1 \neq \varphi_2$. If $\varphi_1 - \varphi_2 > 0$, there is an upwards ratcheting process, as

reported in that paper.¹ Whether the ratcheting behavior changes at t_{a_i} is also tested by adding an interaction between the cyclical variables and A_{it} . The coefficient γ is negative if interest payments, $r_{it-1}b_{it-1}$, crowd out other expenditure.

Note that in this specification, the adjustment *starts* at time t_{a_i} and continues thereafter. The total adjustment is captured by the accumulated effects, which will be reflected in the long-run ratio.

2.1 The long run

The long-run value of g_i can be obtained from equation (1) as follows:

$$\begin{aligned} 0 &= \alpha_{0i} + \alpha_1 \text{avg}(d_i) + \alpha_2 \text{avg}(1-d_i) + \varphi_1 \text{avg}(d_i \Delta \ln \tilde{y}_i) \\ &+ \varphi_2 \text{avg}((1-d_i) \Delta \ln \tilde{y}_i) + \gamma r_i b_i + \beta x_i + \lambda g_i \end{aligned} \quad (2)$$

$i = 1, \dots, 18$

where the variables without the index t represent long-run values. The problem with using (2) to compute g_i is that the equation involves b_i , which is related to g_i through the long-run budget constraint $b_i = \frac{\tau_i - g_i}{r_i - \text{avg}(\Delta \ln y_{it})}$. Given that the tax rate τ_i is also involved, this equation is insufficient for closing the system. Indeterminacy is resolved by assuming a required $b_i = \bar{b}$, as in the Maastricht Treaty where $\bar{b} = 0.6$. Then, assuming $r_i = r$, the long-run levels of government spending are:

$$g_i = -\frac{1}{\lambda} \left[\alpha_{0i} + \alpha_1 \text{avg}(d_i) + \alpha_2 \text{avg}(1-d_i) + \varphi_1 \text{avg}(d_i \Delta \ln \tilde{y}_i) + \varphi_2 \text{avg}((1-d_i) \Delta \ln \tilde{y}_i) + \gamma r \bar{b} + \beta x_i \right] \quad (3)$$

$i = 1, \dots, 18$

Note that $1/\lambda$ represents the degree to which a permanent change in one of right-hand variables affects the long-run level of government spending.

When the adjustment does take place during the sample, its contribution to the long-run ratio of government spending to output is $(\alpha_1 \text{avg}(d_i) + \alpha_2 \text{avg}(1-d_i))/(-\lambda)$. If, for example, output growth is above average exactly half the time, the long-run adjustment is given by $(\alpha_1 + \alpha_2)/(-2\lambda)$. The long-run contribution of cyclical ratcheting is $[\varphi_1 \text{avg}(d_i \Delta \ln \tilde{y}_i) + \varphi_2 \text{avg}((1-d_i) \Delta \ln \tilde{y}_i)]/(-\lambda)$. If the cyclical spending pattern is symmetric in expansions and recessions, *i.e.*, $\varphi_1 = \varphi_2$, and the average deviations of

¹ Note that when checking for cyclical asymmetry, the simultaneity problem is alleviated if simultaneity is similar in expansions and recessions. For a further elaboration of this point see Hercowitz and Strawczynski (2004), Appendix A.

output growth above and below average are the same, the business cycle does not affect the long-run g_i . Alternatively, for example, if $\varphi_1 > \varphi_2$ and the average deviations of output growth from average are the same, output fluctuations lead to higher government spending. The next factor is interest payments: If $\gamma < 0$, as expected, a permanent reduction in interest payments increases g_i times the factor $-\gamma/\lambda$. Finally, x_i are long-run values of other variables, such as demographic factors, which affect the level of the government spending/output ratio.

3. Results for aggregate government spending

3.1 The data

The panel data set is composed of 18 countries, 12 of them in the EMU – Austria, Belgium, Germany, Finland, France, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal and Spain – and 6 other OECD countries – Canada, Denmark, Japan, Sweden, United Kingdom and the U.S. Most of these countries performed the primary expenditure adjustment shown in Figure 1, but some did not, such as Japan and Greece. The data are annual over the 1980-2003 period. The variable G is matched to primary general government expenditures, *i.e.*, it includes regional authorities, and Y is represented by GDP. The source is the OECD economic data.

3.2 Estimation results

We report first a preliminary estimation of equation (1), concentrating on the adjustment variable A . For this purpose, the fiscal adjustment and cyclical variables are constrained to enter in a symmetric form, *i.e.*, $\alpha = \alpha_1 = \alpha_2$, $\varphi = \varphi_1 = \varphi_2$; interest payments and control variables are not included.

The variable A is introduced in three alternative formulations. One is based on the Maastricht Treaty. The dummy variable *Maast* takes the value 1 in the years following referendum approval in each one of the 15 countries joining the treaty, and 0 elsewhere.² We also used an alternative specification, excluding the three countries with a derogation status – the U.K., Sweden and Denmark – from the *Maast* variable. The second form is a dummy variable for all countries in the sample, taking the value 1 starting in a specific year during the Nineties, and 0 previously. Table 1 reports the results with the dummy variable for 1994, *d94*, which turned out to yield the best fit among the alternatives for 1991 through 1996.

² The countries in the sample that joined the Maastricht Treaty are (the date of referendum approval is indicated in the parenthesis): Austria (12.6.94), Belgium (5.11.92), France (23.9.92), Italy (29.10.92), Luxemburg (2.7.92), Holland (15.12.92), Ireland (18.6.92), Greece (31.7.92), Spain (25.11.92), Denmark (18.5.93), United Kingdom (23.7.93), Germany (12.10.93), Finland (16.10.94), Sweden (13.11.94) and Portugal (10.12.92). Source: Kessing's Records of World Events.

Table 1

Aggregate Government Expenditure
(sample: 1981-2003, standard errors in parentheses)

| | | Dependent Variable: Δg | | |
|---|-----------|--------------------------------|----------------|----------------|
| Variable-coefficient ⁽ⁱ⁾ | | (1) | (2) | (3) |
| <i>d94</i> | α | | -0.342 (0.089) | -0.502 (0.135) |
| <i>Maast</i> | α | -0.334 (0.126) | | 0.048 (0.159) |
| <i>SGP</i> | α | 0.191 (0.156) | | 0.318 (0.155) |
| $\Delta \ln(\tilde{y})$ | φ | -0.449 (0.026) | -0.432 (0.026) | -0.432 (0.026) |
| g_{-1} | λ | -0.181 (0.018) | -0.187 (0.018) | -0.182 (0.018) |
| R^2 | | 0.53 | 0.55 | 0.56 |
| <i>D.W.</i> | | 1.53 | 1.51 | 1.53 |
| Observations: 23; Number of countries: 18 | | | | |
| Total panel observations: 386 | | | | |
| (i) Country fixed-effects included | | | | |

The third form is based on the Stability and Growth Pact: The variable *SGP* takes the value 1 in the EMU countries during and after 1997, and 0 elsewhere.

The results from this preliminary specification are presented in Table 1.

The main results in Table 1 are the following. In column (1), the variable *Maast* has a negative and significant coefficient, but *SGP* does not have additional explanatory power. However, when *d94* is also included (column (3)), only *d94* has a negative and significant coefficient, *Maast* becomes insignificant and *SGP* appears with a positive and even borderline significant coefficient. Hence, it appears that the adjustment is a general OECD phenomenon, and not specific to EU countries. The positive coefficient of *SGP* resembles a partial reversal. The results are practically the same when we use the *Maast* specification that excludes the U.K., Sweden and Denmark.

In Table 2 we report the estimation of the complete specification of equation (1). The adjustment and cyclical behavior is allowed to be asymmetric; and the interest payments and control variables are included. The control variables are: The population growth rate, $\Delta \ln pop$, and the fractions of the young (0-14 years of age), *young*, and the old (65 and older), *old*, in the population. In Table 6 in the Appendix, we report the inclusion of an inequality index. This variable is expected to have positive effects.

Table 2

Aggregate Government Expenditure

| Dependent Variable: Δg | | | | |
|--|---------------------|----------------|----------------|----------------|
| Sample: 1981-2003 (standard errors in parentheses) | | | | |
| Variable-coefficient ⁽ⁱ⁾ | | (1) | (2) | (3) |
| $d94$ | α | -0.604 (0.130) | | -0.482 (0.162) |
| $d94 * d$ | α_1 | | -0.578 (0.147) | |
| $d94 * (1-d)$ | α_2 | | -0.645 (0.155) | |
| $\Delta \ln(\tilde{y})^* d$ | φ_1 | -0.290 (0.053) | -0.296 (0.056) | -0.270 (0.069) |
| $\Delta \ln(\tilde{y})^* (1-d)$ | φ_2 | -0.515 (0.045) | -0.524 (0.045) | -0.561 (0.049) |
| $d94 * \Delta \ln(\tilde{y})^* d$ | $\tilde{\varphi}_1$ | | | -0.075 (0.106) |
| $d94 * \Delta \ln(\tilde{y})^* (1-d)$ | $\tilde{\varphi}_2$ | | | 0.199 (0.108) |
| $(rb)_{-1}$ | γ | -0.194 (0.040) | -0.197 (0.040) | -0.211 (0.041) |
| $\Delta \ln pop$ | β_1 | 0.484 (0.208) | 0.472 (0.209) | 0.460 (0.211) |
| $(young)_{-1}$ | β_2 | -0.044 (0.056) | -0.051 (0.057) | -0.054 (0.056) |
| $(old)_{-1}$ | β_3 | 0.100 (0.087) | 0.094 (0.088) | 0.111 (0.087) |
| g_{-1} | λ | -0.140 (0.018) | -0.140 (0.018) | -0.140 (0.018) |
| R^2 | | 1 | 1 | 1 |
| $D.W.$ | | 2 | 2 | 2 |
| Observations: 23; Number of countries: 18 | | | | |
| Total panel observations: 386 | | | | |
| (i) Country fixed-effects included | | | | |

The main results are the following:

- The estimate of α in column 1, -0.6 , is large and significant, indicating a strong downward adjustment in government spending beginning in 1994. Column 2 reports the test of differential adjustment in expansions and recessions. One may expect that a downward adjustment in the spending/output ratio is socially and politically easier during expansions. The Wald test indicates, however, that the estimates of α_1 and α_2 are insignificantly different from one another. We also tested for differential behavior in more extreme cyclical situations, *i.e.*, when output growth deviates from the mean by more than one standard deviation. In this case as well (not shown), the difference between the coefficients in expansions and recessions is statistically insignificant.
- The estimate of the ratcheting coefficient ($\varphi_1 - \varphi_2$) in column 1 is 0.23 percentage points of GDP, significantly different from zero at the 1 per cent level. Column 3 addresses the hypothesis that the asymmetric cyclical behavior leading to ratcheting changed after 1994. According to the point estimates in column 3, the ratcheting behavior practically disappears from 1994 onwards: It

declines from $\varphi_1 - \varphi_2 = 0.29$ to $\varphi_1 - \varphi_2 - (\tilde{\varphi}_1 - \tilde{\varphi}_2) = 0.025$. However, among the coefficients $\tilde{\varphi}_1$ and $\tilde{\varphi}_2$, only $\tilde{\varphi}_2$ is close to being significant at the 5 per cent level. Hence, the evidence of a change towards less asymmetric cyclical behavior is weak.

- Another important result is the negative and significant coefficient of interest payments (γ). A reduction of interest payments is followed by an increase in primary expenditures of 20 per cent of the amount saved in the following year. If the decline in interest payments is permanent, the effect on other expenditures accumulates over time. Below, we compute the long-run effect.
- The shares of old and young in the population are insignificant, but population *growth* has a positive and significant effect.
- The estimate of $\lambda = 0.14$ indicates that the convergence to the long-run value of g takes place quite gradually.

We also ran these regressions including only the 15 countries that joined the Maastricht Treaty in order to explore different behavior. The results, are similar to those presented in Table 2. This supports the notion that fiscal behavior is similar in all countries in the sample.

We tested the possibility of an upwards adjustment of total government expenditure after 1998. This is done by adding a dummy variable that takes the value of 1 after 1998 and 0 elsewhere. It turned out that the corresponding coefficient was not significant. This result suggests that the upward trend after 1998 is explained by the other explanatory variables.

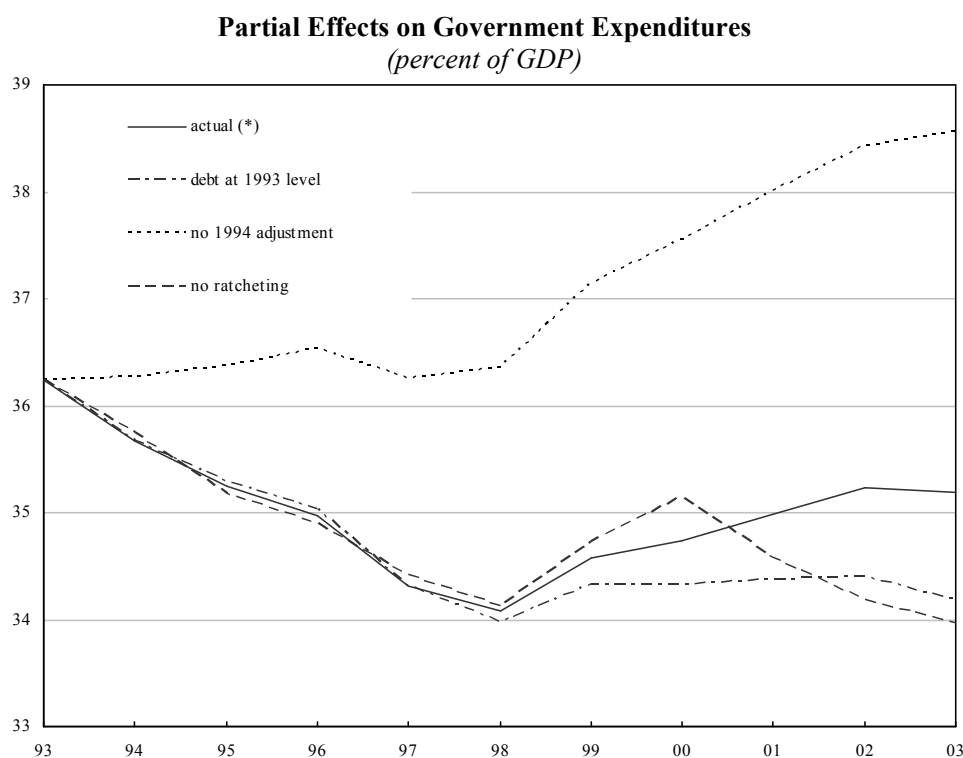
3. Implications of the results

Here we address the dynamic effects of the results in Table 2. The coefficients express the effects of the explanatory variables on the *immediate change* in the government's spending/output ratio. If the movements in the explanatory variables are persistent, the changes accumulate over time although this accumulation generates an opposite stabilizing effect via the term λg_{t-1} .

Figure 2 illustrates the in-sample net accumulated effects of each of the main variables of interest since 1993. The solid line represents the cyclically-adjusted weighted average ratio of primary government spending to GDP. The cyclical adjustment is symmetric in expansions and recessions.³ Using the coefficients in Table 2, column 1, we then computed the hypothetical behavior of g in three cases: (a) no adjustment in 1994, *i.e.*, setting $\alpha_{194} = 0$, (b) no change in interest payments, *i.e.*, assuming that the burden of servicing the debt did not decline

³ The weights are based on PPP-adjusted GDP. This is the same variable presented in Figure 1.

Figure 2



(*) Weighted average of cyclically-adjusted ratio to GDP.

since 1993, (c) no asymmetric cyclical spending, and hence no ratcheting behavior – *i.e.*, setting $\Delta \ln \tilde{y} = 0$ from 1994 onwards.

Figure 2 shows that without the adjustment introduced in 1994, government spending would have been more than 3 percentage points of GDP higher – the vertical distance between the no 1994 adjustment and the actual line. This is the source of the largest contribution to the change in government spending. A constant debt burden since 1993 would have implied that no funds would have been released to increase primary expenditure. The line for debt at 1993 level illustrates that primary spending would have been 1 percentage point of GDP lower. The line for no ratcheting represents the hypothetical spending-to-GDP ratio without asymmetric spending over the business cycle. Without asymmetry, the spending-to-GDP ratio would have been lower by 1.2 percentage point of GDP.

From the figure it follows that one of these two factors – (1) reduced interest payments or (2) ratcheting behavior – can be considered responsible for the spending rebound since 1998. The three lines – actual, debt at 1993 level, and no

ratcheting – are at about the same level in 1998. The vertical distance between the actual ratio and the other two ratios in 2003 is about 1 percentage point, which is precisely the increase in actual spending from 1998 to 2003.

4. Expenditure decomposition

Here we focus on government expenditures disaggregated into three components: (1) consumption expenditure, (2) transfers and subsidies, and (3) public investment. The sum of the three components is somewhat lower than the total primary expenditure figures used in the aggregate analysis due to items such as capital expenditure, which are not included in the separate components.

4.1 Econometric framework

Given the results with aggregate expenditure, the adjustment in the Nineties is assumed here to be symmetric. For expenditure in category $j = 1, 2, 3$, the basic equation (1) is extended to:

$$\begin{aligned} \Delta g_{it}^j &= \alpha_{0i}^j + \alpha_1^j A_{it} + \varphi_1^j \Delta \ln(\tilde{y}_{it}) d_{it} + \varphi_2^j \Delta \ln(\tilde{y}_{it})(1 - d_{it}) \\ &+ \gamma^j (r_{t-1} b_{it-1}) + \beta^j x_{it} + \lambda_1^j g_{it-1}^1 + \lambda_2^j g_{it-1}^2 + \lambda_3^j g_{it-1}^3 + \varepsilon_{it}^j, \end{aligned} \quad (4)$$

$i = 1, \dots, 18.$

This formulation allows for crowding out effects of spending in component i by spending in others. Otherwise, the equation is the same as (1). The parameters $\lambda_1^j, \lambda_2^j, \lambda_3^j$ are expected to be negative, as is γ^j . In matrix notation,

$$\begin{aligned} \Delta g_{it} &= \alpha_{0i} + \alpha_1 A_{it} + \varphi_1 \Delta \ln(\tilde{y}_{it}) d_{it} + \varphi_2 \Delta \ln(\tilde{y}_{it})(1 - d_{it}) \\ &+ \gamma (r_{t-1} b_{it-1}) + \beta x_{it} + \lambda g_{it-1} + \varepsilon_{it}, \end{aligned} \quad (5)$$

$i = 1, \dots, 18,$

where g_{it} , α_{0i} , α_1 , φ_1 , φ_2 , γ and ε_{it} are 3×1 , β is $3 \times k$, x_{it} is $k \times 1$, and λ is 3×3 .

4.2 The long run

The long-run ratios of the different spending components to output can be obtained following a procedure similar to that used for the aggregate spending case but now applied to the vector of spending/output ratios. In the long run we have:

$$0 = \alpha_{0i} + \alpha_1 + \varphi_1 \text{avg}(\Delta \ln(\tilde{y}_i) d_i) + \varphi_2 \text{avg}(\Delta \ln(\tilde{y}_i)(1 - d_i)) + \gamma (r\bar{b}) + \beta x_i + \lambda g,$$

with 0 a 3×1 vector of zeroes.

Inverting the matrix λ , this equation can be expressed as:

$$g_i = -\lambda^{-1}(\alpha_{0i} + \alpha_1 + \varphi_1 \text{avg}(\Delta \ln(\tilde{y}_i) d_i) + \varphi_2 \text{avg}(\Delta \ln(\tilde{y}_i)(1 - d_i)) + \gamma \bar{b} + \beta x_i) \quad (6)$$

Similarly to aggregate spending, the focus of the analysis is the quantitative adjustment since the Nineties. The results will reflect not only the direct effects measured by the coefficients of the dummy variable for the Nineties on the estimation, but also the indirect effects from the interaction between the components (the crowding out of the individual category by spending on the others). The results are shown in Table 3.

The results show the following:

- the direct effects of the adjustment from 1994 apply mainly to consumption expenditure and transfers, while the coefficient on investment is not significant;
- transfers crowd out government consumption, but not the opposite;

Table 3

Components of Government Expenditure
(sample: 1981-2003, standard errors in parentheses)

| | Consumption Expenditure | Current Transfers | Investment |
|---|-------------------------|-------------------|----------------|
| Dependent Variable ⁽ⁱ⁾ | Δg^1 | Δg^2 | Δg^3 |
| Variable | | | |
| <i>d94</i> | -0.149 (0.072) | -0.174 (0.080) | -0.041 (0.033) |
| $\Delta \ln(\tilde{y})^* d$ | -0.138 (0.025) | -0.179 (0.029) | -0.001 (0.012) |
| $\Delta \ln(\tilde{y})^* (1-d)$ | -0.170 (0.022) | -0.267 (0.026) | 0.020 (0.010) |
| <i>(rb)</i> ₋₁ | -0.070 (0.020) | -0.021 (0.022) | -0.021 (0.010) |
| $\Delta \ln^{pop}$ | -0.106 (0.094) | 0.438 (0.109) | 0.172 (0.044) |
| <i>(young)</i> ₋₁ | -0.031 (0.024) | -0.005 (0.030) | -0.011 (0.012) |
| <i>(old)</i> ₋₁ | 0.096 (0.041) | 0.079 (0.047) | -0.008 (0.021) |
| <i>(g¹)</i> ₋₁ | -0.115 (0.021) | 0.072 (0.025) | -0.017 (0.011) |
| <i>(g²)</i> ₋₁ | -0.097 (0.019) | -0.137 (0.022) | -0.026 (0.010) |
| <i>(g³)</i> ₋₁ | 0.046 (0.037) | 0.007 (0.045) | -0.166 (0.023) |
| <i>R</i> ² | 0.54 | 0.59 | 0.38 |
| <i>D.W.</i> | 1.68 | 1.69 | 2.05 |
| Observations: 23; Number of countries: 18 | | | |
| Total panel observations: 386 | | | |
| <i>(i)</i> Country fixed-effects included | | | |

- consumption and transfers are countercyclical and asymmetric – and the corresponding coefficients are statistically significant. The results from aggregate spending, presented previously, reflect this behavior. For investment, the results are quite different. In high-growth years, investment is acyclical whereas in low-growth years, investment appears *procyclical*, with a coefficient that is almost significant at the 5 per cent level;
- population growth has a strong effect on transfers and investment;
- the share of the old in the population increases government consumption, but its impact on transfers is not significant at 5 per cent significance level;
- interest payments have crowding out effects on consumption and investment. The coefficient on transfers is statistically insignificant.

The dynamic adjustment parameters are:

$$\lambda = \begin{bmatrix} -0.115 & -0.097 & 0.046 \\ 0.072 & -0.137 & 0.007 \\ -0.017 & -0.026 & -0.166 \end{bmatrix}$$

Each row represents the cross-effects on one spending component, and each column the impact of one spending component on the others. Investment is crowded out by consumption and transfers, and consumption is crowded out by transfers. This is the type of cross effects expected. In contrast, consumption crowds transfers in.

The long-run interaction is given by:

$$-\lambda^{-1} = \begin{bmatrix} 5.779 & -4.347 & 1.413 \\ 2.992 & 4.991 & 1.059 \\ -1.066 & -0.348 & 5.727 \end{bmatrix}$$

The long-run effects follow from the direct effects in λ . The first column represents the long-run effects of an initial change in consumption spending (due to a change in any of the exogenous variables). The largest effect is on consumption spending itself, which spills over to transfers. Investment, on the other hand, is crowded out. The second column indicates the effects of an initial change in transfers: it crowds out the other two types of spending, mainly government consumption. An initial investment change, in contrast, crowds in both consumption and transfers.

How did the adjustment in the Nineties affect the long-run composition of government spending? The coefficients of $d94$ indicate the immediate changes in the spending/output ratios. These coefficients are $\alpha'_1 = [-0.149, -0.174, -0.041]$, on consumption expenditure, transfers and investment, respectively. The largest direct effect is on transfers. To compute the long-run implications of the adjustment, one needs to take into account the cross effects among the spending components. This computation is given by:

$$\Delta g_i|_{d94} = -\lambda^{-1} \alpha_1 = \begin{bmatrix} -0.167 \\ -1.357 \\ -0.014 \end{bmatrix}$$

The largest long-run decline is of transfers, about 1.4 percentage points of GDP. According to this computation, government consumption and public investment are only marginally affected by the adjustment.

A similar computation for interest payments yields:

$$\Delta g_i|_{rb} = -\lambda^{-1} \gamma = \begin{bmatrix} -0.342 \\ -0.339 \\ -0.039 \end{bmatrix}$$

These figures indicate that a decline in interest payments generates increases in government consumption and transfers equal to about a third of the decline. The total increase in the three items is about 0.72.

We can use the same procedure to compute the implications of population aging. Given the coefficient of the variable *old* in Table 3, we get:

$$\Delta g_i|_{old} = -\lambda^{-1} \beta_{old} = \begin{bmatrix} 0.200 \\ 0.670 \\ -0.173 \end{bmatrix}$$

Hence, for each percentage point increase in the share of individuals 65+ in the population, transfers increase by 0.67 per cent of GDP, and public consumption by 0.2 per cent of GDP. Investment spending decreases by 0.17 per cent.⁴

Finally in this section, we report in Table 4 the long-run ratios of government spending to output in the 18 countries in the sample and, in parenthesis, the ratios in the last year in the sample. The computation uses the equation shown above together with: (a) the coefficients in Table 3, (b) the average values of the cyclical variables in each country, (c) $d94=1$ and $rb=0.05 \times 0.6$, and (d) the demographic variables set at their 2003 values. The computed long-run values of \mathcal{G} are, in most countries, higher than the actual ratios at the end of the sample. This can be rationalized by the forces pushing for higher spending, such as lower interest payments and cyclical ratcheting, not reaching their long-run effects by 2003. However, none of the long-run values are statistically different from the last values in the sample.

In half of the countries in the sample, long-run government consumption is higher than in the last year of the sample. For transfers, this feature characterizes almost all countries. Finally, for total expenditure in some countries (Austria, Denmark, Germany, United Kingdom and the U.S.), long-run values are similar to those in the last year of the sample, but for most they are higher.

⁴ For an analysis of the implications of population aging on the public finances of industrial countries, see Heller and Hauner (2005).

Table 4

Long-run Ratios of Government Expenditure Components to GDP

| | Consumption | Current Transfers | Investment | Total |
|----------------|---------------|-------------------|---------------|---------------|
| Austria | 0.184 (0.180) | 0.240 (0.254) | 0.020 (0.012) | 0.444 (0.446) |
| Belgium | 0.242 (0.228) | 0.225 (0.201) | 0.017 (0.016) | 0.484 (0.445) |
| Canada | 0.230 (0.192) | 0.135 (0.102) | 0.027 (0.027) | 0.392 (0.321) |
| Denmark | 0.259 (0.266) | 0.232 (0.227) | 0.015 (0.017) | 0.506 (0.510) |
| Finland | 0.216 (0.223) | 0.252 (0.212) | 0.021 (0.029) | 0.489 (0.464) |
| France | 0.236 (0.243) | 0.221 (0.217) | 0.028 (0.033) | 0.485 (0.493) |
| Germany | 0.191 (0.192) | 0.223 (0.229) | 0.013 (0.015) | 0.427 (0.436) |
| Greece | 0.166 (0.160) | 0.251 (0.189) | 0.026 (0.039) | 0.443 (0.388) |
| Ireland | 0.180 (0.159) | 0.156 (0.119) | 0.032 (0.039) | 0.367 (0.317) |
| Italy | 0.216 (0.195) | 0.239 (0.199) | 0.022 (0.026) | 0.477 (0.420) |
| Japan | 0.167 (0.177) | 0.127 (0.102) | 0.056 (0.054) | 0.350 (0.333) |
| Luxembourg | 0.173 (0.182) | 0.175 (0.209) | 0.040 (0.048) | 0.388 (0.439) |
| Netherlands | 0.255 (0.254) | 0.190 (0.155) | 0.029 (0.036) | 0.474 (0.445) |
| Portugal | 0.192 (0.214) | 0.192 (0.184) | 0.030 (0.034) | 0.414 (0.432) |
| Spain | 0.184 (0.179) | 0.179 (0.148) | 0.034 (0.035) | 0.397 (0.362) |
| Sweden | 0.286 (0.283) | 0.241 (0.222) | 0.031 (0.031) | 0.558 (0.536) |
| United Kingdom | 0.199 (0.209) | 0.178 (0.168) | 0.014 (0.017) | 0.391 (0.394) |
| United States | 0.159 (0.152) | 0.116 (0.113) | 0.021 (0.026) | 0.296 (0.291) |

(i) In parenthesis: last year of the sample (2002 for Canada, Japan and United States, 2003 for other countries).

5. Concluding comments

We found that the government spending adjustment began in 1994, and that it can be characterized as an OECD phenomenon rather than as a phenomenon specific to countries participating in the Maastricht Treaty or the Stability and Growth Pact.

The spending adjustment was estimated to reduce the long-run ratio of primary spending to GDP by about 4 percentage points. As shown in Figure 2, the contribution of this adjustment to average spending by 2003 was about 3.3 percentage points of GDP. We did not find evidence that the adjustment is carried out differently in expansions and recessions.

The results from aggregate spending indicate that a decline in interest payments generates a long-run increase in other expenditure that is larger by 1.4 percentage points. However, we cannot reject the hypothesis that this effect is statistically different from 1. In any event, this result implies that in the long run, declining debt servicing does not reduce the total amount of government spending.

We found that the bouncing back of the average ratio of primary spending to GDP since 1998 can be quantitatively explained by either the reverse crowding out of the decline in interest payments, or the accumulated ratcheting generated by asymmetric cyclical spending behavior.

The analysis of the spending components indicates that the long-run effect of the spending adjustment was concentrated on transfers. The long-run effect on government consumption was estimated to be much smaller, and the corresponding effect on public investment was very small.

APPENDIX

We also considered HP-filtered output as the cyclical variable (as in Galí and Perotti, 2003) instead of the deviations of the growth rate of output from their average value. In the following table, we define yd as HP-filtered $\ln(\text{GDP})$, d' is a dummy variable with a value of 1 when $yd > 0$, and 0 otherwise.

In general, the fit of the regressions is poorer than in Table 2, as reflected by the lower R^2 and $D.W.$ statistics. Other differences are that the coefficient of countercyclical policy in recessions is no significant here, and that the variable old is positive and significant.

Table 6 includes a Theil index of inequality in gross wages in the OECD countries (Source: University of Texas Inequality Project). This index is available only through 1999. According to the results presented in column 1 inequality does not affect total government expenditure at a 5 per cent significance level.

Table 5

HP-filtered GDP as the Cyclical Variable
sample: 1981-2003, standard errors in parentheses

| Dependent Variable: Δg | | | | |
|---|-------------|--------------------|--------------------|-----------------|
| Sample: 1981-2003 (standard errors in parentheses) | | | | |
| Variable-coefficient ⁽ⁱ⁾ | | All countries (18) | All countries (18) | Maastricht (15) |
| $yd * d'$ | φ_1 | -0.193 (0.063) | -0.187 (0.065) | -0.147 (0.073) |
| $yd * (1-d')$ | φ_2 | -0.092 (0.066) | -0.085 (0.067) | -0.013 (0.081) |
| $d94$ | α | -0.012 (0.002) | | |
| $d94 * d'$ | α_1 | | -0.012 (0.002) | -0.013 (0.002) |
| $d94 * (1-d')$ | α_2 | | -0.011 (0.002) | -0.011 (0.002) |
| $\Delta \ln pop$ | | 0.840 (0.268) | 0.826 (0.269) | 0.686 (0.298) |
| $(rb)_{-1}$ | γ | -0.257 (0.045) | -0.260 (0.046) | -0.271 (0.049) |
| $(young)_{-1}$ | β_1 | 0.114 (0.067) | 0.114 (0.067) | 0.158 (0.074) |
| $(old)_{-1}$ | β_2 | 0.445 (0.099) | 0.446 (0.099) | 0.534 (0.118) |
| g_{-1} | λ | -0.157 (0.025) | -0.156 (0.025) | -0.130 (0.026) |
| R^2 | | 0.34 | 0.34 | 0.33 |
| $D.W.$ | | 1.38 | 1.38 | 1.42 |
| Observations: 23 | | | | |
| Total panel observations. Columns (1) and (2): 386, column (3): 330 | | | | |
| (i) Country fixed-effects included | | | | |

Table 6

Controlling for Income Inequality
(sample: 1981-99, standard errors in parentheses)

| | | Dependent Variable: Δg | | |
|---|-------------|--------------------------------|----------------|-----------------|
| Variable-coefficient | | (1) | (2) | (3) |
| $\Delta \ln(\tilde{y}) * d$ | φ_1 | -0.249 (0.067) | -0.290 (0.068) | -0.263 (0.077) |
| $\Delta \ln(\tilde{y}) * (1-d)$ | φ_2 | -0.518 (0.053) | -0.534 (0.051) | -0.547 (0.053) |
| $d94 * \Delta \ln(\tilde{y}) * d$ | | | | 0.028 (0.144) |
| $d94 * \Delta \ln(\tilde{y}) * (1-d)$ | | | | 0.417 (0.195) |
| $d94$ | α | -0.982 (0.187) | | -0.997 (0.226) |
| $d94 * d$ | α_1 | | -0.009 (0.002) | |
| $d94 * (1-d)$ | α_2 | | -0.015 (0.003) | |
| $\Delta \ln pop$ | | 0.593 (0.254) | 0.524 (0.251) | 0.551 (0.252) |
| $(rb)_{-1}$ | γ | -0.222 (0.065) | -0.219 (0.064) | -0.224 (0.066) |
| $(young)_{-1}$ | β_1 | -0.019 (0.079) | -0.026 (0.078) | -0.0003 (0.079) |
| $(old)_{-1}$ | β_2 | 0.183 (0.139) | 0.180 (0.137) | 0.239 (0.140) |
| $Theil$ | β_3 | 0.141 (0.076) | 0.162 (0.076) | 0.184 (0.078) |
| g_{-1} | λ | -0.134 (0.023) | -0.129 (0.022) | -0.131 (0.022) |
| R^2 | | 0.63 | 0.65 | 0.65 |
| $D.W.$ | | 1.87 | 1.88 | 1.89 |
| Observations: 19; Number of countries: 18 | | | | |
| Total panel observations: 282 | | | | |

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PUBLIC INVESTMENT AND FISCAL ADJUSTMENT IN LATIN AMERICAN COUNTRIES

*Ricardo Martner and Varinia Tromben**

1. Introduction

The decreasing trend in public investment in the last two decades has become a hot topic in the international debate. Government authorities, analysts and international institutions recognize that the resulting infrastructure gap has not been fulfilled in a mechanical way by the private sector. In some Latin American countries, the investment fall has taken alarming dimensions.

Servén and Calderón (2004a and 2004b) quantify the infrastructure gap by economic sectors, and estimate its effect on economic growth for a wide number of countries. Lucioni (2004) shows how the decreasing financing of the international organisms has contributed to the infrastructure gap. The International Monetary Fund (IMF) published a comprehensive study of the relationship between fiscal policy and public investment in emerging countries.¹ The IMF document explains the public investment drop essentially by the widening of the coverage of public sector targets, including all public enterprises operations. Even if this procedure was justified in the past, when they played a quasi-fiscal financing role in many countries, today it appears reasonable to exclude from fiscal targets those public enterprises that are “commercially run”.

The IMF also recommend a sequence of measures in emerging economies, including paying more attention to the public investment quality, using the current balance as an additional fiscal indicator to the traditional overall balance, excluding some public corporations from the targets, enhancing the institutional capacity to develop public-private associations,² and last but not least, adopting structural fiscal indicators.

Nevertheless, this issue is not limited to countries that have supporting programs from IMF. There is widely a public investment bias during fiscal adjustment periods. In hard times, as the 1998-2003 episode in Latin American countries, it will always be easier to postpone investment projects than to take any other measure to reduce current expenditures. The challenge would be then to reduce this bias, which is not equivalent to benefit capital expenditures versus current expenditures, but to restore a balance between them. Occasionally, this proposal is understood as a rule that would disadvantage social expenditures. This appears to be

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¹ International Monetary Fund (2004a). See also Hemmings and Ter-Minassian (2004).

² See International Monetary Fund (2004b).

a misleading dilemma, as a major part of public investment in developing countries has a high social component (hospitals, schools, housing).

There are various options to promote investment, in this kind of “pure” public goods, a number of which are reviewed in this paper. The first one, and the most radical, would be to adopt a golden rule in public finance management. Current revenues would finance current expenditures, while borrowing would finance capital expenditures. As it is the common practice in private corporations, net investment (gross investment minus consumption of fixed capital) should not be included in the balance sheet.³ Moreover, separated budgets should be used for current expenditures, and for investments, as it is the case in the recent United Kingdom experience. Nevertheless, in spite of the concept’s clearness, a generalized application of the golden rule is complex. As the public sector does not necessarily receive the financial returns of its investments (normally spread to the whole society), the analogy with the private sector loses consistency.

A second option, related to the first one, would be the broad adoption of the accounting principles of the Government Finance Statistics Manual (*GFSM 2001*) of IMF. Investment is recorded as an increase in nonfinancial assets, with a counterpart that could be for example a decrease in financial liabilities. Therefore, net worth is not affected and public investment is not considered as expenditure. Although very attractive, these accounting principles are not fully applied in Latin American countries, and it will be difficult to replace the traditional cash overall balances target used in IMF-supported or in national programs.

Other partial options aim at promoting certain types of public investment. One is to reduce the coverage of fiscal targets, eliminating completely or partially public enterprises operations. The IMF proposes to exclude from fiscal targets only “commercially run enterprises”. By contrast, in Chile for example the budget covers general government operations. This is exactly what European countries do: fiscal commitments are set within the general government coverage. Recent practices in Mexico exclude from the traditional overall balance investment projects from fuel and energy. As private corporations do, the aim is to register investment expenditures during several fiscal exercises. Although private-public partnerships are another promising option, they do not eliminate the traditional anti-public investment bias in traditional public goods. Recent initiatives appoint to generalize this practice with long-term investments in education and health care sectors.

Another, more general formula, would be to adopt a structural macro-fiscal rule, reducing the adverse effects of macroeconomic cycles on public expenditures and public investment. In the case of Chile, the structural fiscal balance rule sets that public expenditure expand at the rhythm of potential economic growth. This is a solution for the public investment bias, in the sense that fiscal adjustments are avoided.

³ For a recent review of this proposal, see Blanchard and Giavazzi (2004).

Furthermore, the Economic Commission for Latin America and the Caribbean (ECLAC, 2004b) suggest greater fiscal flexibility concerning the role of the multilateral development banks. As Lucioni (2004) points out, the financing capacity of the multilateral banks is limited because of budget expenditure constraints. These projects could be recorded when the government realizes amortization disbursement, and not when it receives the financing funds. This would allow intertemporal distribution of the financial burden, as it is a common use in the private sector. Multilateral development banks could then represent a powerful pro-growth tool.

2. Public and private investment trends in Latin America

Two sources of information are available to evaluate trends of public and private investment in Latin American countries, coming from National Accounts and from Government Finance Statistics.⁴ The definition of public investment of the 1993 System of National Accounts corresponds to general government, but a significant number of countries use the nonfinancial public sector coverage, which makes international comparisons difficult. For descriptive trends and public/private investment composition analysis, the source of information is National Accounts. For the fiscal study itself, central government statistics are useful to compare the evolution of public investment with the other components of public expenditure.

The general trend, in both the OECD countries and Latin American countries, is a decrease in public investment (see Figure 1). This trend is clear in the United States during the Seventies and in European countries and Japan from the Eighties until now. The available data for Latin America⁵ covers the 1980-2003 period, showing that on average the public investment as a share of GDP reached its highest level in 1982 (7,5 per cent), and the lowest in 2002 (4,0 per cent) with a decreasing trend along the period.

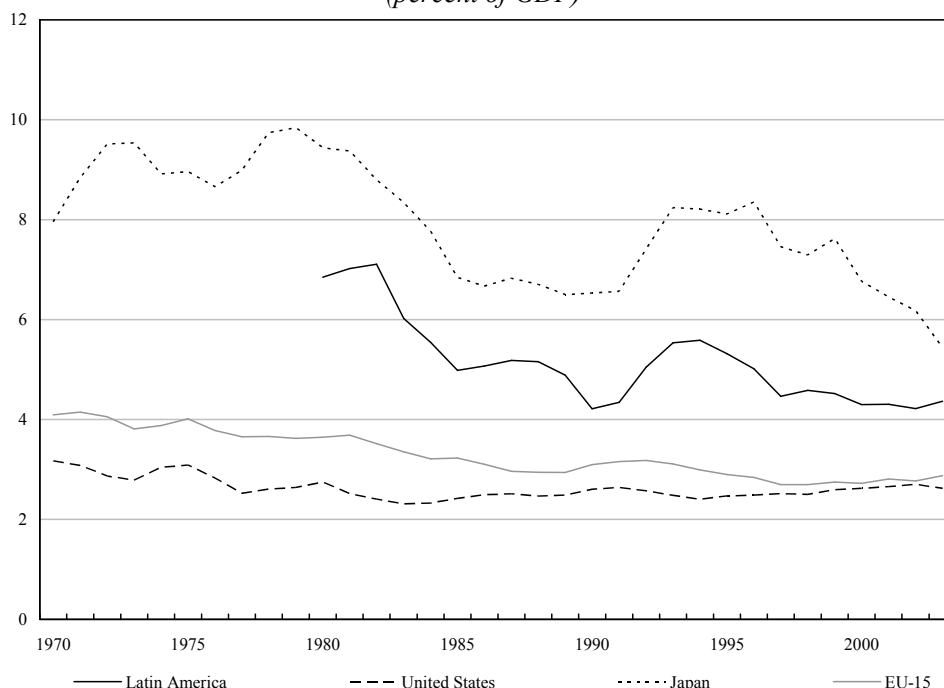
In 2003, some countries had gross fixed capital formation (Figure 2) lower than 15 per cent of GDP (Argentina, Bolivia, Colombia, Guatemala, Uruguay and Venezuela), while others had levels near by or higher than 20 per cent of GDP

⁴ The 1986 Government Finance Statistic Manual has the following definition for public investment: "This category covers payments for purchase in the market or for production within government of new or existing durable goods to be used for nonmilitary productive purpose. It encompasses only expenditure for goods with both a normal life of more than one year and more than a significant value. The kind of durable goods included are immovable fixed capital goods, including residential buildings, among them accommodations for the households of members of the armed forces, nonresidential civil buildings and other civil construction and works, and movable fixed capital goods such as transport equipment, machinery, and other equipment".

⁵ Countries having information for gross fixed capital formation separating economic sectors are the following: Argentina (1993-2003), Bolivia (1980-2002), Brazil (1980-2002), Chile (1980-2001), Colombia (1980-2003), Costa Rica (1980-2003), Ecuador (1993-2000), El Salvador (1990-2002), Guatemala (1980-2002), Honduras (1980-2003), Mexico (1980-2001), Nicaragua (1990-2003), Panama (1980-2000), Paraguay (1980-2002), Peru (1991-2003), Uruguay (1980-2003) and Venezuela (1980-2002).

Figure 1

**Latin America, United States, Japan and European Union:
Gross Fixed Capital Formation, General Government, 1970-2003
(percent of GDP)**



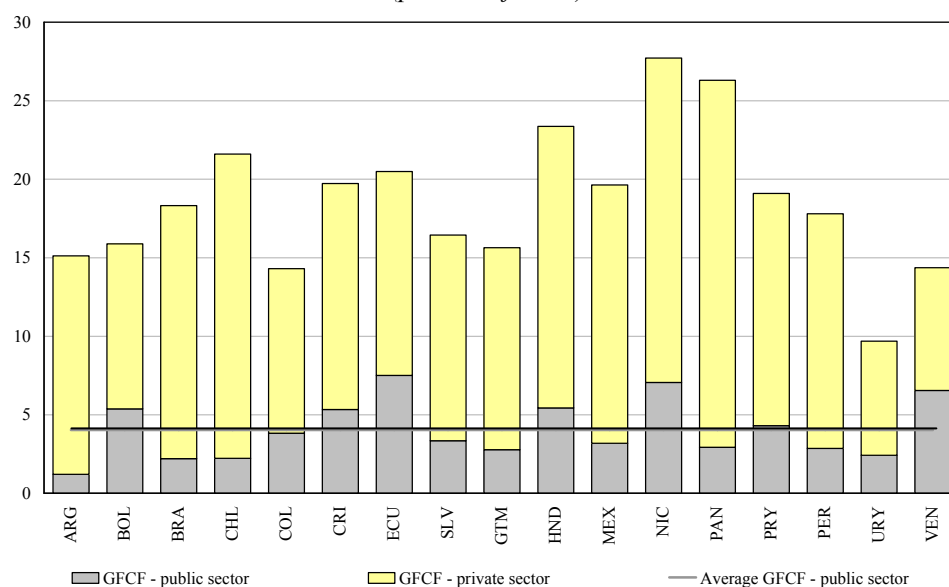
Source: ECLAC, United Nations for Latin America, European Commission, AMECO Database for the rest of the countries.

(Chile, Costa Rica, Ecuador, Honduras, Mexico, Nicaragua, Panama and Paraguay). This dispersion is even larger in public investment, although some countries include public corporations investment. Argentina and Chile have levels of public investment near 2 per cent of GDP, while for Ecuador, Honduras and Venezuela this share is above 7 per cent.

Figure 3 shows central government public investment as a share of GDP. As it can be seen, in several countries (Bolivia, Chile, Dominican Republic, Ecuador, El Salvador, Honduras, Nicaragua, Paraguay and Panama) this ratio is higher than 2 per cent of GDP. In federal countries as Argentina, Brazil and Mexico, public investment is extremely low and went along a decreasing trend during the analyzed period. This tendency can be partly explained by the transfer of some components of expenditure to sub national governments. Also, in some centralized countries (Colombia, Peru, Costa Rica and Uruguay), a systematic reduction of public investment as a share of GDP has been observed in the last years.

Figure 2

Latin America: Gross Fixed Capital Formation, 2003
(percent of GDP)



Source: ECLAC, United Nations.

In Figure 4 it can be noticed a rather small but positive correlation between public-private investment growth average in some Latin American countries. Public investment may crowd out private investment if the public sector engages activities that substitutes those normally carried out by the private sector. But public investment may exert a positive effect on private investment (crowding in) via increased productivity of private sector firms, higher expected profits and better investment opportunities. This is typically the case of public infrastructures that are used as common inputs in private sector firms' activities.

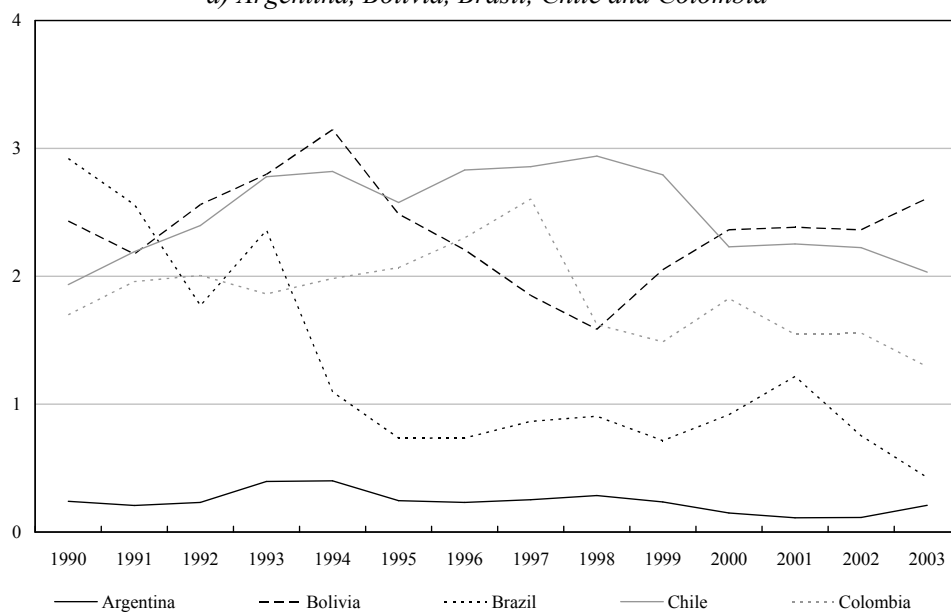
To explore the causality relation, we apply the Granger's causality test. The basic idea is to evaluate if past values of a variable can explain current values of another variable. We perform the test using annual data from selected Latin American countries, according to long-term time series availability. Following European Commission (2003) methodology, variables are expressed as first differences of their logarithm to obtain stationary time series, and we use ordinary least squares estimation. For each country, we perform the following estimation:

$$\Delta i_t^P = \alpha + \beta \Delta i_{t-1}^P + \gamma \Delta i_{t-1}^G + \varepsilon_t$$

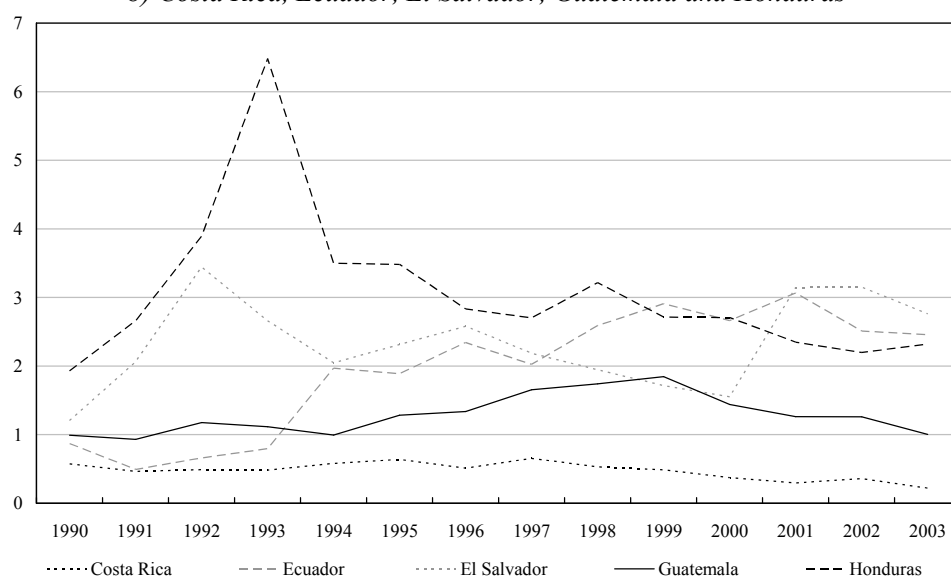
Figure 3

Central Government Real Investment, 1990-2003
(percent of GDP)

a) Argentina, Bolivia, Brasil, Chile and Colombia



b) Costa Rica, Ecuador, El Salvador, Guatemala and Honduras

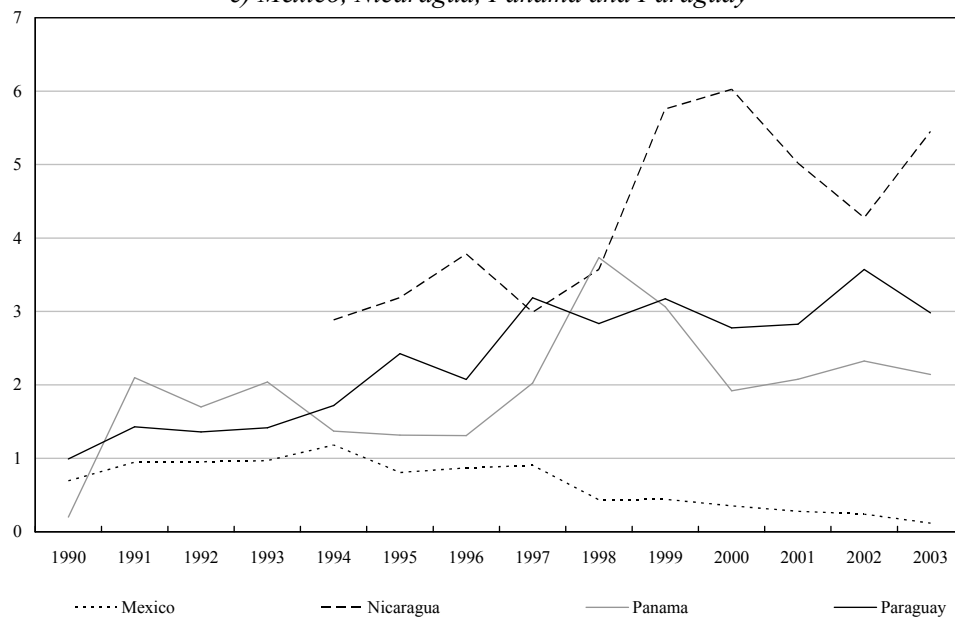


Source: ECLAC, United Nations.

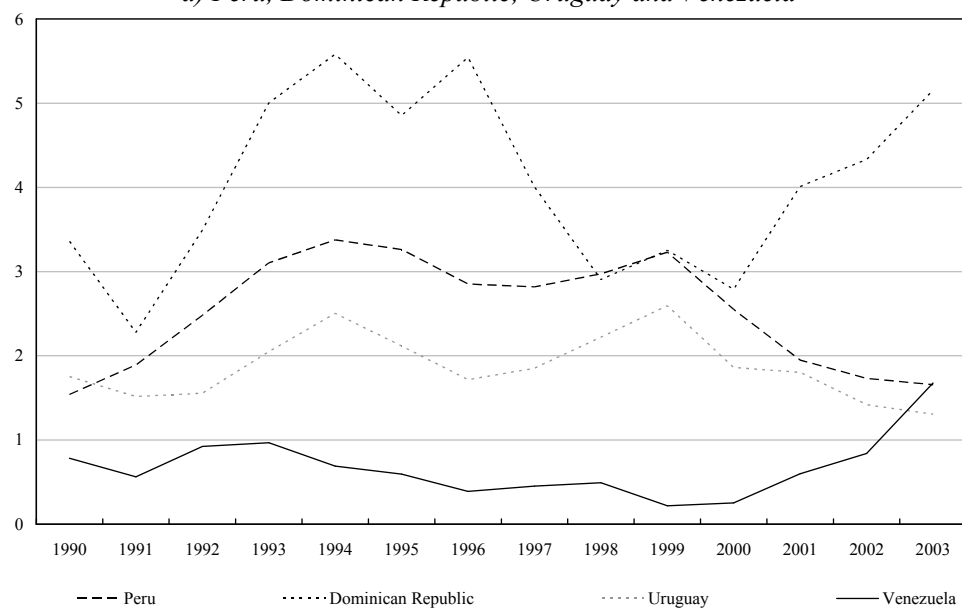
Figure 3 (continued)

Central Government Real Investment, 1990-2003
(percent of GDP)

c) Mexico, Nicaragua, Panama and Paraguay



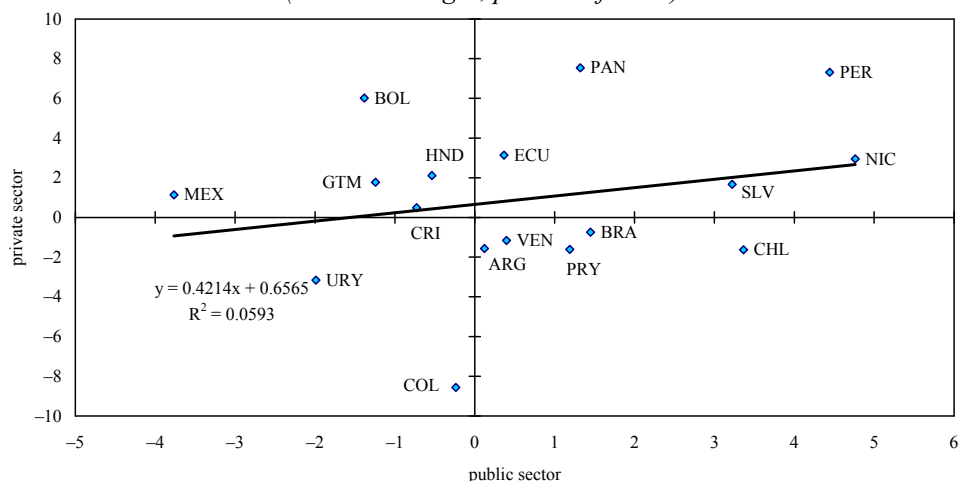
d) Peru, Dominican Republic, Uruguay and Venezuela



Source: ECLAC, United Nations.

Figure 4

Latin America: Relation Between Public and Private Investment, 1980-2003
(annual averages, percent of GDP)



Source: ECLAC, United Nations.

where superscripts G and P correspond to public and private investment respectively. Δi_t is the first difference of the logarithm of public investment or private investment in period t and $t-1$, and ε_t is a random term. If public investment has an impact over private investment, then the parameter γ is significantly different from zero. A negative value should be read as “crowding out”, a positive value as “crowding in”. The results obtained from the estimations are summarized in Table 1. The parameters are all positive; in five countries (Costa Rica, Mexico, Panama, Peru and Uruguay) γ is significant at the 5 per cent level, showing a “crowding in” virtuous circle between public and private investment.

3. Fiscal adjustment and public investment: empirical evidence

Since 1998, Latin American countries are living a period of fiscal adjustment, which implied a strong recovery of the primary balance. Countries will maintain this high primary surplus in the medium term, considering that the reduction of public debt continues to be a major concern (see ECLAC, 2004b). Figure 5 show the weighted average of the central government overall fiscal balance and primary balance. Figure 6 illustrates the deterioration of the quality of public expenditure: while public investment as a share of GDP decreased, public debt interest payments increased strongly up to 1999, remaining until now a heavy burden.

Table 1
Public and Private Investment, Granger's Causality Test

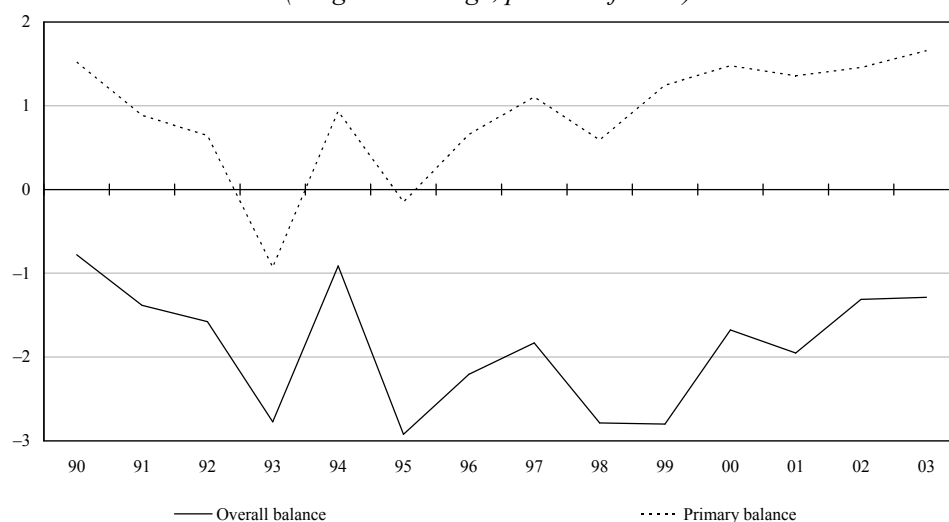
| <i>Dependent Variable: Δi_t^P</i> | Δi_{t-1}^P | Δi_{t-1}^G | <i>No. Obs.</i> |
|--|--------------------|--------------------|-----------------|
| Costa Rica | 0.064 | 0.333 (**) | 36 |
| Colombia | 0.196 | 0.329 | 27 |
| Guatemala | 0.342 (**) | 0.001 | 52 |
| Honduras | 0.413 (**) | 0.024 | 32 |
| Mexico | -0.164 | 0.376 (**) | 30 |
| Panama | -0.245 | 0.528 (***) | 31 |
| Paraguay | 0.427 (***) | 0.119 | 41 |
| Peru | 0.082 | 0.250 (**) | 32 |
| Uruguay | 0.269 (**) | 0.172 (**) | 47 |
| Venezuela | 0.130 | 0.128 | 33 |

Notes: The estimation method used is ordinary least squares including a constant term. (***) and (**) denote significance at 1 and 5 per cent respectively.

Source: Calculations of the authors based on data from ECLAC.

Figure 5

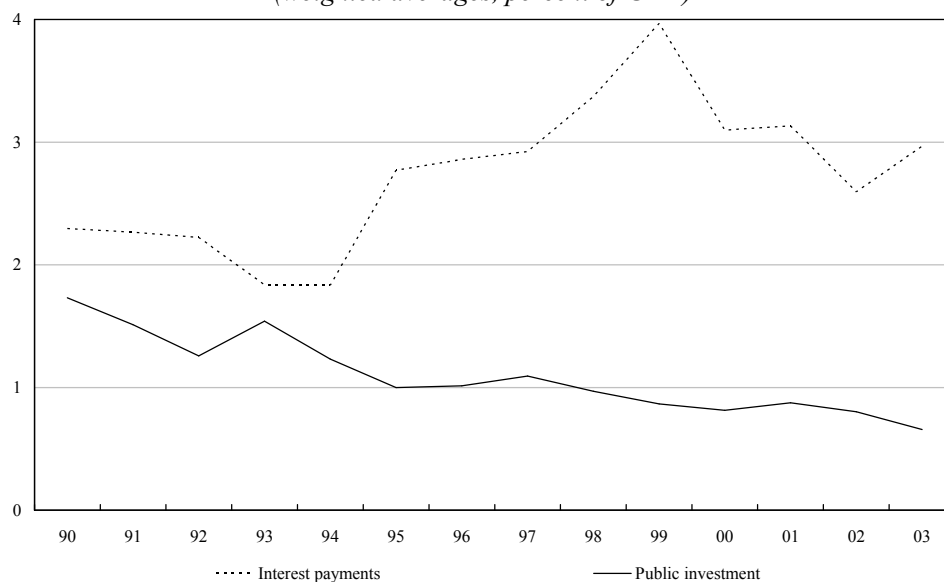
Latin America: Overall and Primary Balance
(weighted average, percent of GDP)



Source: ECLAC, United Nations.

Figure 6

Latin America: Interest Payments Expenditures and Public Investment
(weighted averages, percent of GDP)



Source: ECLAC, United Nations.

The idea that public investment is more sensitive to fiscal adjustments than other components of public expenditures is recurrent in the economic literature.⁶ Balassone and Franco (2000) show that the introduction of a fiscal target can cause a decrease in public investment in a two period's model. Turrini (2004) demonstrates that investment levels are negatively correlated with debt and past values of the cyclically adjusted primary balance. In the case of European Union countries, since 1985 public investment decreased much more than current expenditures during fiscal consolidation periods. This trend was clear during the preceding period of the Euro launch, that is between 1994 and 1998, when public investment dropped 4 per cent a year as a share of GDP.

To identify this negative bias, we proceed in three different ways. First, following the European Commission methodology,⁷ fiscal adjustment periods are classified using changes in cyclically adjusted primary balances (CAPB) of the central government as a share of GDP. A fiscal adjustment period is defined as a period (a minimum of two consecutive years) in which the change in cyclically

⁶ See, for example, Oxley and Martin (1991).

⁷ See European Commission (2000). The details of the estimation for Latin American countries are described in Martner and Tromben (2003).

adjusted primary balances is positive. These changes in CAPB are then split in cyclical and structural revenues, and current and capital expenditures (see Table 2).

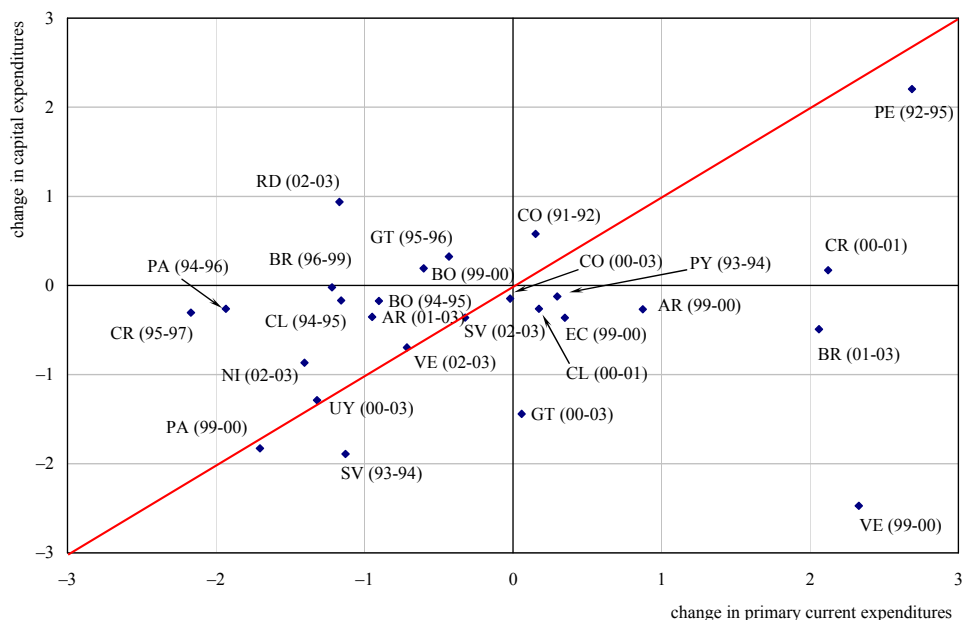
On average, during fiscal adjustment episodes revenues increased more (2,4 per cent of GDP) than the decline of primary expenditures (-1,2 per cent of GDP). The distribution of public expenditures adjustment (Figure 7) illustrates the bias against public investment. In 18 out of 24 fiscal adjustment episodes, there is a decline in capital expenditures, and in seven cases with a simultaneous rise in current primary expenditures.

A second, simpler and illustrative way to identify this bias in Latin American countries is to evaluate the share of public investment in total primary expenditures (see Figure 8).

Finally, in Table 3 the real variation of the central government expenditures components is shown for the period 1998-2003. On average, primary current expenditures increased more than 22 per cent in real and cumulative terms, while public investment level decreased 14 per cent.

Figure 7

Latin America and the Caribbean: Change in Capital and Primary Current Expenditure During Fiscal Adjustment Periods, 1990-2003
(weighted averages, percent of GDP)



Source: ECLAC, United Nations.

Latin America: Fiscal Adjustment Composition, 1990-2003
(percent of GDP)

| | Fiscal adjustment period | Change in overall balance | Change in cyclically adjusted overall balance (a) | Change in interest payments (b) | Change in cyclically adjusted primary balance (c) | Change in cyclically adjusted revenues (d) | Change in primary expenditures (e) | Change in primary current expenditures | Change in capital expenditures | Change in investment expenditures |
|-------------|--------------------------|---------------------------|---|---------------------------------|---|--|------------------------------------|--|--------------------------------|-----------------------------------|
| Argentina | 99-00 | -0.4 | 1.1 | 1.2 | 2.3 | 2.9 | 0.6 | 0.9 | -0.3 | -0.1 |
| | 01-03 | 1.9 | 5.6 | -1.4 | 4.2 | 2.9 | -1.3 | -0.9 | -0.4 | 0.0 |
| Bolivia | 94-95 | 3.5 | 2.9 | -0.1 | 2.7 | 1.7 | -1.1 | -0.9 | -0.2 | 0.2 |
| | 99-00 | 0.1 | 2.0 | 0.4 | 2.3 | 1.9 | -0.4 | -0.6 | 0.2 | 0.2 |
| Brazil | 96-99 | 1.7 | 2.4 | 2.9 | 5.4 | 4.0 | -1.2 | -1.2 | 0.0 | 0.0 |
| | 01-03 | 0.2 | 1.4 | 0.4 | 1.6 | 3.3 | 1.6 | 2.1 | -0.5 | -0.5 |
| Chile | 94-95 | 1.7 | 1.6 | -0.6 | 1.1 | -0.3 | -1.3 | -1.2 | -0.2 | -0.3 |
| | 00-01 | 1.6 | 1.8 | -0.1 | 1.7 | 1.6 | -0.1 | 0.2 | -0.3 | -0.6 |
| Colombia | 91-92 | 2.2 | 2.5 | -0.2 | 2.3 | 3.0 | 0.7 | 0.2 | 0.6 | 0.9 |
| | 00-03 | 1.4 | 1.4 | 1.1 | 2.5 | 2.3 | -0.2 | 0.0 | -0.1 | -0.1 |
| Costa Rica | 95-97 | 2.4 | 3.1 | 0.6 | 3.7 | 1.2 | -2.5 | -2.2 | -0.3 | 0.1 |
| | 00-01 | -0.5 | 0.2 | 0.3 | 0.5 | 2.8 | 2.3 | 2.1 | 0.2 | 0.0 |
| Ecuador | 99-00 | 4.2 | 5.0 | 2.3 | 7.3 | 7.3 | 0.0 | 0.3 | -0.4 | 0.1 |
| El Salvador | 93-94 | 2.9 | 2.4 | -0.8 | 1.7 | -1.3 | -3.0 | -1.1 | -1.9 | -1.4 |
| | 02-03 | 1.3 | 1.4 | 0.7 | 2.1 | 1.4 | -0.7 | -0.3 | -0.4 | -0.4 |

Notes: (a) = (c) - (b) and (c) = (d) - (e)

Source: calculations of the authors based on official data.

Table 2 (continued)

Latin America: Fiscal Adjustment Composition, 1990-2003
(percent of GDP)

| | Fiscal adjustment period | Change in overall balance | Change in cyclically adjusted overall balance (a) | Change in interest payments (b) | Change in cyclically adjusted primary balance (c) | Change in cyclically adjusted revenues (d) | Change in primary expenditures (e) | Change in primary current expenditures | Change in capital expenditures | Change in investment expenditures |
|----------------|--------------------------|---------------------------|---|---------------------------------|---|--|------------------------------------|--|--------------------------------|-----------------------------------|
| Guatemala | 95-96 | 1.4 | 1.4 | 0.2 | 1.6 | 1.5 | -0.1 | -0.4 | 0.3 | 0.3 |
| | 00-03 | 1.8 | 2.0 | -0.1 | 1.9 | 0.6 | -1.4 | 0.1 | -1.4 | -0.6 |
| Honduras | 94-95 | 6.1 | 6.7 | 0.3 | 7.0 | 1.7 | -5.4 | -5.4 | 0.0 | -3.0 |
| | 97-98 | 2.3 | 2.0 | -0.2 | 1.8 | 2.3 | 0.5 | -5.3 | 5.8 | 0.4 |
| Nicaragua | 02-03 | 5.4 | 6.0 | -0.2 | 5.8 | -2.5 | -2.3 | -1.4 | -0.9 | 0.4 |
| Panama | 94-96 | 3.4 | 4.1 | -0.9 | 3.2 | 1.0 | -2.2 | -1.9 | -0.3 | -0.7 |
| | 99-00 | 3.4 | 3.6 | 1.0 | 4.6 | 1.1 | -3.5 | -1.7 | -1.8 | -1.8 |
| Paraguay | 93-94 | 1.7 | 1.6 | -0.3 | 1.3 | 1.5 | 0.2 | 0.3 | -0.1 | 0.4 |
| Peru | 92-95 | -0.9 | -2.7 | -0.5 | 3.3 | 1.6 | 4.9 | 2.7 | 2.2 | 1.4 |
| Dominican R. | 02-03 | -1.4 | -0.8 | 1.0 | 0.2 | 0.1 | -0.2 | -1.2 | 0.9 | -0.3 |
| Uruguay | 00-03 | -0.8 | 2.3 | 3.9 | 6.2 | 3.7 | -2.6 | -1.3 | -1.3 | -1.3 |
| Venezuela | 95-96 | 20.1 | 20.0 | -0.3 | 19.8 | 5.6 | -14.2 | -15.1 | 1.0 | 0.9 |
| | 99-00 | 8.6 | 8.9 | 0.0 | 9.0 | 8.8 | -0.1 | 2.3 | -2.5 | -2.4 |
| | 02-03 | 4.6 | 6.3 | 1.8 | 8.1 | 6.7 | -1.4 | -0.7 | -0.7 | -0.7 |
| Average | | 2.8 | 3.3 | 0.4 | 4.0 | 2.4 | -1.2 | -1.1 | -0.1 | -0.3 |

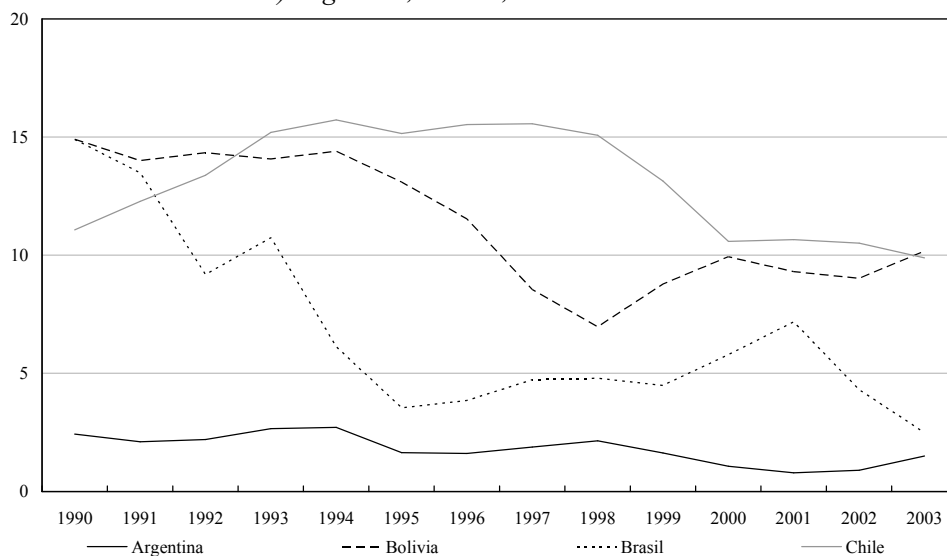
Notes: (a) = (c) - (b) and (c) = (d) - (e)

Source: calculations of the authors based on official data.

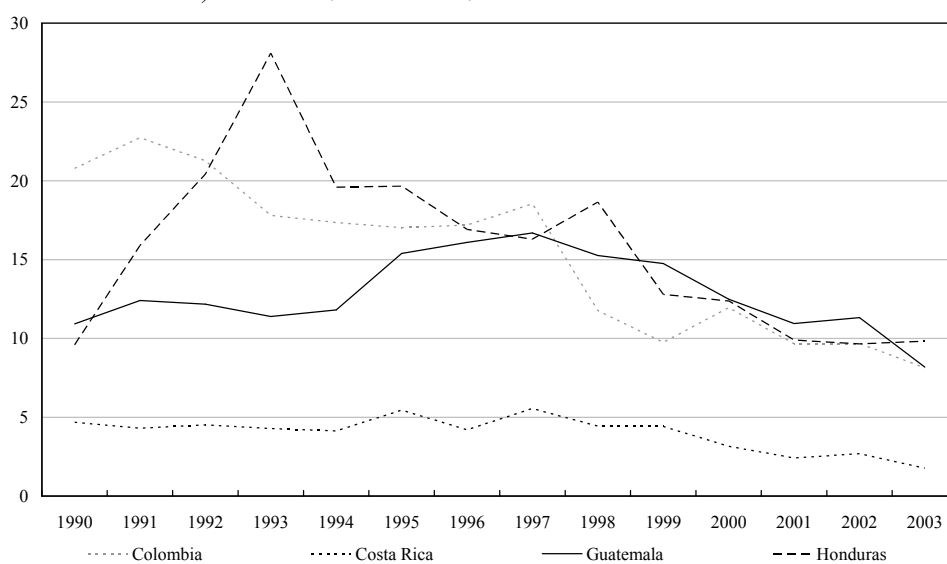
Figure 8

Latin America: Central Government Fixed Investment, 1990-2003
(percent of primary expenditures)

a) Argentina, Bolivia, Brasil and Chile



b) Colombia, Costa Rica, Guatemala and Honduras

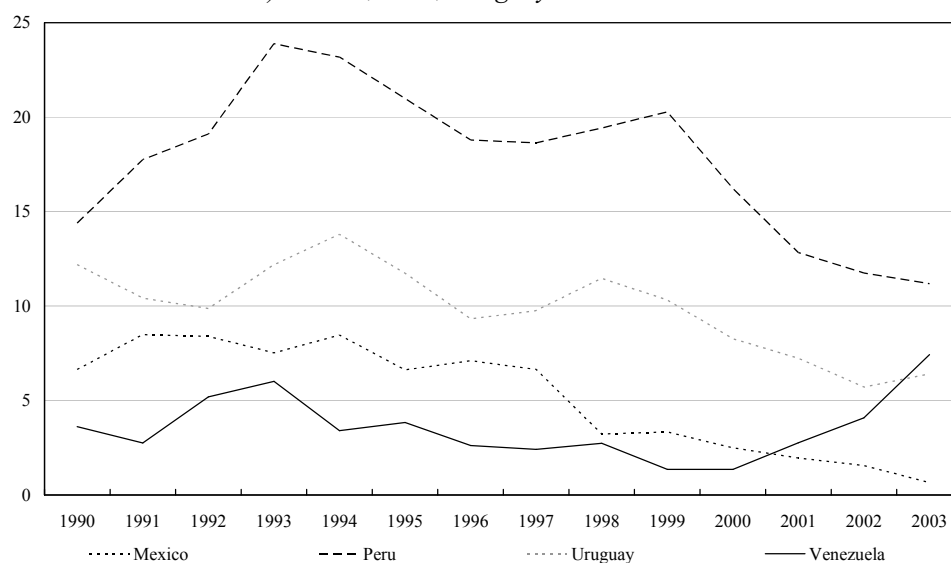


Source: ECLAC, United Nations.

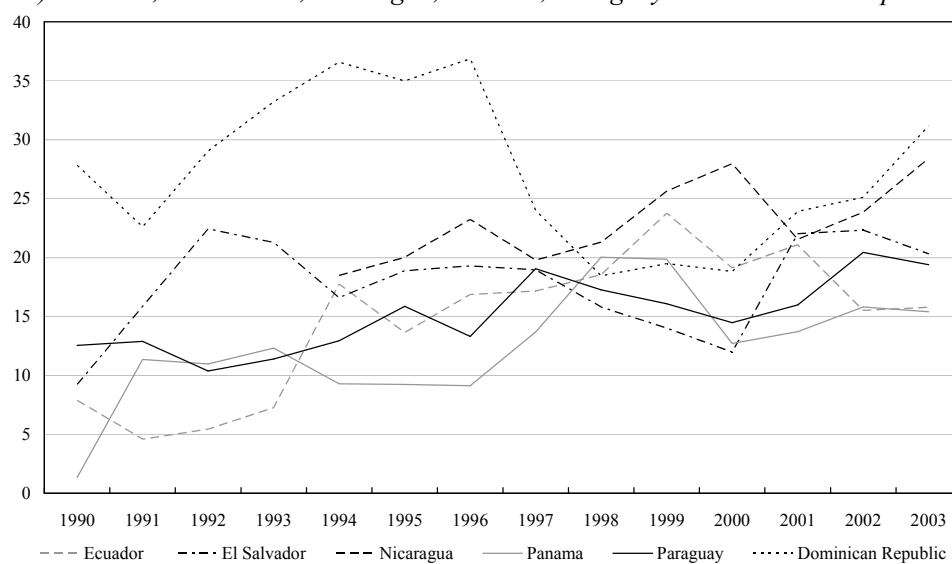
Figure 8 (continued)

Latin America: Central Government Fixed Investment, 1990-2003
(percent of primary expenditures)

c) Mexico, Peru, Uruguay and Venezuela



b) Ecuador, El Salvador, Nicaragua, Panama, Paraguay and Dominican Republic



Source: ECLAC, United Nations.

Table 3

Latin America: Central Government Expenditure Components

| | 2003 (percent of GDP) | | Real Variation 1998-2003 (percent) | |
|------------------------------------|------------------------------|------------|---------------------------------------|--------------|
| | Primary Current Expenditures | Investment | Primary Current Expenditures | Investment |
| Nicaragua | 10.8 | 5.4 | 30.3 | 81.1 |
| Dominican Republic | 12.9 | 5.2 | 11.8 | 123.3 |
| Paraguay | 14.3 | 3.1 | -6.6 | -1.6 |
| Haiti | 8.9 | 3.0 | 20.5 | 54.3 |
| El Salvador | 9.9 | 2.8 | 17.4 | 59.2 |
| Honduras | 17.7 | 2.8 | 69.6 | -18.4 |
| Bolivia | 21.5 | 2.6 | 15.2 | 80.7 |
| Ecuador | 10.7 | 2.5 | 19.8 | 0.7 |
| Panama | 11.6 | 2.1 | 0.2 | -28.2 |
| Chile | 17.2 | 2.0 | 21.0 | -51.2 |
| Venezuela | 15.7 | 1.7 | -4.1 | 180.5 |
| Peru | 12.9 | 1.7 | 22.4 | -36.9 |
| Uruguay | 19.1 | 1.3 | -6.1 | -50.4 |
| Colombia | 14.6 | 1.3 | 26.7 | -15.8 |
| Guatemala | 7.8 | 1.0 | 30.8 | -33.8 |
| Brazil | 9.9 | 0.4 | | -58.3 |
| Costa Rica | 11.5 | 0.2 | 32.9 | -48.7 |
| Argentina | 13.2 | 0.2 | -2.2 | -34.8 |
| Mexico | 16.9 | 0.1 | 64.9 | -69.7 |
| Latin America⁽¹⁾ | 13.7 | 1.8 | 22.4 | -14.1 |

(1) Unweighted average excluding Haiti, Dominican Republic and Venezuela.

Source: calculations of the authors based on official data.

There has been a negative bias for public investment in recent years, although this trend cannot be generalized to all countries and all episodes. Making room to public investment in Latin America, while ensuring fiscal sustainability, is undoubtedly a puzzle for fiscal authorities. We analyze different options in the rest of the document.

4. A radical option: the golden rule in public finance

4.1 General considerations

In formal terms, the golden rule arithmetic is the following (see Blanchard and Giavazzi, 2004):

$$\dot{b} = g - t + i + (\delta - \vartheta)k + (r - n)b .$$

Where b is public debt stock, t represents government revenues, g current expenditure, i net investment, and k is the capital stock. All variables are expressed as a share of GDP, and there is no inflation. Also, r is real interest rate, n the economic growth rate, δ the capital depreciation rate and ϑ the public capital return rate. The novelty of this definition of the change in public debt stock is the inclusion of incomes of public capital stock.⁸ If the rule is a balanced budget, we would have:

$$g - t + i + (\delta - \vartheta)k + rb = 0$$

Changes in public debt stock would depend on its initial value and the rate of growth of the economy:

$$\dot{b} = -nb$$

With a positive growth rate of the economy, the public debt-to-GDP ratio will converge to zero. If the rule is to have a current account balance, then:

$$g - t + (\delta - \vartheta)k + rb = 0$$

and:

$$\dot{b} - \dot{k} = -n(b - k)$$

Defining $i = \dot{k} + (n + \delta)k$, public debt stock has its counterpart in the public capital stock. If capital stock is constant as a share of GDP, the government can have a deficit equal to nk . Public debt stock would then converge to the amount of public capital stock.

We apply this rule for Latin American countries using: $\delta = 0.05$ and $k = 30$. Probably this last number is lower in Latin American countries, so we also estimate “the admissible deficit” under a golden rule applied to net investment ($i - \delta k$) with a public capital stock equal to 20 (Table 4).

If we accept these parameters as realistic, especially the capital depreciation rate, we can observe that public investment deficit is very significant: nine countries would have nil or negative net investment (second column of Table 4). These simple estimations confirm a key intuition: countries can have bigger deficits without compromising fiscal sustainability if we take into account public investment returns. Considering in addition the positive impact of public investment on economic growth, a special treatment of public investment should result in welfare improvements. Infrastructure deficiencies compromise economic growth and contribute negatively to the public debt-to-GDP ratio evolution.

Objections to a generalized application of the golden rule are numerous. In a discussion referred to the European Union, Buti, Eiffinger and Franco (2003)

⁸ Although it is not precised by the authors, we can imagine two sources of public capital returns: the first would be a direct source proceeding from public corporations investment; and the second an indirect source proceeding from a higher tax collection due to an increased overall economic activity.

Table 4

**“Admitted” Deficit in Latin American Countries,
According to Central Government Investment Level**

| | Gross Investment 2003 | “Admitted” Deficit <i>k</i> = 30 per cent | “Admitted” Deficit <i>k</i> = 20 per cent |
|------------------------------------|----------------------------------|--|--|
| Nicaragua | 5.4 | 3.9 | 4.4 |
| Dominican Republic | 5.2 | 3.7 | 4.2 |
| Paraguay | 3.1 | 1.6 | 2.1 |
| Haiti | 3.0 | 1.5 | 2.0 |
| El Salvador | 2.8 | 1.3 | 1.8 |
| Honduras | 2.8 | 1.3 | 1.8 |
| Bolivia | 2.6 | 1.1 | 1.6 |
| Ecuador | 2.5 | 1.0 | 1.5 |
| Panama | 2.1 | 0.6 | 1.1 |
| Chile | 2.0 | 0.5 | 1.0 |
| Venezuela | 1.7 | 0.2 | 0.7 |
| Peru | 1.7 | 0.2 | 0.7 |
| Uruguay | 1.3 | -0.2 | 0.3 |
| Colombia | 1.3 | -0.2 | 0.3 |
| Guatemala | 1.0 | -0.5 | 0.0 |
| Brasil | 0.4 | -1.1 | -0.6 |
| Costa Rica | 0.2 | -1.3 | -0.8 |
| Argentina | 0.2 | -1.3 | -0.8 |
| Mexico | 0.1 | -1.4 | -0.9 |
| Latin America⁽¹⁾ | 1.8 | 0.3 | 0.8 |

(1) Unweighted average excluding Haiti, Dominican Republic and Venezuela.

Source: calculations of the authors based on official data.

suggest that the gains of adopting that kind of rule would be limited in countries where infrastructure is already well developed. Net investment levels are very low, and not necessarily inconsistent with the actual rule. In addition, empirical evidence shows that public infrastructure investment have decreasing returns. From an intergenerational point of view, a combination of high public investment with high borrowing is not necessarily superior to a situation with low public investment and low borrowing. Finally, separate budgets could bias public expenditure in favor of non-financial assets, disadvantaging human capital and other intangibles that contribute to economic growth.

Turrini (2004) adds up some other arguments against the golden rule. First, there is no clarity in respect to the optimal rate of public investment. Therefore, situations where a golden rule could be counterproductive can exist. Perhaps the most criticized aspect of the golden rule's rationality is the analogy made with the private sector. In general, private enterprises take possession of the majority of their project returns, which represents a justification of the multi-annual accounting treatment for those investment projects. In the case of public investment, these returns benefit the whole society and are not necessarily transformed into revenues for the public treasury. The proper investment accounting is indeed difficult: some outlays that have future returns are not classified as investment (education), whereas some outlays classified as investment do not have substantial future returns (social housing). Finally, the estimation of crucial parameters as depreciation and public capital stock remain very difficult.

If we were to apply the golden rule in its traditional form in Latin America and the Caribbean, an unsolved problem would be the absence of limits in the overall fiscal deficit. The application of the golden rule would lead to a kind of "structural" heterogeneity of the overall fiscal deficit goals. While in some countries (Argentina, Brazil, Colombia, Costa Rica, Mexico and Uruguay) capital expenditure represents less than 2 per cent of GDP, in other countries (Bolivia, Chile, Ecuador, Paraguay, Peru, Dominican Republic and Venezuela) the amount is much larger and could justify bigger deficits.

The conclusion is that, although the idea of a golden rule is very interesting and addresses a true problem, its application is far from being universal. It seems better to leave room to discretionary decisions, depending on the initial situation, the budget restrictions and the dimension of infrastructure gap. Also, its implementation would require key institutional adaptations, as explained in Toigo and Woods (this issue).

4.2 The Government Finance Statistics Manual 2001 (GFSM 2001)

As it is well known, in most Latin American countries accounting rules are defined in a cash basis (flows are recorded when cash is received or disbursed) and rarely in an accrual basis (flows are recorded when economic events occur irrespective of whether cash was received or paid). The combination of a cash basis accounting and explicit fiscal rules may lead to an intensive use of creative accounting. A budget can appear to be balanced in the short-term, but at the same time it can produce unsustainable obligations for the future or it can be financed by net worth reduction (through sales of non-financial assets or through the reduction of public investment), that would imply a progressive decrease for future financing. A fundamental difference is that accrual based accounting distinguishes between expenses and acquisitions of nonfinancial assets (recorded separately): the expenses of using non-financial assets in operating activities are matched with the period of their use and not with the period of their acquisition.

In 2001, the IMF published the new Government Finance Statistics Manual (*GFSM 2001*), establishing new standards in the structure, coverage and accounting rules for fiscal statistics. The 1986 *GFSM* concentrated in governments' cash problems, considering that liquidity or finance restrictions of the governments were the best way to evaluate country's fiscal policy. The *GFSM 2001* introduces accrual basis accounting and balances with the coverage of economic and financial activities of general government. There are many analogies with the private sector financial statements. Hence, this new accounting structure should allow evaluating general government financial strength according to the same criteria applied to the other economic agents.

The *GFSM 2001* analytical framework is constructed over the principle that "all changes in stocks can be fully explained by the flows" and it is based on the same accounting rules than the 1993 System of National Accounts. Double-entry accounting is used for recording flows (every economic event should have a credit entry and a debit entry),⁹ which implies a simple definition of what are government revenues and expenditures. Revenue is an increase in net worth resulting from a transaction, whereas expense is a decrease in net worth resulting also from a transaction. In the *GFSM 2001*, public investment is recorded as an increase in nonfinancial assets and its counterpart is a decrease in financial assets (double-entry accounting). Therefore, net worth is not affected and public investment is not considered as an expense.

In the *GFSM 2001*, there are three financial statements: the statement of government operations, the statement of other economic flows and the balance sheet. The balance sheet records the stocks of assets, liabilities and net worth of the government at the end of each accounting period, which is also the beginning of the next accounting period. By breaking down the total of assets and liabilities into their constituents and establishing the sources of their changes from one period to another in terms of transactions and other economic flows, the framework provides statistical explanation of the factors that cause the changes in net worth:

$$W = pK + FA - FL$$

Net worth (W) is equal to the sum of all assets (pK corresponds to public capital stock or, in other words, to nonfinancial assets and FA corresponds to financial assets) minus liabilities (FL corresponds to financial liabilities). This framework would allow evaluating, for example, if fiscal adjustments have been accompanied by a decrease in net worth. Milesi-Ferretti and Moriyama (2004) made such an exercise for European Union countries, seeking to determine if the decrease in public debt was "genuine", leading to an increase in net worth or a decline in non-financial assets through privatizations and reduction of public investment. In this study, the authors divided the sample into two adjustment periods: in the first period (1992-97) they found a positive correlation between changes in assets and

⁹ A debit is an increase in an asset, a decrease in a liability, or a decrease in net worth. A credit is a decrease in an asset, an increase in a liability or an increase in net worth.

liabilities with a reduction in net worth; in the second period (1998-2002), the reduction observed in liabilities was accompanied by a substantive increase in net worth. Despite the importance of that kind of diagnosis, the lack of information in Latin American countries makes this type of evaluation impossible for the time being.

5. Options for greater fiscal flexibility

5.1 *The coverage of fiscal statistics and rules*

In the public sector area, the observance of procedures contained in the recently published manuals by the IMF and the OECD is part of the integration of emerging countries that have access to international capital markets. Even if countries made notorious progress in the application of standards and codes in public accounting, some recent practices are rather controversial and even misleading.

Government finance statistics should refer in priority to the general government, as ministries and agencies are essentially providing public goods, financed primarily by taxation. In spite of its straightforwardness, this kind of rule could lead to small or big revolutions in fiscal institutions. On one hand, several countries in Latin America have extra-budgetary mechanisms, special funds and stabilization funds. On the other hand, countries organized politically as federal states cannot establish fiscal rules for the whole *Estados* or *Provincias*. For example, the fiscal responsibility law of 1999 in Argentina only encompassed the federal government.

Nevertheless, IMF-supported programs have tended to widen institutional coverage of overall fiscal balance and public debt stock targets, including in most cases public enterprises and Central Bank. For developed countries, IMF staff reports, in the framework of Article IV consultations, focus at the general government level. For Latin American countries, the coverage is eighty five per cent nonfinancial public sector, including then non-financial enterprises. Moreover, compared to other geographical areas, Latin America is clearly in disadvantage (see IMF, 2004a).

This trend is not arising only from the IMF. In the case of regional agreements, common goals refer to overall fiscal balance and public debt stock of the non-financial public sector (this is the case for the Andean Community and the Common Central American Market), or to the new concept of change in net public debt stock (MERCOSUR). In this last example, international reserves are included in the common goal, contributing to give to that norm another pro-cyclical characteristic. A broad coverage seems to be necessary when it is clear that countries have important off-budget activities. But these practices should not represent the norm for medium-term macro-fiscal rules, as it leads to magnifying fiscal deficits.

The inclusion of nonfinancial enterprises in a consolidated basis with the general government may induce to artificial adjustments; it will always be easier to cut investments in public enterprises than reducing programs from the general government, or than increasing tax rates. When the target is non-financial public sector balance, any public enterprise investment will aggravate deficit. With this institutional coverage, analysts and financial agencies would see a worsening of the fiscal stance, rising country risk and punishing infrastructure investments with high interest rates.

In a medium term perspective, the broad approach magnify fiscal deficit and induce artificial adjustments, reducing investments from public enterprises rather than evaluating expenditure programs from the general government, or increasing tax collection. Analysts would observe a worsening of the fiscal stance with public enterprises investment expenditures, elevating the country-risk and punishing infrastructure. If public enterprises do not have quasi-fiscal activities and if transfers from central government are properly recorded in the budget, it makes no sense to include their operations in fiscal goals. It has been argued that, as guarantees for public enterprises are contingent liabilities for the Treasury, coverage for fiscal statistics should be nonfinancial public sector. Nevertheless, contingent liabilities do not represent certain obligations and should have then a different treatment.

As emphasized in the IMF paper (2004a), it is important to exclude from fiscal indicators public enterprises that are commercially run. The controversy remains in how to define them. As a general criterion, the IMF suggests that public enterprises must perform nine criteria, falling into four broad categories: managerial independence (prices and employment policies), relations with government (subsidies and transfers, and regulatory and tax regime), financial conditions (profitability and creditworthiness) and governance structure (stock listing, outside audits and shareholders' rights). As these criteria may be too restrictive, it is recommended to focus on managerial independence and relations with government.

Within this framework, a set of public enterprises has been identified in Turkey that have compulsory goals for the program 2002-04, while others only have indicative goals (47 public enterprises are still included in the principal fiscal indicator). In Brasil, with the 2002-05 arrangement, Petrobras was classified as a commercially run enterprise, and therefore Petrobras' investments were excluded from the fiscal primary surplus calculation. More recently, some "strategic" investments are not included in the target. In Colombia, the framework was applied to 14 public enterprises, but only one performed the established criteria.

This "case-by-case" approximation has to be considered as a first step, considering that, in most cases, the framework does not notably reduce the coverage of fiscal indicators. Moreover, the case-by-case approach is a little confusing when countries need harmonized criteria in their relationships with International Financial Institutions. A proper accounting of general government operations would be a better option, considering that only four out of twenty countries of Latin America and Spanish Caribbean do so; all the rest have available data for central government and non financial public sector coverages.

5.2 Public-private Partnerships: the Mexican experience

The interest for public-private partnerships (PPP) is growing in Latin American countries. But the concept of PPP is not easy to define. Most of the time, there is some confusion between PPP's and privatizations or concessions that can lead to contingent liabilities. In a recent report published by the IMF (2004b), PPP's are defined as "arrangements where the private sector supplies infrastructure assets and services that have been traditionally provided by the public sector." These operations include the construction and management of hospitals, schools, prisons, highways, tunnels, bridges, railways, air traffic control systems, etc.

The United Kingdom is a pioneer in PPPs: its Private Finance Initiative (PFI)¹⁰ allowed materializing more than 600 investment projects since 1992, including 34 hospitals and 200 schools. Once constructions are engaged, the government makes annual cash payments covering all costs, including capital costs (for infrastructure assets) and services. In the case of a hospital, for example, services payments (maintenance, catering, cleaning and others) represent up to 40-50 per cent of the total unit cost. As these costs are easy to quantify, they can be included in a transparent way in future budgets. Still 85 per cent of public investment in the United Kingdom is "traditional", and there is no generalization of this type of contract in the rest of OECD countries.

In the case of Mexico, the institutional coverage used for the presentation of the traditional fiscal balance is the central nonfinancial public sector. It includes the federal government and nonfinancial entities that produce goods and services for the market and/or nonprofit enterprises. Beginning the first semester of 2001, the *Secretaría de Hacienda y Crédito público* calculates two fiscal indicators: the "traditional fiscal balance" and the "public sector borrowing requirements" (PSBR). The latter include, among other things, the traditional fiscal balance, the financing needs of public investment projects in oil and energy sectors (PIDIREGAS) and the borrowing requirements of the toll road rescue program (FARAC). In 2003, while the traditional deficit was 0.3 points of GDP, the wider indicator climbs to 2.5 per cent of GDP. The PSBR indicator is only indicative; Mexican authorities continue using the traditional public balance as the relevant fiscal indicator to budgetary commitments. Moreover, internal and external net indebtedness ceiling authorized by the congress are consistent with the traditional measure of fiscal balance.

Borrowing requirements for long-term infrastructure projects (PIDIREGAS, for PEMEX and CFE, state-owned enterprises of oil and electricity.) are derived from projects that can be financed by themselves and have an economic impact once they are realized. Their budgetary registration is deferred across time according to legal arrangements (article 18 of the General Law of Public Debt and article 30 from the Budget Law). The private sector executes these projects on behalf of the public sector and frequently obtains financial resources covering the costs during the project execution period. Infrastructure projects realized under this modality

¹⁰ See HM Treasury (2003): *PFI: Meeting the Investment Challenge*.

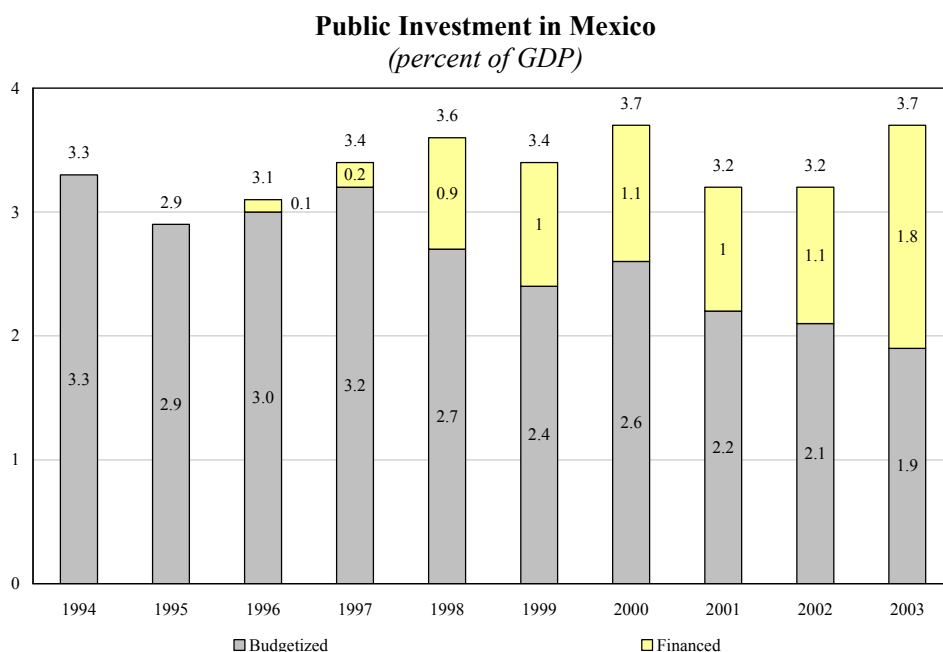
correspond to strategic activities and should have a demonstrated income-yield capacity, in the sense that future revenues generated from sales of goods and services should be sufficient to cover financial obligations.

The PIDIREGAS's scheme is based on a simple formula; the private sector has the mandate of the execution of the project, with the obligation to reconstitute ownership to the public entity once the works have ended. Once the ownership's transfer is realized the government assumes as a direct liability payments realized in advance and the rest is assumed as a contingent liability.

The extent of this practice is illustrated in Figure 9 for the period 1998-2003, representing in this last year the same amount than traditional public investment. For this reason, the downward trend of budgeted public investment is misleading. Nevertheless, fiscal authorities consider that Pidiregas does not represent an advantage anymore, since amortization is similar to new investment. In the future, the budgetary channel should be used to keep in line traditional balance.

A particular case of PPPs is constituted by those long-term projects related to the rendering of services (PPS). Mexican authorities have launched this kind of PPP's in the education and health sectors. The objective is to establish long-term contracts to private suppliers who are in charge of the building infrastructures

Figure 9



Source: Ibarra (2003).

operated by public employees. Based on the experience of the United Kingdom (PFI), PPS's basic characteristics are: i) the government assign a contract to the private investor who have to provide services for a period superior to 15 years; ii) assets' ownership could be from private investor or from a public entity; iii) once services have been supplied with satisfaction, the government realizes the corresponding payments. The investment potential amount is quite important: US\$ 780 million in projects in Transport and Communications sector, US\$ 300 million in Health sector; US\$ 230 million in Education sector.

Within the PPS scheme the accounting is similar to the private sector: once a year one part of the investment is recorded in fiscal accounts, including maintenance expense. As this initiative concerns "pure" public goods investments, it represents a real and attracting alternative to reduce anti-public investment bias.

5.3 *Structural balance rules: the Chilean experience*

Ideally, public spending should be acyclical, rather neutral in the business cycle, or countercyclical, with explicit policies aimed at reducing public debt during good periods and hence confronting in better conditions cyclical downturns. In OECD countries, it has been widely accepted to leave automatic fiscal stabilizers operate, as a leading criterion for fiscal policy. This principle has been supported by ECLAC (1998) for its full application in Latin American countries, recommending the use of structural fiscal indicators instead of the traditional fiscal balance. Other international organizations have also promoted the application of macro fiscal rules, not only with the idea to protect public investment, but also to enforce the countercyclical role of the fiscal policy. The IMF report (2004a) also emphasize the importance of managing boom periods (keeping public expense growth rate under control and reducing debt during those periods) with cyclically adjusted indicators. Putting into practice this kind of policy represents a huge step toward macroeconomic stability.

Unfortunately, there is ample empirical evidence of the pro-cyclicality of fiscal policies in Latin American countries.¹¹ For this reason, applying counter-cyclical fiscal rules is crucial to ensure a stable path of public spending. Many countries have made improvements; the fiscal responsibility Laws launched in the beginning of the decade succeeded to stop ever-growing debt dynamics. Nonetheless, there are few experiences where the explicit goal of fiscal rules is counter-cyclical.¹²

¹¹ See for example Martner and Tromben (2003) for a recent analysis.

¹² The tax stabilization funds (Argentina, Peru), or commodities stabilization funds (Chile, Venezuela, Ecuador, Mexico) are in fact anti-cyclical policies. In Peru, the resources of the Fondo de Estabilización Fiscal (the fiscal surplus of public sector at the end of the year) will be used to pay external debt when their amount is superior to 2 per cent of GDP; in Ecuador, 70 per cent of the resources of the Oil Stabilization Fund will be used to pre-pay debt and cancel liabilities with the Institute of Social Security; in Chile, non-expected incomes from copper sales are accumulated in the Fondo de Compensación, that can either increase international reserves or be used to pre-pay external debt (see ILPES, 2004, for more *(continues)*)

The Chilean experience is valuable in that sense. With the 2001 budget law, the Chilean government made official the decision of driving a fiscal policy rule based on the achievement of a structural budget surplus equivalent to 1 per cent of GDP. The rule imply fixing the public expenditure growth of central government in terms of trend GDP, regardless effective GDP fluctuations. This in theory ensures a neutral and stable multiannual path to public expenditure, reducing the probability of severe adjustments and bringing in practice some certainty to the execution of public projects and programs.

This rule was first applied in a period of negative output gap (the cyclical component of the budget was negative until 2003 with a maximum level of 1,7 per cent of GDP in 2002. See Table 5). From 2004, the rule is being applied in the upper size of the business cycle, when pressures to spend are bigger. A basic requirement is then fulfilled: fiscal policy's neutrality throughout the complete business cycle. The authorities anticipate that the sum of fiscal surpluses for the period 2004-05 will be greater than fiscal deficits for the period 2000-03, which confirms that the rule is operating symmetrically within the cycle. Resources not budgeted are accumulated in the Copper Compensation Fund (CCF), and used in part to reduce external public debt. At the end of 2005, the CCF should recover the same level than before Asian crisis, being able to finance budget in case of a reversion of the present phase of high prices of copper.

The basic idea of a structural budget balance is to exclude cyclical components of the budget in order to restore to the fiscal policy its stabilization function. To achieve the implementation of the rule the government needs:

- the estimation of the potential output. This is done through a Cobb-Douglass production function. Since 2002, a committee of 14 external experts has been created and each member gives annually an estimation of the growth of the inputs for the production function (the gross fixed capital formation and the labour force) for the next three years. The average of the experts' estimations, excluding extreme values, is the potential GDP growth used to estimate the output gap. In order to ensure transparency to the process, the Budget Direction publishes in its web site the meeting reports;
- the estimation of the long-term copper price. This estimation is also made through a committee, formed by 10 external experts. The average, excluding the extreme values, is the long term price;
- the estimation of the cyclical components of the budget. The calculation of the cyclically adjusted tax revenues is completed using the output gap and the income elasticity of taxes, estimated at 1.05. The copper cyclical component ($IC_{s,t}$), is estimated considering physical sales from CODELCO (the copper state enterprise) and the price cyclical variations.

details). But the existence of these funds is not enough to ensure neutral or anti-cyclical policies. As a matter of fact, legislative limitations of public expenditure growth (3.5 per cent per year in real terms in Ecuador and Peru, for example) tend to impose a descendent path to public expenditure in terms of GDP, if trend growth is higher, and hence these kind of policies are not neutral.

Table 5

Chile: Central Government Traditional and Structural Balances
(percent of GDP)

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 ^(e) | 2005 ^(b) |
|--------------------------|------|------|------|------|------|------|------|---------------------|---------------------|
| Traditional balance | 2.0 | 0.4 | -2.1 | -0.7 | -0.6 | -1.3 | -0.4 | 1.9 | 1.2 |
| Total cyclical component | 1.2 | -0.2 | -1.3 | -0.8 | -1.4 | -1.7 | -1.2 | 1.0 | 0.2 |
| of which: | | | | | | | | | |
| Tax revenues | 1.0 | 0.5 | -0.4 | -0.3 | -0.4 | -0.7 | -0.8 | -0.6 | -0.5 |
| Copper | 0.2 | -0.7 | -0.9 | -0.4 | -1.0 | -1.0 | -0.4 | 1.6 | 0.7 |
| Structural balance | 0.8 | 0.6 | -0.8 | 0.1 | 0.9 | 0.5 | 0.8 | 1.0 | 1.0 |

(e): estimated; (b): budgeted.

Source: DIPRES (2004): *Informe de finanzas públicas. Proyecto de Ley de Presupuesto del sector público para el año 2005*, Santiago de Chile.

There is no cyclical component of the budget for expenditures. The calculation of the so-called structural budget balance is obtained from the conventional balance, deducting the cyclical components of tax revenues and copper revenues. Based on the projections of structural revenues it is therefore possible to fix the rate of growth of expenditures for the next budget.

The 2000-01 adjustment period (when the official structural balance went from -0.8 per cent of GDP to 0.9 per cent) implied a substantial decrease in public investment, much bigger than in the case of current expenditures. Public-investment-to-GDP ratio has not improved until 2003; growing public expenditure components are essentially current transfers and capital transfers. Both of them are associated to massive employment programs (including direct and indirect subsidies to the private sector). In the case of Chile the application of a structural macro fiscal policy rule, although ensuring an important stabilization role, has not proven to be sufficient to enhance public investment. If public authorities want to eliminate the anti-public investment bias, the tools should be more specific, combining a structural rule and a golden rule, as it the case in the United Kingdom.

Chile has recently implemented the GFSM 2001 framework for its fiscal statistics. Although the gross operating balance will probably be soon a familiar indicator for analysts and public opinion, it is doubtful that it will be an explicit fiscal goal. Rules covers General Government operations, as public enterprises accounting are presented separately. The NFPS coverage is not published as such, but all the information is available to proceed to consolidation.

6. Towards an integrated agenda

The Cusco's final Declaration of the XVII Rio Group Summit, in May 2003, ratified the urgent need for establishing innovating financial mechanisms appointing to enforce democratic governance and the struggle for poverty eradication through new resources for productive investment and pro-employment programs. In order to fulfill these targets, stimulating infrastructure expenditures is crucial. For Latin American countries, it would be necessary to invest around 3 per cent of GDP annually in infrastructure – the equivalent of US\$ 70 billion – to achieve a sustainable rate of 3 per cent annually.

We showed evidence that during the years 1998-2002, there was once again a bias against public investment in fiscal adjustment episodes. It will always be easier to suspend public works than cutting off current expenditures. It has been estimated that reductions of investment in infrastructure accounted for half of the fiscal adjustments made in Argentina, Bolivia, Brazil, Chile and Peru during the Nineties. Introducing greater fiscal flexibility and promoting a growth-oriented fiscal policy leads to recognize that investment and current expenditure are different economic phenomena.

This is why it is urgent to confront this issue adopting an integrated approach. ECLAC (2004) has made a set of concrete proposals on this issue. A first group of proposals revolves around the use of specific taxes to finance infrastructure projects, in particular fuel taxes to pay for road projects. In addition, fuel consumption is a good proxy indicator of demand for roads. These proposals are inspired by the experience of the United States, where taxes on fuel used to finance highways. The experience in Argentina is another example. For decades, taxes on fuels were used to finance companies engaged in the development of road infrastructure.

Public-private partnerships have become an important alternative, allowing governments to create new infrastructure without immediately adding capital outlays to the budget. This mechanisms facilitate distribution of investments costs over time, as the investment is amortized with the outlays that the government pays periodically to the operators of the service.

In view of the need to combine public and private efforts to meet the growing demand for infrastructure services, some steps will have to be taken to strengthen the financing and implementation capacity of the public sector and to promote greater participation by the private sector. For the former, accounting instruments that offer more flexibility in the administration of public investment are required. As for private sector involvement, it is necessary to ensure a relatively stable economic and political environment and to enhance current regulation mechanisms.

A third way of increasing fiscal flexibility in to enhance the role played by multilateral development banks, especially in low income countries. The capacity of these institutions to disburse approved loans at present is being diminished by budgetary practices, subject to the limitations imposed by the countries' fiscal targets. At the same time, such loans normally require national counterparts or

matching funds, which also counted as expenditures and exert additional pressure on fiscal accounts. For this reason, the IADB, for example, disbursed 60 per cent of its approved budget for investment projects in the year 2000, and only 30 per cent in 2003. Clearly, this kind of investment, in principle accurately evaluated, should have a different accounting treatment.

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PUBLIC PENSION REFORM IN EUROPE AND THE USA

*Maura Francese, Daniele Franco and Pietro Tommasino**

1. Introduction

The reform of pension systems is on the political agenda in most European countries. There is a widespread need to adjust social security arrangements to new demographic, economic and social conditions while safeguarding their essential achievements. Even though several reforms have already been introduced in the recent past, others are under consideration. Pension reforms are also discussed in the United States, where changes have so far been more limited.

Pension systems are an essential feature of all developed countries. Most citizens either contribute to finance them or draw benefits from them: individuals' plans and decisions are influenced by social security rules over a large part of their lifetime. Pension systems absorb sizeable public resources, influence the labour and capital market, and largely affect income distribution both within and across generations. These features make reforms an extremely complex task.

After considering the main drivers of the policy changes under discussion or implemented in developed countries,¹ the paper highlights the three main lines of action characterising these measures: (i) parametric changes in traditional PAYG public schemes, (ii) the introduction of new pension formulas (such as notional funding) in PAYG schemes, and (iii) the development of funded schemes.

The paper examines the debate in the USA and in some European Union countries in the Nineties and in the current decade.² The analysis aims at tracing common features, but also at underlining country peculiarities. The paper considers the role of different objectives and policy approaches in determining the reform structure. Finally, it evaluates the results achieved so far.

2. The main factors underlying the pension reform debate

Pension reforms are prompted by three main factors: (i) the increase in projected outlays, (ii) the adverse effects of the pension system on the labour market and (iii) the distributive problems related to public spending composition.

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¹ For a survey of issues which are more relevant for less developed countries, a useful reference is World Bank (1994) and its recent follow-up (World Bank, 2005).

² The main features and data of the pension systems of developed countries are examined in OECD (2005).

2.1 Demographic and expenditure developments

Most developed countries are ageing.³ The ratio of the elderly (65 years and more) to working-age population (20 to 64 years) has already reached historically unprecedented levels and is projected to increase further (Table 1). In OECD countries the ratio will raise from 24.1 in 2000 to 50.6 per cent in 2050 (OECD, 2001; Table 2). The dependency ratio will increase particularly fast after 2010, when the generations born after the Second World War will reach 65. In many countries it will peak after the year 2025. The ageing process is driven by progress in life expectancy and low fertility rates. Migration limits the increase in the dependency ratio but its size is unlikely to offset the impact of fertility and longevity trends (Dang *et al.*, 2001).

Demographic changes increase the demand for transfers and services directed to the elderly. Public pension schemes will bear much of this pressure.⁴ In spite of the reforms introduced over the last 20 years, the ratio of pension expenditure to GDP is still expected to rise in most OECD countries. In the EU it would increase from 10.1 per cent of GDP in 2000 to a peak of 13.7 per cent in 2040; in the United States it would increase from 4.6 in 2000 to 6.7 per cent in 2050 (OECD, 2001; EPC, 2001, and EPC, 2003; Table 3).

Demographic changes also tend to increase spending for health and long-term care. Overall, age-related public spending in OECD countries is expected to increase on average by about 5.5 percentage points of GDP. While in EU countries expenditure growth will mainly be driven by pensions, in the USA spending for health and long term care will be the dominant factor.

The reform debate largely reflects the concern about these long-term expenditure developments, with the sustainability of PAYG systems being frequently questioned.⁵ However, policy changes are sometimes also invoked in order to improve budget balances over the short and medium term. In EU countries this would contribute to ensure compliance with the common fiscal rules and it would help in reducing public debts and interest burdens (Kopits, 1997).

³ This paper does not review the vast literature concerning the broader macroeconomic implications of ageing populations. See for instance Casey *et al.* (2003), Group of Ten (1998), Heller (2003), OECD (1998), Roseveare *et al.* (1996) and Visco (2002). Jackson and Howe (2003) examine the capacity of twelve developed countries to meet the impact of demographic changes.

⁴ Since the early Eighties this issue has drawn increasing attention and a number of studies have examined the long-term prospects for public budgets. Projections pointed to large increases in age-related spending and, in particular, of pension spending. See Chand and Jaeger (1996) and Leibfritz *et al.* (1995). The evolution of pension expenditure projections, both in terms of methodology and results, is examined in Franco, Marino and Zotteri (2005).

⁵ International Labour Office (2001) takes a somewhat different view and argues that the affordability of social protection mostly depends on policy preferences.

Table 1

Demographics and Social Expenditure – Projections

| Countries | DEMOGRAPHICS | | | | | | | | | PUBLIC SOCIAL EXPENDITURE | | | | | |
|--------------------|---------------------|------|--------|---------------------|------|--------|----------------------|------|--------|-------------------------------|------|--------|---------------------------------------|------|--------|
| | Fertility rates (a) | | | Life Expectancy (a) | | | Dependency ratio (a) | | | Public Social Expenditure (b) | | | Old Age Public Social Expenditure (b) | | |
| | 1980 | 2000 | change | 1980 | 2000 | change | 1980 | 2000 | change | 1980 | 2000 | change | 1980 | 2000 | change |
| Australia | 1.90 | 1.75 | -0.15 | 74.6 | 79.3 | 4.7 | 17.1 | 20.7 | 3.6 | 11.3 | 18.6 | 7.3 | 3.2 | 5.3 | 2.1 |
| Austria | 1.65 | 1.36 | -0.29 | 72.6 | 78.1 | 5.5 | 27.8 | 25.1 | -2.7 | 22.5 | 26.0 | 3.5 | 8.6 | 10.5 | 1.9 |
| Belgium | 1.68 | 1.66 | -0.02 | 73.4 | 77.7 | 4.3 | 24.8 | 28.2 | 3.4 | 24.1 | 26.7 | 2.6 | 6.1 | 8.5 | 2.4 |
| Canada | 1.68 | 1.49 | -0.19 | 75.3 | 79.4 | 4.1 | 16.2 | 20.3 | 4.1 | 14.3 | 17.3 | 3.0 | 3.1 | 4.7 | 1.6 |
| Czech Republic | 2.10 | 1.14 | -0.96 | 70.3 | 75.1 | 4.8 | 23.8 | 21.9 | -1.9 | n.a. | 20.3 | n.a. | n.a. | 6.8 | n.a. |
| Denmark | 1.55 | 1.77 | 0.22 | 74.3 | 76.9 | 2.6 | 25.3 | 24.1 | -1.2 | 29.1 | 28.9 | -0.2 | 8.1 | 8.3 | 0.2 |
| Finland | 1.63 | 1.73 | 0.10 | 73.4 | 77.6 | 4.2 | 20.0 | 24.6 | 4.6 | 18.5 | 24.5 | 6.0 | 5.2 | 7.6 | 2.4 |
| France | 1.95 | 1.88 | -0.07 | 74.3 | 79.0 | 4.7 | 25.0 | 27.5 | 2.5 | 21.1 | 28.3 | 7.2 | 7.7 | 10.6 | 2.9 |
| Germany | 1.56 | 1.38 | -0.18 | 72.9 | 78.0 | 5.1 | 27.2 | 26.4 | -0.8 | 23.0 | 27.2 | 4.2 | 10.0 | 11.5 | 1.5 |
| Greece | 2.21 | 1.29 | -0.92 | 74.5 | 78.1 | 3.6 | 23.2 | 28.5 | 5.3 | 11.5 | 23.6 | 12.1 | 5.1 | 11.8 | 6.7 |
| Hungary | 1.92 | 1.32 | -0.60 | 69.1 | 71.7 | 2.6 | 22.9 | 24.5 | 1.5 | n.a. | 20.0 | n.a. | n.a. | 7.8 | n.a. |
| Ireland | 3.25 | 1.90 | -1.35 | 72.9 | 76.5 | 3.6 | 21.7 | 19.2 | -2.5 | 17.0 | 13.6 | -3.4 | 4.5 | 2.6 | -1.9 |
| Italy | 1.64 | 1.24 | -0.40 | 74.0 | 79.6 | 5.6 | 23.3 | 29.1 | 5.8 | 18.4 | 24.1 | 5.7 | 7.4 | 11.2 | 3.8 |
| Japan | 1.75 | 1.36 | -0.39 | 76.1 | 81.2 | 5.1 | 15.1 | 27.9 | 12.9 | 10.2 | 16.1 | 5.9 | 3.0 | 6.8 | 3.8 |
| Korea | 2.80 | 1.47 | -1.33 | n.a. | n.a. | n.a. | n.a. | 11.4 | n.a. | n.a. | 5.6 | n.a. | n.a. | 1.4 | n.a. |
| Luxembourg | 1.49 | 1.76 | 0.27 | 72.5 | 78.0 | 5.5 | 22.9 | 23.0 | 0.1 | 23.5 | 20.0 | -3.5 | 6.7 | 7.2 | 0.5 |
| Netherlands | 1.60 | 1.72 | 0.12 | 75.9 | 78.0 | 2.1 | 20.1 | 21.9 | 1.8 | 26.9 | 21.8 | -5.1 | 7.1 | 6.4 | -0.7 |
| New Zealand | 2.03 | 1.98 | -0.05 | 73.2 | 78.5 | 5.3 | n.a. | 20.1 | n.a. | 17.2 | 19.2 | 2.0 | 6.9 | 5.0 | -1.9 |
| Norway | 1.72 | 1.85 | 0.13 | 75.8 | 78.7 | 2.9 | 26.6 | 25.7 | -0.9 | 17.9 | 23.0 | 5.1 | 5.1 | 6.5 | 1.4 |
| Poland | 2.28 | 1.34 | -0.94 | 70.2 | 73.8 | 3.6 | 17.5 | 20.3 | 2.8 | n.a. | 21.9 | n.a. | n.a. | 8.1 | n.a. |
| Portugal | 2.18 | 1.55 | -0.63 | 71.5 | 76.6 | 5.1 | 20.9 | 26.7 | 5.8 | 10.9 | 20.5 | 9.6 | 3.4 | 7.5 | 4.1 |
| Spain | 2.20 | 1.24 | -0.96 | 75.6 | 79.1 | 3.5 | 20.2 | 27.2 | 7.0 | 15.9 | 19.9 | 4.0 | 4.7 | 8.5 | 3.8 |
| Sweden | 1.68 | 1.54 | -0.14 | 75.8 | 79.7 | 3.9 | 28.5 | 29.5 | 1.0 | 28.8 | 28.6 | -0.2 | 7.8 | 9.2 | 1.4 |
| United Kingdom | 1.90 | 1.64 | -0.26 | 73.2 | 77.9 | 4.7 | 26.8 | 26.8 | -0.0 | 17.9 | 21.7 | 3.8 | 5.5 | 8.2 | 2.7 |
| United States | 1.84 | 2.06 | 0.22 | 73.7 | 76.8 | 3.1 | 19.8 | 21.1 | 1.2 | 13.3 | 14.2 | 0.9 | 5.2 | 5.2 | 0.0 |
| Countries' average | 1.93 | 1.58 | -0.35 | 73.5 | 77.7 | 4.2 | 22.5 | 24.1 | 2.3 | 18.7 | 19.3 | 3.4 | 5.9 | 7.5 | 1.8 |
| EU 15 - average | 1.88 | 1.58 | -0.30 | 73.79 | 78.1 | 4.3 | 23.8 | 25.9 | 2.0 | 20.6 | 23.7 | 3.1 | 6.5 | 8.6 | 2.1 |

Notes: (a) OECD (2004a), *Health Data*; (b) OECD (2004b), *Social Expenditure Database*.

Table 2

| Countries | Demographic Projections | | | | | | | | |
|--------------------|-------------------------|------|--------|---------------------|------|--------|----------------------|------|--------|
| | Fertility rates (a) | | | Life Expectancy (a) | | | Dependency ratio (b) | | |
| | 2000 | 2050 | change | 2000 | 2050 | change | 2000 | 2050 | change |
| Australia | 1.72 | 1.56 | -0.16 | 76.7 | 82.6 | 5.9 | 20.4 | 47.0 | 26.6 |
| Austria | 1.31 | 1.50 | 0.19 | 75.0 | 80.3 | 5.3 | 25.2 | 58.2 | 33.0 |
| Belgium | 1.54 | 1.80 | 0.26 | 75.3 | 80.5 | 5.2 | 28.1 | 49.5 | 21.4 |
| Canada | 1.62 | 1.50 | -0.12 | 75.5 | 80.0 | 4.5 | 20.4 | 45.9 | 25.5 |
| Czech Republic | 1.14 | 1.50 | 0.36 | 71.5 | 75.2 | 3.7 | 21.9 | 57.5 | 35.6 |
| Denmark | 1.77 | 1.80 | 0.03 | 74.8 | 79.1 | 4.3 | 24.2 | 40.3 | 16.1 |
| Finland | 1.73 | 1.70 | -0.03 | 73.9 | 79.9 | 6.0 | 25.9 | 50.6 | 24.7 |
| France | 1.73 | 1.80 | 0.07 | 74.8 | 80.0 | 5.2 | 27.2 | 50.8 | 23.6 |
| Germany | 1.40 | 1.50 | 0.10 | 74.7 | 80.0 | 5.3 | 26.6 | 53.2 | 26.6 |
| Hungary | 1.30 | 1.60 | 0.30 | 66.8 | 74.6 | 7.8 | 23.7 | 47.2 | 23.5 |
| Italy | 1.22 | 1.50 | 0.28 | 75.5 | 81.0 | 5.5 | 28.8 | 66.8 | 38.0 |
| Japan | 1.38 | 1.61 | 0.23 | 77.4 | 79.4 | 2.0 | 27.7 | 64.6 | 36.9 |
| Korea | 1.71 | 1.59 | -0.12 | 70.6 | 76.2 | 5.6 | 11.3 | 45.4 | 34.1 |
| Netherlands | 1.71 | 1.80 | 0.09 | 75.5 | 80.0 | 4.5 | 21.9 | 44.9 | 23.0 |
| New Zealand | - | - | - | 74.3 | 79.5 | 5.2 | 20.4 | 48.3 | 27.9 |
| Norway | 1.80 | 1.80 | 0.00 | 75.7 | 80.0 | 4.3 | 25.6 | 41.2 | 15.6 |
| Poland | 1.34 | 1.58 | 0.24 | 69.9 | 78.5 | 8.6 | 20.4 | 55.2 | 34.8 |
| Portugal | 1.53 | 1.70 | 0.17 | 72.0 | 78.0 | 6.0 | 26.7 | 50.9 | 24.2 |
| Spain | 1.19 | 1.50 | 0.31 | 74.9 | 79.0 | 4.1 | 27.1 | 65.7 | 38.6 |
| Sweden | 1.50 | 1.80 | 0.30 | 77.3 | 82.0 | 4.7 | 29.4 | 46.3 | 16.9 |
| United Kingdom | 1.72 | 1.80 | 0.08 | 75.2 | 80.0 | 4.8 | 26.6 | 45.3 | 18.7 |
| United States | 2.05 | 1.95 | -0.10 | 73.9 | 79.1 | 5.2 | 21.7 | 37.9 | 16.2 |
| Countries' average | 1.54 | 1.66 | 0.12 | 74.1 | 79.3 | 5.2 | 24.1 | 50.6 | 26.4 |

Notes: (a) OECD (2001); for New Zealand data are for 1996 and 2051; (b) Casey *et al.* (2003).

Table 3

Expenditure on Public Pensions – Projections
(percent of GDP)

| Countries | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 | change 2050- 2000 (c) |
|--------------------|------|------|------|------|------|------|-----------------------------|
| Australia (b) | 3.9 | | | | | 5.7 | 1.8 |
| Austria (a) | 14.5 | 14.9 | 15.8 | 17.2 | 17.3 | 16.5 | 2.0 |
| Belgium (a) | 10.0 | 9.9 | 11.4 | 13.3 | 13.7 | 13.3 | 3.3 |
| Canada (b) | 5.1 | | | | | 7.9 | 2.8 |
| Czech Republic (b) | 9.6 | | | | | 15.7 | 6.1 |
| Denmark (a) | 10.5 | 12.5 | 13.8 | 14.5 | 14.0 | 13.3 | 2.8 |
| Finland (a) | 11.3 | 11.6 | 12.9 | 14.9 | 16.0 | 15.9 | 4.6 |
| France (a) | 12.1 | 13.1 | 14.3 | 15.0 | 14.7 | n.a. | 2.6 |
| Germany (a) | 10.8 | 11.1 | 12.1 | 13.8 | 14.4 | 14.9 | 4.1 |
| Greece (a) | 12.6 | 12.6 | 15.4 | 19.6 | 23.8 | 24.8 | 12.2 |
| Hungary (b) | 7.2 | | | | | 15.3 | 8.1 |
| Ireland (a) | 4.6 | 5.0 | 6.7 | 7.6 | 8.3 | 9.0 | 4.4 |
| Italy (a) | 13.8 | 13.9 | 14.8 | 15.7 | 15.7 | 14.1 | 0.3 |
| Japan (b) | 7.9 | | | | | 8.5 | 0.6 |
| Korea (b) | 2.4 | | | | | 10.4 | 8.0 |
| Luxembourg (a) | 7.4 | 7.5 | 8.2 | 9.2 | 9.5 | 9.3 | 1.9 |
| Netherlands (a) | 7.9 | 9.1 | 11.1 | 13.1 | 14.1 | 13.6 | 5.7 |
| New Zealand (b) | 4.8 | | | | | 10.5 | 5.7 |
| Norway (b) | 7.3 | | | | 17.1 | 16.9 | 9.6 |
| Poland (b) | 12.2 | | | | | 9.6 | -2.6 |
| Portugal (a) | 13.3 | 14.7 | 15.5 | 15.7 | 15.5 | 15.3 | 2.0 |
| Spain (a) | 8.4 | 8.0 | 8.5 | 9.9 | 12.0 | 13.0 | 4.6 |
| Sweden (a) | 9.0 | 9.6 | 10.7 | 11.4 | 11.4 | 10.7 | 1.7 |
| United Kingdom (a) | 5.5 | 5.1 | 4.9 | 5.2 | 5.0 | 4.4 | -1.1 |
| United States (b) | 4.6 | | | | | 6.7 | 2.1 |
| EU 15 (a) | 10.1 | 10.6 | 11.7 | 13.1 | 13.7 | 13.4 | 3.3 |
| Countries' average | 8.7 | | | | | 12.3 | 3.6 |

Notes: (a) Franco and Marino (2004), source: EPC (2003) and EPC (2001) – the latter only for countries whose forecasts did not change with the 2003 projection exercise; (b) OECD (2001) – it includes old-age pensions and early retirement programmes; (c) For France, change 2040-2000.

2.2 Labour market effects

In most industrialised countries, the participation rates of the elderly significantly fell over the last decades (OECD, 1995a and 1995b). In OECD countries, the average labour force participation rate for 55 to 65-year old men steadily declined from 79 in 1970 to 62 per cent in 2000 (Gruber and Wise, 1999). The average effective retirement age is slightly under 60 in most European

Table 4

Pensions and Labour Market

| | Changes in pension wealth from working an additional year* (percent of earnings) (a) | Employment rate of men 55 to 64 in 2000 (percent) (a) | Average age of withdrawal from labour market (Men - average 1994/1999) (b) |
|----------------|--|---|--|
| Australia | – | 59 | 62.3 |
| Canada | –2 | 58 | 62.2 |
| Finland | 1 | 44 | 59.8 |
| France | – | 38 | 59.3 |
| Germany | 0 | 48 | 60.5 |
| Italy | – | 30** | 59.3 |
| Japan | – | 78 | 69.1 |
| Korea | 37 | 68 | 67.1 |
| Norway | n.a | 73 | 64.2 |
| Netherlands | – | 50 | 61.6 |
| Spain | –1 | 55 | 61.1 |
| Sweden | – | 68 | 63.3 |
| Switzerland | 5 | 77 | n.a. |
| United Kingdom | n.a | 60 | 62 |
| United States | 5 | 66 | 65.1 |

Nota: Source: (a) OECD 2003; (b) Scherer (2002).

* for the average production worker, at the earliest eligibility age.

** age group 60-64.

countries. The EU average is about 59 years.⁶ In the USA it is about 65 (Scherer, 2002; Table 4).

⁶ Visco (2001) notes that while in the period 1960-1985 life expectancy in the OECD area increased by about 4 years, over the same period the unweighted average age of retirement declined from around 65 years for both males and females to 62 years for males and 60 years for females. This implies that the average duration of receipt of a public pension increased by about 7 years.

One explanation for the low participation rates in Europe is that PAYG systems are not neutral with respect to the retirement decision. Indeed, in many countries social security provisions are such that the pension wealth of a worker (*i.e.* the discounted value of the stream of future pension payments) decreases with the age of retirement.⁷ Differentials in activity rates may also reflect the design of other welfare programs as well as the higher European personal income tax and social security contribution rates. The large tax wedge may affect both the demand and supply of labour.

Even if the trend towards lower activity rates seems to have come to a halt, the present levels of participation rates are considered too low in view of the ageing process. There is also a growing awareness that in order to achieve higher employment rates, countries need both to improve the design of pension schemes and to take action in the labour market (more training for older employees, higher flexibility in age-earnings profiles and in working arrangements).

2.3 *Redistribution issues*

The increase in pension spending has contributed to improve the economic conditions of elderly citizens, who were traditionally one of the groups with relatively high poverty risks. Poverty rates for older citizens have dropped and are now similar to the population average: in some European countries they are actually lower than for younger people (Table 5).⁸ The poverty risk of the elderly is limited by minimum pension guarantees, such as flat-rate universal benefits or means-tested social assistance schemes. Many countries offer top-up payments to raise earnings-related pension entitlements to a specified minimum level. In most EU countries, public pension schemes allow adequate living standards after retirement.

This has led to question whether more public resources should be channelled to other welfare programs, which are more targeted towards the needs of other social groups. The rise in the ratio of pensioners to the active population could induce an increase in contribution rates and could compress the resources available for other potentially problematic groups of citizens.

3. **The available policy options**

High and rising expenditure as well as badly designed pension schemes can threaten the sustainability of public finances, exacerbate inefficiencies in labour markets and determine problematic redistributive outcomes (OECD, 1988). In order to address these issues, pension reforms have long been discussed in most developed countries. Generally they follow one of the three following broad lines of action:

⁷ See Blondal and Scarpetta (1998) and Duval (2003).

⁸ See European Council and European Commission (2003).

Table 5

| Pensions and Poverty | | |
|-----------------------------|--|--|
| | Poverty rate* for people aged 0 to 64 | Poverty rate* for people aged 65 and over |
| Belgium | 11 | 22 |
| Denmark | 7 | 31 |
| Greece | 18 | 33 |
| Finland | 10 | 17 |
| France | 14 | 19 |
| Germany | 11 | 11 |
| Italy | 19 | 14 |
| Ireland | 17 | 34 |
| Austria | 10 | 24 |
| Portugal | 18 | 33 |
| Netherlands | 11 | 7 |
| Spain | 19 | 16 |
| Sweden | 10 | 8 |
| United Kingdom | 19 | 21 |
| United States | - | - |

Note: Source: Economic Policy Committee (2003).

* at 60% of median income.

parametric changes in traditional PAYG public schemes, the introduction of new pension formulas (such as notional funding) in PAYG schemes and the development of funded schemes.⁹ In spite of the different approaches, all reforms basically tackle one issue: how to grant adequate living standards to an increasing number of elderly citizens without imposing an excessive burden on public finances (OECD, 1994).

3.1 Parametric changes

In most developed countries social protection programs are built around a PAYG pension scheme, in which social contributions paid by those currently

⁹ The literature on the economics of pension reform is vast, for a survey see Feldstein and Liebman (2002) and Lindbeck and Persson (2003). The international organisations have significantly contributed to the debate, see Heller (1998), Holzmann (2000), Queisser (2000) and OECD (1988). For a general discussion of the mechanics of social security systems, see Diamond (2004).

working are transferred to retirees in the form of pension benefits. One possible reform strategy involves changes in the parameters of such scheme that do not question its basic structure (European Commission, 2001). In many countries contribution rates are already considered very high, making their increase a non-feasible option. A reduction in pension expenditure can be achieved by reducing the level of the average individual benefit and/or the number of pensions. It can be implemented in several ways: the proportion between past wages or contributions and the initial level of benefits can be made less favourable; the rate of growth of benefits during the retirement period can be linked to price increases instead of wages dynamics; the normal retirement age (the age after which retirement entitles to full benefits) can be increased; the minimum age can also be raised.

An increase in the minimum eligibility age forces liquidity-constrained agents to work longer and increases the average effective retirement age. If the system is actuarially fair, this measure has no first order impact on spending in present value terms, but merely changes the intertemporal expenditure profile. However, as already mentioned, most schemes are not neutral with regard to retirement. Also, if there is under-investment in real annuities (either because the market for this instrument is inefficient or because workers act myopically), a rise in the minimum eligibility age ensures more adequate pension levels.

Distortions in labour supply can be reduced if the links between benefits and lifetime contributions are tightened (for example, by extending the number of working years which are relevant for the computation of benefits). As labour supply in the early part of a worker's career is typically quite inelastic, what matters the most are the incentives faced by individuals at – and immediately after – the minimum retirement age. In a well designed pension system the pension formula should make the discounted pension wealth independent of the moment of retirement, so that the system mimics, at the margin, an actuarially fair scheme (Wise, 2005).

All such policies have distributive implications. First of all, increasing the weight of the earnings-related component of pension benefits reduces the degree of insurance against unexpected and undeserved differences in lifetime earnings across individuals. On the other hand, extending the number of working years that are relevant for the computation of benefits can make the system less regressive, as high earners are also characterised by steeper age-earnings profiles. Finally, increasing the retirement age tends to penalise individuals who have started to work earlier and have been employed in activities involving a shorter life expectancy.

3.2 *Notional defined contribution system*

In the previous paragraphs we have discussed how different reforms would change the steady state of the economy. However, it is also relevant to understand how social security systems differ in their response to shocks (especially those

related to adverse demographic developments).¹⁰ The majority of existing PAYG systems grant a fixed rate of return to workers (*i.e.* they provide “defined benefits”). If there are changes, such as a reduction in the rate of growth of total wages (which determines the rate of return of the system), future working generations will have to pay higher payroll contributions in order for the pension system to have a balanced budget. In a fully funded system, instead, these shocks translate directly into a change in the pension wealth of the person (therefore such systems are said to be of the “defined contribution” type),¹¹ leaving the future workers unaffected. The same is true for a decrease in mortality rates: in a standard PAYG scheme the fraction of GDP transferred to the non-working population would increase, while in a funded system an improvement in life expectancy causes the price of annuities to rise, which only hurts the younger generations.

Some recent reforms introduced in PAYG schemes aimed at making the intergenerational distribution of macroeconomic and demographic risks similar to the one characterising an investment-based scheme.¹² Indeed, in such plans (called Notional Defined Contribution plans), the formula which translates contributions into benefits weights each year’s contribution with a discount factor which is proportional to the medium-run growth of the wage base, *as if* contributions had been invested at a compound interest rate equal to that rate of growth. While it is easily demonstrated that any pension formula which uses the whole contributory life to calculate pension benefits shares this structure, other two features make NDC systems somewhat different from standard PAYG schemes: first, the formula multiplies this discounted sum with a factor which automatically reflects life expectancy and the age of the individual, *as if* the person was using his/her fictional wealth to buy an annuity on the insurance market. Secondly, Social Security administrators keep track of cumulated contributions and in some cases (for example in Sweden) communicate this amount to the worker, *as if* the person had an actual account.

As a consequence, NDC systems can mimic the same apportionment of socioeconomic risks across generations of an investment-based plan, without the strains of the transition and without its high economic costs and rate of return risks. They can be designed to adjust automatically in order to respond to exogenous variables variations, reducing the risk of unexpected rule changes. Personal accounts give to workers a clearer perception of their pension position and transparent accrual rules increase available information necessary for efficient decision making during the working life. Indeed, endowing people with personal accounts should make it easier to move across different jobs and sectors, as well as across different stages of the life cycle.

¹⁰ The different intergenerational contracts implicit in pension schemes are examined in Musgrave (1981).

¹¹ As in Lindbeck and Persson (2003) among others, our taxonomy distinguishes the contribution-based vs. flat-rate dimension of the pension formula from the defined contributions vs. defined benefit dimension.

¹² See Cichon (1999), Franco (2002) and Palmer (2002).

Anyway it must be stressed that even though a NDC system can improve work incentives, the effects are not automatic. The “*as if*”s have to work properly: first workers have to understand how the NCD system works (hence governments should properly inform citizens); second contributions should be perceived as invested funds. Finally, the inclusion of adjustment mechanisms does not guarantee *per se* that reforms to the system would not be required over long periods.

Parametric changes based on predefined adjustment mechanisms, via NDC formulas or via other pension rules, can reduce problematic political discussions. The mechanisms relating pension indexation to economic developments can help spreading the burden of demographic changes or economic shocks across all generations, including pensioners.¹³

3.3 *Introducing investment-based elements*

If confronted with current or perspective social security imbalances, one policy option is to shrink or – in an extreme case – eliminate the PAYG scheme. An adequate old-age income would then be pursued through investments on the financial markets, at the individual or at the collective level. In fully privatised funded systems, workers are given control of the way in which their contributions are invested. Alternatively, the government can manage the public pension funds. In any case, the rate of return on pension savings is determined by financial markets performance.

PAYG and funded schemes are subject to different risks and returns.¹⁴ PAYG schemes are superior in the alleviation of poverty and the provision of insurance against inflation and investment risks. On the other hand, they are vulnerable to population ageing and decline in employment. Governments may also default promises based on optimistic assumptions. Funded schemes produce lower distortionary effects in the labour market. They may also contribute to the development of financial markets and provide workers with higher returns to contributions in a situation in which the real interest rate is higher than the rate of growth of employment and real wages. On the other hand, they are vulnerable to investment risks, have relatively high administration costs and suffer from the inefficiencies of the market for annuities. These different features of PAYG and funded systems may advise to opt for a mixed system (Lindbeck, 2002). The development of funded schemes can facilitate the reforms of PAYG schemes by offering to the workers the possibility to compensate for the reduction in the replacement rate resulting from the reforms.

¹³ Lindbeck (2002) notes that if automatic risk sharing between generations is desired, an obvious reform is to introduce a mechanism that ensures that the relation between pensions and the earnings of contemporary workers is fixed.

¹⁴ See, for instance, Panel on Privatisation of Social Security (1998), Lindbeck and Persson (2003) and Sinn (2000).

The economics of shifting from PAYG to funding is quite complex and involves many policy issues (Holzmann, 1999; Disney, 2000). Abstracting from market failures, if workers' contributions to social security are capitalised at a rate that is lower than the market rate of return, a PAYG system is equivalent to a tax on labour. This implies that a reform which would abruptly dismantle a PAYG scheme (starting from the current period no contributions are levied and no benefits are paid), would increase efficiency because labour supply distortions would disappear. Of course, this reform is not viable from a practical point of view, as it would dramatically penalise those who have already matured substantial pension rights under the PAYG system.

Alternatively, pension liabilities determined by past contributions can be fully recognised. In this case, implicit pension liabilities are treated as an equivalent amount of explicit public debt. However, there are efficiency and redistributive effects that depend on the intergenerational apportionment of the burden of outstanding pensions. If obligations are met by rising the payroll contributions of those currently working and the old PAYG system is close to actuarial, distortions would increase in the short run – because workers will pay higher marginal tax rates – but they would decrease in the long run. Those which are in the workforce at the time of the reform would be hurt, the retirees would not be affected, and future generations would be better off. Savings would also increase, as current workers would need to save in order to sustain their post-retirement consumption. Feldstein (1996) points out that if the economy is in a steady state with a sub-optimal level of capital this effect will improve efficiency as well. Instead, if obligations are met through debt issuance, the intertemporal profile of labour market distortions would be smoother, but the effect on capital deepening would be reduced, the increase in private savings being at least partially offset by the reduction in public savings. In practice, governments can adopt mixed packages: they can reduce the implicit debt of the PAYG schemes, make explicit a part of the remaining debt, and increase taxation to finance the remaining part.

Whether the transition improves the long-term performance of the economy depends on a number of factors, including the design of the PAYG system. A shift from a well designed PAYG system to an investment-based system does not guarantee a Pareto improvement (Sinn, 2000). Furthermore, any net efficiency gain which comes from intertemporal tax smoothing could also be obtained in a PAYG system. Any improvement which comes from a higher steady state level of per capita physical capital could probably be achieved by addressing the distortions which determine under-accumulation (for example badly designed capital income taxes).

Financial market performance is also important. The returns of funded systems tend to exceed in the long term those of PAYG systems. However, higher returns from personal accounts should be adjusted for risk and the high administrative costs usually incurred by private pension funds (Feldstein and Rangelova, 2001, and the papers in Shoven, 2000). In particular there is a trade off between the freedom of choice granted by a wide offer of privately provided saving

products and the lower costs of publicly managed funds. Furthermore, due to market imperfections, available annuity products are expensive and less than perfectly linked to inflation. Unequal access to financial markets can lead to undesirable distributive outcomes. Well functioning funded systems require effective regulatory agencies and a wide array of sophisticated financial instruments (Group of Ten, 2005).

On the other hand, an increase in the demand for privately provided annuities can contribute to improve financial markets efficiency. Collective management of workers' saving, be it through a centralised fund or through financial intermediaries, can be expected to increase the overall demand for securities. In turn, this could have an impact on the supply of securities: as markets become more liquid, it becomes worthwhile to introduce new financial products (so reducing the degree of market incompleteness).¹⁵ A shift from a PAYG to a system of mandatory savings is also likely to enhance the household saving rate.¹⁶

3.4 *Summing up*

From this concise review of the main policy options we can highlight a few points.

- 1) The status quo is not an option for most developed countries: the soundness of PAYG pension systems is put into question by demographic and economic developments. Sooner or later governments will have to choose from an unpalatable menu: benefit cuts, higher payroll taxes or a substantial downsizing of the system. Early action may allow the implementation of gradual solutions providing individuals a long period of time in which to adjust their work and saving decisions to the new framework.
- 2) All reforms are likely to hurt some categories of citizens or some generations, in terms of cuts in their social security wealth or of higher tax burdens. Reforms can however improve the incentive structure of the pension system. The removal of distortions, such as the incentive to early retirement, can have positive effects on economic growth. Reforms should both ensure the macroeconomic sustainability of pension systems and improve their microeconomic features. This can either be achieved via parametric changes in traditional PAYG schemes, the introduction of NDC systems or a greater role of funded schemes.

¹⁵ Furthermore, pension funds can provide a useful monitoring role against managerial misbehaviour and be a powerful force for the introduction of pro-investor laws. All these direct and indirect effects should in principle spur financial market development (Impavido and Musalem, 2000).

¹⁶ If financial markets are perfect, mandating a certain amount of savings in a funded system has no effects on the saving ratio, to the extent that they earn the market rate of return. If savings in pension accounts are higher than what individuals desire, individuals would reduce the amount they hold in other assets. In practice, credit constraints are widespread, as well as a certain tendency to undersave. The impact on national savings also depends on the tax treatment of funded pension schemes.

- 3) PAYG and funded systems present different features in terms of risks and returns. A mixed system is probably the best solution. This may require a large increase in the size of funded schemes in some countries, especially in Europe.¹⁷ The overall welfare implications of a (full or partial) transition to funding are complex. The costs of the transition for the initial generations can be substantial. A debt-financed transition would be more favourable to the current generation of workers, while a tax-financed transition would favour future cohorts. A tax-financed transition is less likely to reduce labour market distortions, but it is more likely to favour capital accumulation with respect to a debt-financed transition. A parametric reform of the PAYG system complemented by a tax-based transition to a mixed system would increase both public and private savings.
- 4) The increase in retirement age is essential for achieving budgetary sustainability while providing adequate pensions.¹⁸ The incentive structure of PAYG schemes has frequently been geared to allow or even induce early retirement. This is reflected in an average retirement age that is very low with respect to life expectancy. The key to delaying retirement is strengthening the link between contributions and benefits. NDC systems present significant advantages, but their success requires a careful design of the mechanisms adjusting benefits to potential shocks, a considerable effort in terms of communication to the public and a durable commitment of policy makers to avoid interfering with the system.
- 5) Reforms increasing the role of funded schemes or making PAYG benefits more tightly related to lifetime contributions weaken the redistributive features of the pension system. This may require increasing the redistribution carried out via other welfare programmes.
- 6) In general, the cost of the transition to a different set of pension rules should be spread widely. The transition should have smooth adjustments across cohorts with no sharp discontinuities in eligibility criteria or benefit levels. Apart from equity considerations, this solution would limit the room for political difficulties (Diamond, 2005).

4. The role of the European Union

In the European Union national governments retain full responsibility for social policies. The role of the EU is primarily that of ensuring that social protection arrangements do not hamper the mobility of labour.¹⁹ However, economic

¹⁷ See CSIS Panel Report (2002) and Jackson (2002).

¹⁸ See the simulations in European Commission (2001).

¹⁹ Holzmann (2004) notes that labour mobility across member countries makes national economies less exposed to asymmetric shocks and facilitates labour market integration which in turn magnifies the welfare gains from product and capital market integration. He suggests a closer coordination of pension systems in Europe and argues that a multi-pillar system including a NDC pillar plus a supplementary funded pillar and a welfare pension could combine an harmonised structure and country-specific preferences.

integration and EU fiscal rules indirectly influence national pension policies. Moreover, the EU is taking an increasingly active role in the pension policy debate.

Economic integration increases the scope for tax competition, which can shift the tax burden from highly mobile bases (like capital) to less mobile bases (like labour), thereby inducing distortions and negative effects on employment and affecting redistribution policies, including those carried out via PAYG pension schemes (European Commission, 1997). The issue of tax coordination has been discussed for a long time without much progress, with the exception of indirect taxation.

The fiscal rules set in the Maastricht Treaty and the Stability and Growth Pact require budget positions close to balance in the medium term, deficits lower than 3 per cent of GDP and debt to GDP ratios below 60 per cent. Compliance with these rules has two effects on pension reform. First, governments may be induced to accelerate the introduction of pension reforms in order to meet the fiscal requirements. Second, the implementation of the rules would allow EU countries to meet the worsening of the demographic situation after the year 2010 with smaller public debts and lower interest burdens, which may allow them to sustain – other things equal – a higher level of social spending.²⁰

The need for indicators which highlight prospective developments and which measure their size and timing has been increasingly recognised by the European Council and the European Commission. The Council stressed the need for an explicit reference to the sustainability of public finances in the coordination of economic policies at the EU level and agreed that long-term fiscal sustainability should be regularly reviewed within the EU multilateral surveillance. In order to tackle the budgetary implications of ageing population, the Council agreed on a three-pronged strategy that envisages: (i) raising employment rates especially amongst women and older workers; (ii) reducing public debt at a fast pace; and (iii) reforming pensions and health-care systems.

The Council called for the use of an open method of coordination in the area of pensions in order to help EU countries to reform their pension systems (European Commission and European Council, 2003). Reforms should ensure the financial sustainability of pension systems and guarantee the achievement of their social objectives. Governments should adapt the systems to more flexible employment and career patterns. The Council stressed the need to raise employment levels and extend working lives.

The work carried out at the European level has widened the technical discussion on the issue of pension reform and improved the availability and comparability of data. In particular, it has induced all countries to carry out long-term expenditure projections on a regular basis. The debate has played a role in eliciting and clarifying government preferences among the various objectives and

²⁰ More specifically, part of the increase in pension and health expenditure determined by population ageing would be offset by a reduction in interest payments on the public debt (Franco and Munzi, 1997).

the implications of the different policy options. It has also made clear that problems are rather similar across the EU.

In the end, economic integration, fiscal rules and the joint work at EU level have all increased the pressure for reforming EU pension systems. The gap between the indications of the Council's reports and the slow and tortuous path to reform highlights the political difficulties of implementing policy changes.

5. Pension reforms across Europe: similarities and differences

The analysis of the reforms that have been introduced in European countries over the last decades highlights some common features (Table 6).²¹

- a) *Reforms have been partial and gradual.* After a first wave of reforms in the early Nineties (France 1993; Germany 1992; Italy 1992 and 1995) many countries had to “reform their reforms” later on (France 2003; Germany 2001 and 2004; Italy 2004). The incremental approach to pension reform may have costs in terms of uncertainty of the rules governing the system. While a gradual approach to reform may be useful, since individuals can adjust their decisions, continuous uncertainty about future reforms is harmful. The widespread perception that more adjustments are required can worsen expectations and induce elderly workers to retire at the earliest possible date to avoid future benefit reductions.
- b) *Reforms have been predominantly driven by the need to curb expenditure growth.* Changes have been frequently introduced under urgent budgetary pressure. For example, in Italy the reform approved in 1992 was introduced in the context of a fiscal and exchange rate crisis. The Swedish reform of 1994 was influenced by the critical conditions of the Swedish economy in the early Nineties. Another powerful factor of change has been the need to avoid unsustainable increases in contribution rates in future years. For example, in Germany the 2001 Riester reform explicitly set a target in terms of the dynamics of the contribution rate.
- c) *A significant part of the expenditure cuts have been achieved via changes in the pension benefits indexation mechanism.* In many countries the indexation mechanisms have been frequently adjusted in response to slowdowns in employment growth, population ageing and budgetary constraints (Vording and Goudswaard, 1995). On several occasions the mechanisms were temporarily suspended or modified.²² The use of changes in pension indexation may depend

²¹ The literature concerning pension reforms in EU countries is extremely vast. For France, see Blanchet and Legros (2002) and Lavigne (2003); for Germany, see Börsch-Supan (2000) and Rürup (2002); for Italy, see Franco (2002); for the Netherlands, see Kremers (2002); for Spain, see Bonin *et al.* (2001); for Sweden, see Palmer (2002) and – for a detailed description of the NDC system – Swedish Social Insurance Agency (2004), for the United Kingdom, see Disney and Emmerson (2005).

²² Some countries moved from wage to price indexation (France, Italy, United Kingdom). Several of those still retaining wage indexation moved from gross wage indexation to net wage indexation, in order to get the pensioners to share the burden of increases in contribution rates (Austria, Finland, Germany, the (continues)

on the fact that its effects are more diluted over time and over the different cohorts making expenditure cuts less evident. However, there can be doubts on the long-run political sustainability of widening differences in living standards between workers and retirees.

- d) *The increase in retirement age has often been used as the main tool for combining expenditure restraint with adequate pension levels.*²³ Measures have been taken both for increasing the minimum retirement age and for increasing the incentives (or reducing the implicit costs) of staying longer in the labour market. Among the latter, there are the bonuses and penalties introduced in defined benefits PAYG schemes (as in Germany and France).²⁴ The same role is accomplished through the notional accounts introduced in PAYG systems (Sweden and Italy). These schemes aim at making the net present value of pension wealth almost independent of the retirement age.²⁵ However, in some countries which had recently reform their system, replacement rate are set to fall in the future (European Commission and European Council, 2003).
- e) *Reforms have frequently increased the flexibility of individuals in choosing the retirement age.* The design of NDC systems and the bonuses and penalties introduced in defined benefits schemes recognise that it makes sense to allow workers to retire at different ages depending on their preferences and economic conditions (Diamond, 2005).
- f) *Several reforms aimed at tightening the link between contribution and benefits.* This was reflected by legislative changes which increased the period considered for assessing earnings and especially by the introduction of NDC systems.
- g) *Some reforms have introduced mechanisms aimed at automatically adjusting pension expenditure to demographic and economic changes.* In the NDC systems the notional rate of return and the coefficient of proportionality at retirement are kept in line with the evolution of the payroll tax base and with the life expectancy. Elsewhere, the indexation formulas have been modified (e.g. the new German formula ensures that pension adjustments take into consideration changes in the ratio of pensioners to workers). This has meant shifting some risks from workers and taxpayers to pensioners.

Netherlands). Finland increased the weight attributed to price dynamics. In Austria pension indexation was also inversely related to unemployment levels.

²³ Galasso and Profeta (2004) note that increasing retirement age is the most effective way to contain the growth of spending in a situation in which the median voter becomes older and older.

²⁴ The 1989 German reform introduced a penalty of 0.3 per cent on the amount of pension paid on each month of anticipated retirement with respect to the normal retirement age of 65, while in case retirement takes place after 65 the pension is increased by 0.5 per cent for each month, up to a limit of 2 years. In France, the 2003 Raffarin reform awards a 3 per cent increase in benefits for those who remain at work after they have reached the full rate contribution period.

²⁵ These adjustments cannot deliver perfect neutrality with respect to the retirement decision: even if the system is actuarially neutral on average, the incentives of individuals will differ if they have different life expectancy, or if some of them are eligible for other means-tested welfare benefits.

Table 6

Pension Systems Characteristics and Main Reform Timing

| Country | Pre-reform Situation | Reforms | Present Situation | Contribution rates | Pensionable Age | Public Pension Expenditure/GDP |
|---------|--|---|--|--------------------|-----------------|--|
| Germany | DB PAYG | 1992 parametric (increasing standard retirement age and introducing "self-regulating mechanism"); 1996 parametric (strengthening rules for early retirement); 2001 parametric (providing incentives for supplementary pension schemes and new formula for indexation); 2003 parametric (changing indexation formula and improving incentives for supplementary schemes) | DB PAYG plus non-mandatory funded occupational supplementary pension schemes | 19.5 | 65 (3) | EPC(2003): 10.8 (2000), 13.8 (2030), 14.9 (2050) |
| France | DB PAYG plus mandatory occupational supplementary pension schemes (PAYG). Mandatory and occupational schemes vary between categories of workers. | 1993 parametric (indexation mechanism and benefit formula, eligibility requirements); 2003 parametric (incentives for postponing retirement, introduction of harmonisation between private and public sector workers) | DC PAYG plus mandatory occupational supplementary pension schemes plus voluntary (usually funded) optional supplementary schemes. Mandatory and occupational schemes vary between categories of workers. | | 65 (4) | EPC(2003): 12.3 (2000), 15.0 (2030), 14.7 (2040) |
| Spain | DB PAYG | 1995 parametric ("Toledo pact": tightening the link between contribution and benefits, harmonisation of special pension regimes); 1997 parametric (creation of 'buffer fund'); 2002 parametric (incentives for older workers to postpone retirement) | DB PAYG | | 65 | EPC (2003): 8.4 (2000), 9.9 (2030), 13 (2050) |

Table 6 (continued)

Pension Systems Characteristics and Main Reform Timing

| Country | Pre-reform Situation | Reforms | Present Situation | Contribution rates | Pensionable Age | Public Pension Expenditure/GDP |
|---------------|--|--|--|---|-----------------|---|
| Italy | DB PAYG | 1992 parametric (tightening of eligibility requirements, changing benefit formula and indexation mechanism, introducing harmonisation of different pension schemes); 1995 (moving to NDC system and promoting the development of supplementary pension schemes); 1997 parametric (accelerating the phasing in of tighter requirements for seniority pensions); 2004 parametric | NDC PAYG plus a non-mandatory, privately-managed funded DC component | 32.7 employed; 19.0 self-employed (1) | 57-65 (2) | Latest Government official forecasts (2004): 13.8 (2000), 15.9 (2030), 13.6 (2050) |
| Sweden | DB PAYG two-tier pension system: national basic pension scheme plus compulsory supplementary pension schemes | 1994 (move to NDC system); 1998 (approval of most of the legislation regulating the new mechanism); 2001 (adoption of automatic balance mechanism) | NDC PAYG plus a privately-managed mandatory funded DC component | 16 (NDC) +2.5 (mandatory funded component) | from 61 | EPC(2003): 9.0 (2000), 11.4 (2030), 10.7 (2050) |
| United States | DB PAYG defined benefit system | 1983 parametric (broadening compulsory coverage of the system, increasing contribution rates and tightening eligibility for full requirement benefits) | DB PAYG | 12.4 | 65 (5) | OECD(2001): 4.6 (2000), 6.7 (2050) |

Legenda: DB: defined benefit – DC: defined contribution – NDC: notional defined contribution – PAYG: pay-as-you-go.

- (1) The contribution rates reported are those to be applied from 2014 onwards; at present, for the self-employed, the contribution rate is lower (17.0 for artisans and 17.39 for shopkeepers respectively). It will increase by 0.20 p.p. per year until it will reach 19.0 per cent.
- (2) According to the enabling bill approved by the Parliament in August 2004, pensionable age should increase to 65 for men and 60-65 for women.
- (3) 65 is the standard pensionable age; the minimum age for accessing early retirement is 63.
- (4) Standard pensionable age.
- (5) Age for full retirement benefit; 62 age for early retirement.

h) The labour market has an important role. All EU countries have seen increases in employment rates and in the length of the average working life, but most of them are still far from the targets set at the EU level (European Commission and European Council, 2003). Governments have tried to reconcile the provision of adequate pensions with the requirements of financial sustainability through measures aimed at rising employment rates and the average retirement age. However, this has proved to be quite difficult as the tightening of eligibility requirements is strongly unpopular (see Boeri *et al.*, 2002), while active labour market policies, which are also required to sustain labour market demand for the elderly, may be costly in the short run.

Some aspects of the political approach and the technical work underlying pension reforms also show some similarities.

i) Economic ministries have acquired a leading role in the reform process. While in the past the government departments responsible for labour and social affairs had usually been in charge of pension policy, in recent decades economic and finance department have largely contributed to designing pension reforms. This largely depend on financial sustainability being the main motivation for reform (Tamburi, 1999).

j) The search for consensus has led to some innovations in the policy making process. In several countries governments have produced White Papers on pension reform (e.g. France, Germany, Portugal and the United Kingdom). These documents aimed at disseminating information and achieving a consensus. However, in other countries, like Italy, significant reforms have been introduced without any official report being circulated to the public. Another widespread features of the pension reform debate is the creation of advisory bodies and *ad hoc* commissions with the mandate to monitor expenditure developments, elaborate or evaluate reform proposals, and aggregate a wide consensus on pension reform (Reynaud, 2000).

k) The availability and quality of long-term pension expenditure projections has been largely improved. The availability of projections has frequently been crucial in acquiring consensus on the need for a pension reform. Over recent years the resources assigned to the production of long-term pension expenditure projections have been substantially increased. Projections are now available for all EU countries, quite often on a regular basis. Progress has been achieved in the comparability of national exercises and in linking the analysis of pension spending to the sustainability of public finances as a whole (Franco *et al.*, 2005).

There are however some interesting country-specific peculiarities.

a) The political approach to reforms has been quite different across countries. In some cases governments have tried to reach a consensus about the reform with all the interested parties, in particular with trade unions. In other cases they have taken a confrontational approach: some projects have been successfully introduced, although with relevant political costs; other projects have been

abandoned because of the harsh discontent that they generated (France 1996; Germany 1999; Italy 1994).²⁶ Some countries have taken a bipartisan approach (Tamburi, 1999). This is the case of the reform that has introduced the NDC approach in Sweden. The pursuit of bipartisan consensus is evidently important to avoid that the rules governing the pension system are affected by changes in government. On the other hand, it can lead to delayed and less clear-cut reforms. This has been the case in Spain.²⁷

- b) *The degree of funding introduced in the pension system differs across countries.* In the majority of cases reforms have not modified the PAYG feature of pension systems. Measures have been taken to increase the role of funding, but no country has envisaged a radical shift in the way in which the system is financed. This may probably depend on the costs involved in a large-scale transition towards funding. It may also depend on the consideration that PAYG schemes guarantee workers against economic risks and may better allow the government to pursue distributional targets. As to the latter aspect, European Commission and European Council (2003, 39) note that “Public support for solidarity elements in pension system is strong and [EU] Member States have strengthened many of them in recent reforms”. The report also notes that solidarity between generations and among generations have a prominent role in the design of pension systems. On the other hand, there are indeed a few countries that have pursued more radical changes. In Sweden, the reform introducing NDC also aimed at increasing the role of funding.²⁸ The UK has been developing supplementary pension schemes earlier than any other European countries.²⁹ This makes the UK somewhat of an outlier in the European landscape: on the one hand, public pension expenditure is small and is likely to remain manageable in the future; on the other hand, privatisation has highlighted many implementation problems (especially high administrative costs and insufficient coverage of low income individuals).

²⁶ Natali (2003) examines the French and Italian experience and notes that the negotiation of changes with social partners helped the reform process while confrontational approaches led to a deadlock.

²⁷ Spain started its social security reform process in 1994, when a parliamentary commission including representatives of the four main Spanish parties was appointed to draft a proposal. The mild proposal of a parametric reform which emerged was later endorsed by political parties and social partners (the so-called “Toledo Pact” in 1995), but only in 1997 it was partially transformed into law (Lagares Perés, 2000). The process is not yet over and at present in Spain the discussions on a new reform effort are under way.

²⁸ A privately managed mandatory funded scheme is to complement on a compulsory basis the PAYG pillar. The contribution rate for this scheme is 2.5 per cent. The scheme foresees an agency that is in charge of distributing paid contributions to the funds selected by each worker. Each worker can choose how to allocate his contributions among the funds registered in the system.

²⁹ Conservative governments in the eighties and in the early nineties have combined drastic cuts in the earnings-related public PAYG scheme and at the same time have favoured the opting out of workers from the public scheme to private funded plans.

6. The debate about pensions in the USA

The main features of the public pension system in the USA were established by the Social Security Act approved in 1935. The amendments introduced over the following decades have not altered the way in which the system is organised.

Social security is financed on a PAYG basis with the contribution rate being currently set at 12.4 per cent (half of which are paid by the employer). Old-age benefits are computed on the basis of lifetime earnings and are indexed to prices. Full benefits are paid to those retiring at the standard retirement age (currently set at 65). Those claiming the benefits earlier receive a lower amount. Those postponing retirement receive a higher amount. The benefit formula has a pronounced progressive structure that guarantees good replacement rates for poorer and middle income workers even in the face of low contribution rates (Diamond and Orszag, 2004).

The main reform introduced over the last decades was a parametric reform and was prompted by the financial difficulties that became apparent in the early Eighties. In 1981 the government appointed a bipartisan commission chaired by Alan Greenspan. The commission, which was asked to indicate a solution for the financial problems of the Old-age and Survivors insurance programs, issued its report at the beginning of 1983. Its recommendations inspired a bill reforming the social security system that was approved the same year (National Commission on Social Security Reform, 1983).

The reform broadened the compulsory coverage of the system to public sector employees, increased contribution rates and tightened the eligibility requirements for full retirement benefits. Moreover, social security benefits were to be subject to taxation. The implementation of the reform was extremely gradual.³⁰

The adjustments introduced with the reform allow the US social security system to show a financial outlook that is more reassuring than those of the European pension systems. At present, the program is characterised by a surplus: the cumulated difference between revenues and disbursements feeds a fund invested in government bonds. According to the latest official projections (provided by the Social Security Trustees), the trust fund will remain positive until 2042. Even after this date, imbalances will remain manageable: the cumulated deficits in the next 75 years will be (in present value terms) around 3.8 trillion dollars. To keep the system balanced over the next 75 years, it would be necessary to permanently rise payroll contributions by 2 per cent.³¹ The efficiency costs induced by an increase in the contribution rates which would keep the system balanced are smaller than those

³⁰ The increase in age for full retirement benefits (set at 65) was planned to start with cohorts turning 62 in 2000. The transition to the new eligibility requirements will be over in 2022 when the age for full retirement benefit will be 67.

³¹ Assuming that the current system will be in place forever, the cumulated imbalance amounts instead to 10.4 trillion dollars – around 100 per cent of GDP. The required increase in the contribution rate over an infinite horizon is 4 per cent.

suggested by similar calculations for European pension systems, also in view of the fact that current contributions are low by international standards.

The debate about the social security system has been enlivened by several reform proposals mainly aimed at addressing the long-term financial imbalances of the system. A central issue in the discussion is the degree of funding of the system and the role that could be played by individual accounts.

Reform proposals can be grouped into three broad categories. First of all, there are parametric reforms that would leave more or less untouched the overall design of the system. The most prominent example is probably the Diamond-Orszag plan (Diamond and Orszag, 2004).³² The plan envisages a reduction in benefits and an increase in contributions, especially for high earners. A fraction of the rise in contributions and of the reduction in benefits would be automatically linked to realised improvements in life expectancy on a year-by-year basis. The plan is estimated to keep the Social Security budget balanced on a 75 year horizon.

Other proposals, some of which examined by the Congress, aim at more radical reforms of the structure of the system.³³ Even if different in their details, they basically reflect the guidelines of the President's Commission for Strengthening Social Security, a group of experts nominated by President Bush which delivered a series of recommendations in December 2002. After the 2004 election, the new Bush administration reaffirmed its commitment toward the Commission's conclusions and envisaged the following changes:

- a) The formula that translates contributions into the initial level of benefits will weight past contributions with an index related to price dynamics instead of wage dynamics. As a consequence, the replacement ratios will decrease at a pace equal to the growth rate of real wages. This benefit cut by itself would ensure a social security surplus for the foreseeable future. The surplus would be used to provide a new means-tested component: workers with at least 30 years of service would be granted a retirement income that is at least 120 per cent of the poverty line.
- b) Younger workers are allowed to divert, on a voluntary basis and within a maximum yearly amount, up to 4 per cent points of their contributions, while renouncing to a fraction of their future PAYG benefits. This benefit cut, however, is less than the diverted contributions cumulated at the market interest rate. This measure represents a reduction in the tax implied by the PAYG scheme and corresponds to a downsizing of social security. The diverted funds have to be invested in government bonds and in equities. To minimise administrative costs, the Commission proposes to invest the funds in assets linked to market indexes and to shift from a centrally managed to a privately managed system only after a certain amount of resources has been accumulated in the personal accounts.

³² The book includes a non exhaustive list of other parametric proposals.

³³ This is the case of the Demint plan, the Graham plan, the Smith plan (for these proposals, which come from the Republican side, see John, 2004) and the bipartisan "Retirement Security Act".

- c) As the privatisation is partially debt financed, the increase in private savings is in part met by a reduction in public savings. To limit this effect, the plan imposes to the government expenditure cuts and/or revenue increases. These additional resources have to be transferred to the social security budget, and have to be enough to grant a long run surplus equal at least to 100 per cent of yearly outlays.

Other reform proposals are even more radical. Kotlikoff and Burns (2004) argue that the PAYG component of social security should be eliminated altogether (albeit gradually): individual accounts should eventually be the only source of future social security benefits, and they should be mandatory. Contrary to the models put forward by the President's Commission, benefits would be given in the form of real annuities. The fund would invest in a portfolio that replicates a global stock market index. The assets in the individual accounts would be sold only gradually during the retirement period, to minimise the risk inherent in market volatility. In order to cover the imbalances that would emerge in the transition period, Kotlikoff and Burns support the introduction of a new consumption tax that would be used to pay for the benefits of those already retired under the PAYG rules.

In spite of the numerous proposals, no reform seems on the way to be implemented. This may depend on the radically different opinions concerning the desirable design of the pension system and the lack of a political effort to reach a bipartisan agreement. It may also depend on the fact that the PAYG scheme will show financial imbalances only in the long term.

Moreover, there is a growing public concern for the financial imbalances of corporate defined benefit pension plans.³⁴ Indeed, such schemes are vulnerable to swings in the market value of their accumulated assets. In particular, the stock market downturn after 2001 has left company funds severely underfunded. This episode has induced many employers to change the rules of the corporate pension plans, and has severely hampered the financial outlook of many big firms (Group of Ten, 2005).

7. Europe and the USA: some comparisons

The reform debate on the two sides of the Atlantic reflects both the different outlooks for the pension systems and the different views concerning the role of the state (more problematic in the USA than in Europe):

- a) Expenditure levels and trends are more worrying in Europe than in the USA, where population ageing is less pronounced. This explains the greater activism shown by European governments in recent years and the frequent recourse to parametric changes rapidly curbing expenditure growth.
- b) With respect to the public debate in Europe, the US social security reform debate tends to emphasise the impact on savings and capital formation, while labour

³⁴ The Netherlands and the UK suffer from the same problem.

supply effects plays a somewhat minor role. Indeed, the distortions induced by social security contributions depend not only on their size, but also on the overall tax burden on labour (which in the USA is much smaller than in Europe). On the other hand, the low saving rate of American workers, which is perceived as a major problem, has no counterpart in Europe.

- c) While the overall size of social security is much smaller in the USA than in continental Europe, the American system has a much more progressive structure, which grants relatively more favourable replacement rates to poorer workers. In this regard, reforms strengthening the actuarial fairness of the system and tightening the link between contribution and benefits would hurt poorer workers more in the USA than in Europe. This may also explain the political difficulties in further increasing the role of funding in the USA.

It is not easy to account on purely economic ground for the almost opposite direction that the pension reform debate has taken in Europe and the USA. Indeed, while the US Social Security could probably be put on a sound financial footing with limited parametric adjustments, public discussion is focused on the issue of funding and the creation of individual accounts. In most European countries, where the long run sustainability of the present system is more problematic and contribution rates are already very high, prefunding and privatisation issues are instead much less prominent in public debates and in reform plans.

In part, this discrepancy can be traced back to differences in underlying political values and social attitudes: to the extent that societies differ in the degree of risk and inequality that citizens are prepared to face, this is likely to be reflected in the design of their welfare programs.³⁵ Ross (2000) notes that there are two main ways of thinking about pension reform: those stressing individual responsibility argue in favour of funded schemes, those stressing collective responsibility support PAYG schemes. This difference also runs across international institutions³⁶ and within countries.

8. Have the objectives of the reforms been achieved?

8.1 Effects on public expenditure

Even if the recent pension reforms introduced in industrialised countries have been spurred by concerns for sustainability, there is no single and comprehensive indicator to evaluate to what extent they have actually improved the financial outlook of European social security programs.

³⁵ Among others, Alesina and Glaeser (2004) provide an interpretation along these lines of transatlantic differences in the shape and size of welfare states.

³⁶ See the different policy prescriptions of the International Labour Office (2001) and the World Bank (1994).

One indication concerning expenditure trends is provided by the analysis of the factors underlying the projections on expenditure growth. Between 1960 and 1985 a large part of the expansion in pension expenditure in most Western countries was caused by the increase in the eligibility and transfer ratios, that is by policy decisions concerning the benefits to be provided to citizens.³⁷ On the contrary, the projections of OECD (2001) and Economic Policy Committee (2001)³⁸ show that in several countries expenditure ratios in the next decades are expected to grow much less than the rise in the dependency ratio (Table 7). This indicates that in most countries present pension policies are quite different from those implemented in the previous decades. The phase of extension of coverage and improvement of benefits seems over, although in a few countries past extensions and improvements are still affecting expenditure growth. In most countries only demographic trends are presently exerting an upward pressure on the expenditure-to-GDP ratio while policy changes are restraining it.

Furthermore, the expenditure projections carried out by national institutions in the mid-Nineties pointed to smaller increases in spending with respect to the more recent exercises coordinated by the European Commission (Economic Policy Committee, 2000, 2001 and 2003).³⁹ This would indicate that either the early forecasts were optimistic or the reforms introduced in recent years did not significantly modify expenditure trends.

A different indication is provided by the comparison of the results of the projection exercise coordinated by the European Commission in 2001 and 2003. The latest forecasts, which take into account the German reform of 2001 and the French reform of 2003, point to smaller expenditure increases. It seems to show that these legislative changes have limited the projected increases in spending.

Finally, there are studies examining the impact of pension reforms on social security gross liabilities, *i.e.* the present value of current and future benefits implied by the current legislation. McHale (2001) points to sizeable reductions in pension wealth for a representative worker after some major reforms of the early Nineties.⁴⁰

³⁷ Changes in the ratio of pension expenditure to GDP can be decomposed into changes of the *dependency ratio* (*i.e.* the number of elderly as a fraction of the working age population), changes in the *benefit ratio* (the ratio of the average pension to GDP per worker) and changes in the *eligibility ratio* (the ratio of the number of beneficiaries to the number of persons older than the minimum eligibility age). The latter two indicators point to the generosity of the pension system. OECD (1988) shows that between 1960 and 1985 the dependency ratio contributed for less than 25 per cent to the rise of the ratio of pension spending to GDP.

³⁸ Both institutions use the same macroeconomic and demographic assumptions, but cover partially different groups of countries.

³⁹ According to the national forecasts of the early Nineties, the ratio of pension spending to GDP would increase up to 2030 by 2.6 percentage points in the optimistic scenario and 3.3 points in the pessimistic one (Franco and Munzi, 1996). According to Economic Policy Committee (2003), the pension-spending ratio would increase by 3.0 percentage points between 2000 and 2030 and by 3.6 points by 2040.

⁴⁰ For example, the social security wealth of Italian workers has been cut by 38 for men and by 29 per cent for women after the 1992 reform. After the 1983 reform, the social security wealth of American workers was 26.6 per cent lower than before for men and 16 per cent lower than before for women. The Balladur reform of 1993 in France reduced wealth by 13.5 per cent for men and 15.3 per cent for women. The German reform in 1992 produced negative changes of 7.3 per cent for men and 26.2 per cent for women.

Table 7

Breakdown of Pension Spending Projections – Change 2050-2000
percent of GDP)

| Countries | Pension spending | Dependency ratio (a) | Employment ratio (b) | Eligibility ratio (c) | Benefit ratio (d) |
|------------------------|------------------|----------------------|----------------------|-----------------------|-------------------|
| Austria | 2.4 | 10.5 | -2.2 | -3.0 | -2.9 |
| Belgium | 3.3 | 5.2 | -0.9 | 0.9 | -2.0 |
| Denmark | 2.7 | 4.1 | -0.2 | 0.5 | -1.7 |
| Finland | 5.0 | 6.6 | -0.1 | -1.3 | -0.1 |
| France | 3.9 | 7.7 | -0.9 | 0.7 | -3.6 |
| Germany | 4.8 | 6.2 | -0.7 | 2.0 | -2.7 |
| Greece | 11.7 | 9.9 | -3.6 | 1.4 | 4.0 |
| Ireland | 4.3 | 4.5 | -0.9 | 1.4 | -0.7 |
| Italy | 0.2 | 9.5 | -3.1 | -1.4 | -4.9 |
| Netherlands | 5.5 | 5.4 | -0.6 | 0.5 | 0.2 |
| Portugal | 3.3 | 6.7 | -1.1 | -2.4 | 0.1 |
| Spain | 7.5 | 8.2 | -2.4 | 2.0 | -0.3 |
| Sweden | 1.7 | 3.9 | -0.5 | 0.8 | -2.6 |
| United Kingdom | -1.0 | 2.4 | 0.0 | -0.1 | -3.0 |
| EU 15 - average | 3.1 | 6.4 | -1.1 | 0.6 | -2.8 |

(a) persons aged 55+ as percent of persons aged 15-64.

(b) persons aged 15-64 as percent of persons employed.

(c) pension beneficiaries as percent of persons aged 55+.

(d) average pension as percent of GDP per person employed.

Source: EPC (2001).

All in all, it seems that recent reforms have gone some way to counter the rising expenditure trends. It remains to be seen whether these cuts to public pensions, especially the significant reduction in individual average benefits, will prove sustainable from the political and social point of view (Franco and Sartor, 2005). The measures aimed at developing other pillars of the pension systems can be viewed as an effort to find a viable solution to this problem.

8.2 Labour market effects

Recent calculations provided by Duval (2003) show that in several countries social security systems in the Nineties have become more actuarially neutral (sometimes this does not yet show up clearly in the data, as some reforms will phase in very slowly).

Table 8**Employment Rates for Male Workers Aged 55-64**

| Countries | 1970 | 1980 | 1990 | 1995 | 2000 |
|----------------|------|------|------|------|------|
| France | 74.0 | 65.3 | 43.0 | 38.4 | 38.5 |
| Germany | 78.9 | 64.1 | 52.0 | 48.2 | 48.2 |
| Italy | 47.8 | 39.0 | 35.4 | 44.7 | 40.9 |
| Spain | 82.7 | 71.5 | 57.2 | 48.4 | 55.2 |
| Sweden | 84.1 | 77.5 | 74.4 | 64.4 | 67.8 |
| United Kingdom | n.a. | 62.6 | 62.4 | 56.1 | 59.8 |
| United States | 80.7 | 69.7 | 65.2 | 63.6 | 65.6 |

Source: OECD (2002).

Recent figures (OECD, 2002) also document that, over the same period of time, the declining trends in participation and employment rates for older workers have been stopped and in some cases have been reversed (Table 8). However, employment rates usually remain well below the levels of the Seventies and Eighties.

Increased labour supply must be accordingly matched by a rise in labour demand, which in turn may require changes in wage setting practices and institutions and more emphasis on active labour market policies (employment services, training, subsidies to employment and job creation).

8.3 *Effects on savings*

Many governments have implemented legislative changes aimed at increasing the size of funded pension schemes. All in all, these efforts do not seem highly successful (European Commission and European Council, 2003).

Taking as an indicator of the impact of the reforms the stock of financial assets managed by pension funds, one can notice that in the countries (e.g. Italy and France) which have tried to start a funded pillar in the Nineties this stock is growing but remains very small with respect to the USA and the UK (OECD 2003; Table 9).

Changes in the size and composition of pension assets seem more related to parallel and independent capital market developments than to reform measures.⁴¹

Even in a context in which financial markets are well developed, a shift to funding seems to require a strong policy action involving tax incentives and a good regulatory framework. It may also require significant cuts in the replacement ratios provided by PAYG schemes.

9. Conclusions

The demographic changes under way in developed countries have called into question the soundness of the pension systems designed in the past. There is a need to guarantee adequate living standards to an increasing number of elderly citizens without imposing an excessive cost on taxpayers. Significant changes are also required in most countries to improve the incentive structure of pension schemes.

The issue of pension reform has gradually gained ground in the political agenda both in Europe and the USA. The results are somewhat mixed. A number of important reforms have been introduced: expenditures growth has been curbed, incentives systems have been better designed, risks are being gradually diversified by complementing PAYG schemes with a funded pillar. Reforms have been guided both by macro (the need to control expenditure growth) and micro (the need to mitigate the adverse effects induced by retirement rules on the labour market) considerations as well as distributive concerns.

However, the reforms include problematic features and the process is far from completion in most developed countries. In many countries the ratio of spending to GDP remains on a steep upward trend. In other countries cost containment relies on measures which may not prove socially and politically sustainable in the long run. The average effective retirement rate remains relatively low. In many countries the size of pension fund assets remain small.

The process is frequently slow and tortuous. The USA introduced a major reform in the Eighties but now introducing further changes appears difficult. In many European countries pension reform is an ongoing incremental process: the continuous debate about further measures creates uncertainty about future retirement rules. This depends on the fact that reform proposals face several political obstacles. Policymakers may prefer avoiding short-term political costs even if long-term economic returns are high. Politically influential minorities that would be particularly affected by changes can also block the reforms. More generally, policy changes are difficult because of the pervasive effects of pension systems on public finances, the labour market, intra- and intergenerational income distribution. Any change opens several difficult technical and policy problems. As there is no straightforward recipe

⁴¹ In Italy, while the assets managed by institutional investors increased from 28.2 per cent of GDP in 1993 to 94 per cent in 2001, the assets managed by pension funds remained almost stationary (from 3.7 to 4.4 per cent of GDP).

Table 9

Financial Assets of Pension Funds
(percent of GDP)

| Countries | 1993 | 2001 | change |
|---------------------------|--------------|--------------|-------------|
| Australia | 36.60 | 67.50 | 30.90 |
| Austria | 0.60 | 3.80 | 3.20 |
| Belgium | 3.00 | 5.60 | 2.60 |
| Canada | 37.00 | 48.30 | 11.30 |
| Czech Republic* | 0.10 | 2.50 | 2.40 |
| Denmark | 18.70 | 23.80 | 5.10 |
| Finland | n.a. | 3.40 | |
| Germany | 2.50 | 8.30 | 5.80 |
| Hungary* | 0.01 | 3.90 | 3.89 |
| Iceland | 51.50 | 87.30 | 35.80 |
| Italy | 3.70 | 4.40 | 0.70 |
| Japan | 13.60 | 18.50 | 4.90 |
| Korea | 3.30 | 3.20 | -0.10 |
| Mexico | n.a. | 4.30 | |
| Netherlands | 83.60 | 105.10 | 21.50 |
| Norway | 5.80 | 5.60 | -0.20 |
| Poland | n.a. | 2.60 | |
| Portugal | 5.40 | 11.40 | 6.00 |
| Spain* | 4.80 | 8.20 | 3.40 |
| Sweden | 2.00 | 3.70 | 1.70 |
| Switzerland* | 68.30 | 113.50 | 45.20 |
| United Kingdom | 71.80 | 66.40 | -5.40 |
| United States | 50.50 | 63.00 | 12.50 |
| Countries' average | 23.14 | 28.88 | 5.74 |

*1994 instead of 1993.

Source: OECD (2003).

for a Pareto improvement, the costs and the length of the transition to a new system have to be properly accounted for.

Pension reform represents an interesting test to evaluate the ability of each country to adjust its institutions to new developments, manage complex long-term problems and reconcile multiple objectives. Interestingly, the need for reforming pension systems has spurred the development of new policy solutions, such as bipartisan committees, and new technical tools, such as long-term projections. Often, a trade-off between consensus building efforts and incisiveness of the reform has emerged. International organisations and the European Union have been taking an active role in the pension policy debate helping in eliciting government preferences, widening the technical discussion on the issue and improving the availability of information to assess the sustainability of public finances.

The policy processes which have led to the introduction of pension reforms have been very different. In many countries the reforms have been enacted at times of severe economic problems and budgetary pressure. In other cases sustainability considerations have driven the introduction of timely changes in the pension system leading to a more pronounced front loading.

Even though the international academic and policy discussion has not been short of plans and innovative ideas, most reforms have been gradual and incremental. Even apparently innovative schemes, such as NDC, do not change several of the main features of traditional PAYG schemes.

Two lines of action underlie most reform proposals: lengthening the working life in proportion to the increase in life expectancy; diversifying the sources of income of the elderly in order to avoid relying too much on scarce public resources. However, national peculiarities remain strong. European countries have taken different reform approaches, which are largely influenced by their traditional attitude towards social protection. Most countries have introduced parametric changes in traditional PAYG public schemes and have supported the development of funding; some countries have introduced notional funding in PAYG schemes. Several countries are trying to complement the PAYG system with a funded pillar.

The reform debate has taken different directions in Europe and the USA. While the US debate is essentially about the role of funding, in Europe it is mostly about the timing and features of the reform of PAYG schemes with a large consensus concerning the need to increase the role of funding. Both in Europe and the USA the debate about the role of funding has taken a somewhat ideological flavour. This has not helped reaching pragmatic solutions about feasible reform options.

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ANALYSIS OF INTERNATIONAL HEALTH-RELATED EXPENDITURE: LESSONS FOR FRANCE

*Carine Bouthevillain and Karine Hervé**

“Health may have no price but it does have a cost”

Georgina Dufoix (1986)

The amount of economic literature on the health-care sector has expanded steadily since the Sixties and recent budget concerns, shared by the entire industrialised world, have only amplified the trend. Although many different health-care systems exist worldwide, none seems to have found the perfect balance between the conflicting goals of effective care, equity, freedom of choice (for doctors and patients) and the control of public spending. Failure to achieve any of these goals produces specific problems, such as poorer health in the population as a whole, exclusion of some of the population from the system, waiting lists and public-sector deficits. The only consequence of frenetic reform in the Eighties and Nineties was to make the different systems more similar in organisational terms, generally by introducing competition and facilitating decentralisation. No reform has yet managed to achieve the stable and socially endorsed equilibrium of any one health system.

Clearly, the organisational reform of a health-care system depends first on how society answers a number of questions:

- how is public spending to be shared out between health care, education, housing and other public services?
- according to what implicit hierarchy does society rank the objectives of a health-care system?
- how much is the community willing to pay to maintain the current system? Who should pay for the rising cost of health care?

In France, society seems particularly attached to the existing system, which favours equity, high-quality health care and freedom of choice, but at the price of an uncontrolled rise in public spending. An effective reform should aim to do away with the rents that increase the overall cost of health care, rationalise the organisation of health care so that spending is effective, spread the costs appropriately between the community and the private sector and establish the conditions for enforceable regulation.

The remedy may be familiar but implementing it is more difficult. The sole purpose of the many instruments introduced in previous reforms was to lastingly

* Banque de France.

The views expressed in the paper are those of the authors and do not necessarily reflect those of the Banque de France.

reverse the rise in health-care spending. Governments are now aware that higher health-care spending is unavoidable and can even be a plus from an economic standpoint (potential for jobs, new leading-edge industrial sector and health care as a component of overall demand) and are seeking to *control* the rise and ensure that the system is sustainable.

In order to understand the issues at stake in the public debate, it is essential to understand how and why health-care spending has increased, in the light of experience in France and elsewhere. In this paper we shall give a summary and non-exhaustive overview of the different health-care systems and look at some aspects of insurance theory that apply to health care. Through an econometric study of the main determinants of the growth in health-care spending, we shall then try to identify the explanatory factors at work in various countries and compare our results with those of earlier studies. In conclusion, we shall consider the objectives of the recent reform of the French health-care system and, through complementary proposals available in the literature, describe the measures capable of addressing the foreseeable increase in health-care spending as a proportion of GDP in the medium term.

1. Some stylised facts about health-care systems worldwide

A comparison of trends in health-care spending in the OECD countries reveals a common point: it is increasing as a proportion of GDP. In the OECD countries in 2001, it represented 8.4 per cent of GDP compared with 5.3 per cent in 1970. In 2002, the US tops the ranking with 13.9 per cent (6.9 in 1970), followed by Switzerland with 11.2 per cent (5.6 in 1970) and Germany with 10.9 per cent (6.2 in 1970). France is in fifth place behind Canada with 9.7 per cent (5.4 in 1970), significantly higher than the eurozone average of 8.5 per cent (Figure 1). Health care as a proportion of GDP has risen relatively rapidly in most industrialised countries since 1997 after remaining flat between 1992 and 1997, mainly due to spending controls.

Generally speaking, real growth in health-care spending has outstripped GDP growth (Table 1 and Appendix 1). In the OECD countries on average, the variation between 1990 and the early 2000s was around one percentage point (3.3 per cent as against 2.2). France and Germany are within this average even though their economies have grown more slowly than those of countries in the English-speaking world.

The rise is not a problem in itself since its origins lie in economic growth, demographic factors, advances in medical science and a shift towards health-care spending in the structure of consumption in industrialised countries. Health care is generally regarded as a superior good, meaning that consumption of the good rises faster than increases in income. Taking a positive view, health care may therefore be regarded as a strategic sector for innovation and research & development, and a rise in health-care spending as merely reflecting better general welfare and living standards.

Figure 1

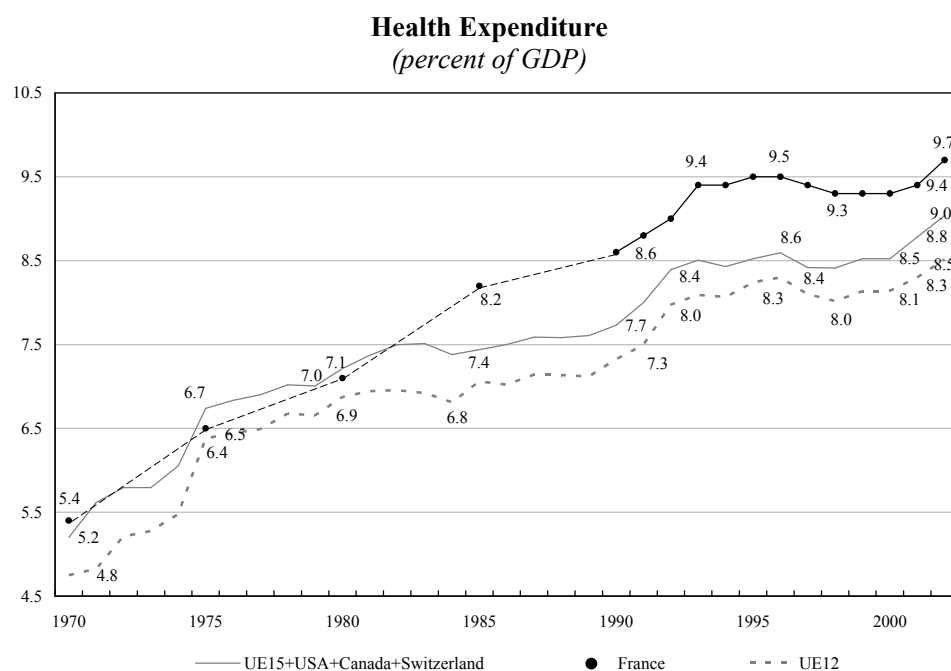


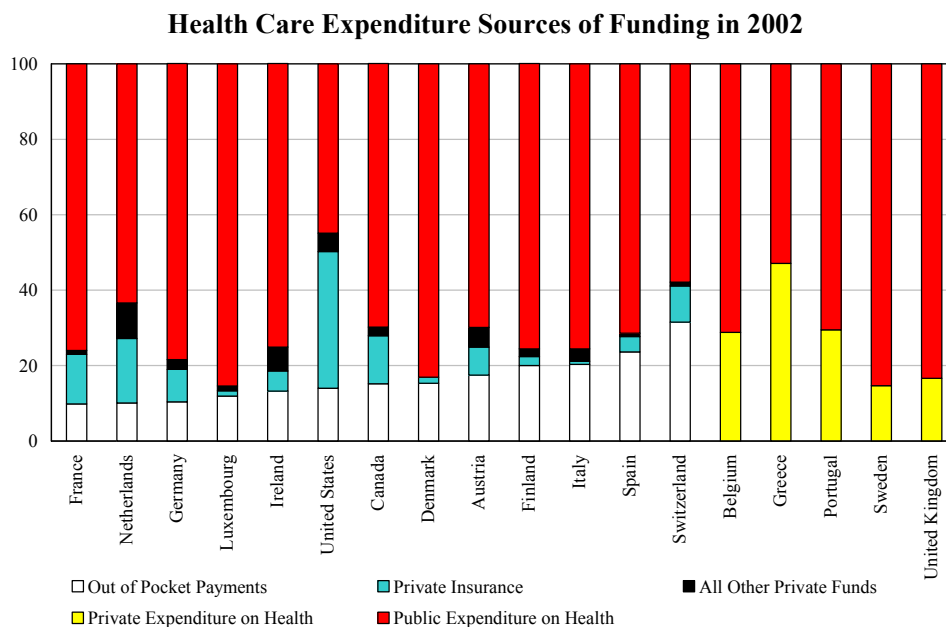
Table 1

Growth of Health Care Expenditure Compared to GDP Growth

| | 1990-2000 | | | Years 2000's | | |
|----------------|------------|---------------------------|------------------|--------------|---------------------------|------------------|
| | GDP (1) | Health expenditure (2) | Ratio (2)/(1) | GDP (1) | Health expenditure (2) | Ratio (2)/(1) |
| Austria | 1.9 | 2.8 | 1.5 | 1.9 | n.a. | n.a. |
| Belgium | 1.9 | 3.4 | 1.8 | 1.7 | n.a. | n.a. |
| Canada | 1.8 | 1.9 | 1.1 | 3.5 | 5.5 | 1.6 |
| Denmark | 1.9 | 1.8 | 0.9 | 2.2 | 3.2 | 1.5 |
| Finland | 1.7 | 0.1 | 0.1 | 2.8 | 3.4 | 1.2 |
| France | 1.5 | 2.4 | 1.6 | 2.4 | 4.7 | 2.0 |
| Germany | 1.2 | 2.1 | 1.8 | 1.3 | 0.5 | 0.4 |
| Ireland | 6.4 | 6.8 | 1.1 | 4.1 | 12.9 | 3.1 |
| Italy | 1.4 | 1.6 | 1.1 | 7.7 | 4.2 | 0.5 |
| Luxembourg | 3.9 | 3.0 | 0.8 | 1.7 | n.a. | n.a. |
| Netherlands | 5.1 | 2.6 | 0.5 | 3.9 | n.a. | n.a. |
| Portugal | 2.5 | 6.4 | 2.6 | 1.6 | n.a. | n.a. |
| Spain | 2.4 | 3.5 | 1.5 | 1.8 | n.a. | n.a. |
| Sweden | 1.6 | 1.8 | 1.1 | 3.0 | 3.2 | 1.1 |
| Switzerland | 0.2 | 2.5 | 12.5 | 2.4 | 4.4 | 1.8 |
| United Kingdom | 2.1 | 4.0 | 1.9 | 1.6 | 5.0 | 3.1 |
| United States | 2.0 | 3.0 | 1.5 | 2.5 | 4.3 | 1.7 |

Both components are expressed in per capita and in real terms using GDP deflator.
n.a. = not available.

Figure 2



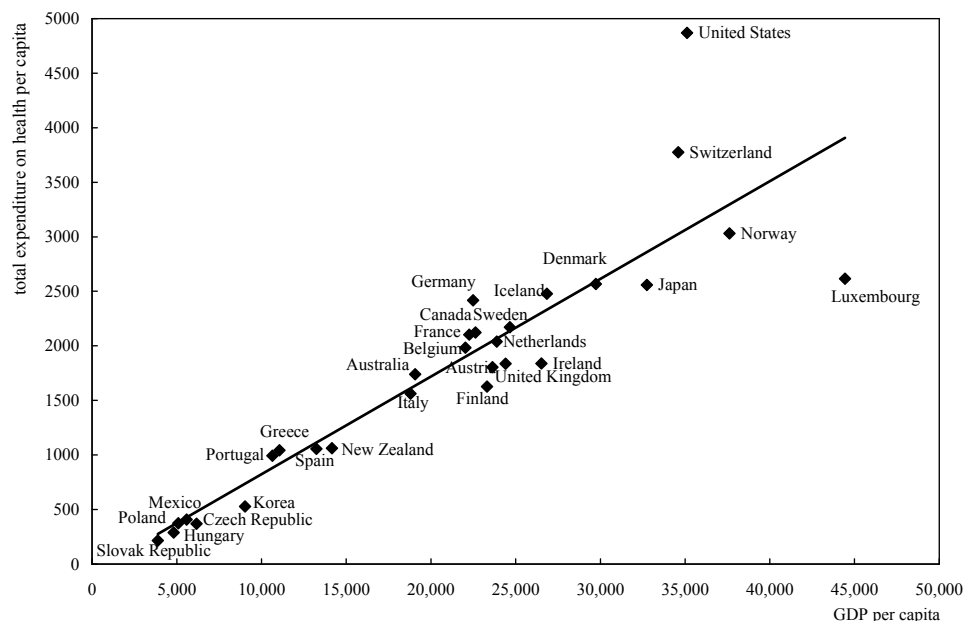
In most countries, however, the proportion of spending funded by the public sector is greater than the proportion funded by private insurance and households. The public-sector share is close to 72 per cent on average in the OECD countries, though it tended to fall back slightly during the Nineties. In contrast, the share of private spending not covered by private or mutual insurance has tended to rise in all countries with the exception of France, Denmark and the United States (Figure 2).

The problem of the funding and sustainability of health-care systems is therefore crucial. In the European countries covered by the Stability and Growth Pact, the pressure on government budgets caused by the uncontrolled rise in public spending on health care has given rise to many reforms. Some countries, like France and Germany, initially opted to increase fiscal pressure to finance the system but were forced to change track because of the pressure of social contributions on wage costs. Likewise, the countries that chose to restrict supply (Australia, Canada, UK) found themselves facing shortages of medical staff and also had to rethink. The common approach finally adopted by the OECD countries consists in limiting public spending by the introduction of co-payment systems and structural reforms that change the way health-care systems are organised (Oxley, 2003; Imai, 2002).

Despite these similarities, health-care spending in some countries (United States, Switzerland, France, Germany) is both higher and rising faster than in others (Sweden, Italy, UK). Total health-care spending per capita in US\$ 1996 was almost 5000 in the United States in 2001, compared with 3800 in second-placed

Figure 3

Per Capita Total Expenditure on Health and GDP, 2001
(US dollars, 1996 exchange rate)



Switzerland (Figure 3). The figure for France, in tenth position and close to the average in the OECD countries, was approx. 2100, compared with less than 2000 in the UK (Huber and Orosz, 2003). The explanations for these differences can be found in the ways the various health-care systems operate and the reforms that have shaped them. Institutional choices (the way practitioners are paid, the amount of choice given to patients and health care providers, the proportion of the population covered) and responses to the consequences of technological and demographic change are at the origin of the different situations that exist today.

Three types of health-care system are traditionally identified (Palier, 2004).¹

- 1) National health systems (countries of northern Europe, the UK in the Eighties, Ireland, Italy, Spain, Portugal to some extent, Greece, Canada) offer all citizens

¹ Docteur and Oxley (2003) adopt this classification but use the customary OECD terms for each of the three categories. The breakdown of countries can be different from the one given in the original article by Oxley and McFarlan (1994). In it, the OECD classifies organisational models for health-care systems according to three categories: the "public-integrated model", which is similar to national health systems, the "public-contract model", which mainly concerns Germany and the Netherlands, where public insurers enter into contracts with private health care providers, and the "reimbursement model" which applies to France for ambulatory health care and to the United States, where health care providers are private and aim to make a profit.

access to health care virtually free of charge. Health-care provision is organised mainly by the government and paid for out of tax revenue. The system may be highly centralised (UK) or not (Nordic countries). These systems guarantee equal access to health care and relatively low levels of expenditure but their main problem is how to regulate flows of patients who are insensitive to budget restrictions, leading to long waiting lists for specialist treatment and care of debatable quality. Patients are limited in their choice of doctor and GPs have a gate-keeping and flow control role, which helps to stem spending inflation while offering better monitoring of patients and better coordination of treatment. Health care providers are paid according to set principles (doctors by capitation or flat fee, hospitals in the form of block grants) out of a predefined and limited budget. Such systems are directly inspired by the Beveridge model, based on universal social protection through coverage of the entire population and all social risk, uniform treatment based more on needs than on income, and equality through state management of the entire social protection system.

- 2) Health insurance systems (Germany, France, Austria, Japan, the Netherlands before the Dekker reform and, more recently, the UK), in which health-care provision is partly private (ambulatory care, some hospitals and clinics) and partly public (hospitals). The costs are assumed by health insurance funds and financed from social security contributions. The system may be centralised, as in France, or decentralised, as in the German Länder. These health insurance systems guarantee freedom of choice for both patient (choice of GP or specialist, possibility of direct access to a hospital) and practitioner (freedom of establishment and prescription), and the convenience and in many cases the quality of treatment. Their drawbacks are high expenditure (doctor-shopping, over-consumption) and sometimes unequal access to care. Ambulatory doctors, most of them in private practice, are generally paid on a fee-for-service basis, *i.e.*, after the treatment has been dispensed. These systems are inspired by the “Bismarckian” model in which social protection is granted in return for professional activity. However, insurance systems are now “mixed”, in that they combine features of the Beveridge model (especially in guaranteeing a minimum level of social protection to the population) and the Bismarckian model (funding method, importance of the practitioner’s role).
- 3) In liberal health-care systems (United States, Ireland), public provision of health insurance is extremely limited (the very poor, emergency treatment, the elderly and disabled). The system is mostly private and generally funded by employers. Providers of ambulatory and hospital care, drugs and medical testing are in competition with each other, mainly on a market basis. Some of the population has no health cover. The US system is technologically very advanced and gives the wealthy access to the best health care, but there are great inequalities in access to health care and in the health of the population as a whole. In addition, the overall level of health-care spending is very high.

The thrust of reform has differed from one OECD country to another as governments have sought to remedy the prime defect of their particular system. Although no country has found a best – or even a satisfactory – solution, a trend

Box 1
The place of the French health-care system²

The French system has a number of advantages, such as easy access to health care, no waiting lists and high-quality treatment. It is also relatively fair, since there are few restrictions on health-care spending and reimbursement rates are high. Patients are entirely free to choose their health care provider, while practitioners enjoy complete freedom of establishment and prescription. The downside, however, is a heavy and increasing burden on the public purse. It is also difficult to assess the system's efficiency, in terms of both the ratio of health-care spending to the population's state of health and the extent to which it supports the growth of the industrial sector associated with it. The allocation of resources is probably not optimal, a problem which recent and future demographic changes will amplify.

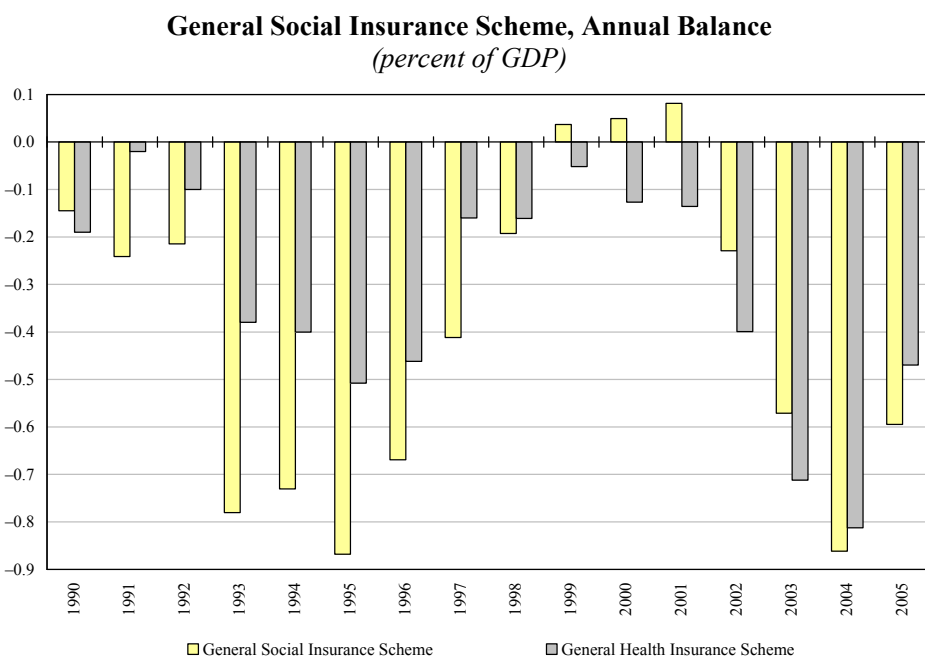
Under the French system, the government funds approximately 80 per cent of health-care spending, private insurers 10 per cent and patients the remainder. The compulsory public share of the system covers just about all the population: there are some twenty health insurance funds for wage-earners and their families, depending on their type of occupation. Those excluded from the system are covered by the CMU (universal health coverage) scheme which, since 1 January 2000, has provided basic coverage to the most needy and additional coverage to those on low incomes. Three-quarters of beds are in public hospitals, which account for two-thirds of hospital spending, and public hospital staff have civil servant status. In the ambulatory sector, about three-quarters of GPs are under contract and practice in Sector I (*i.e.*, their fees are determined by official schedules); non-contract practitioners (Sector II) can charge higher fees, but they have declined as a proportion of the total since the conditions for access to Sector II were tightened up in 1990. In contrast, 34 per cent of specialists are in Sector II. Until the 2004 reform, GPs were neither required nor expected to act as gate-keepers for access to specialists, a factor which encouraged specialists to compete with GPs or with each other according to their equipment level. The government sets the price of reimbursable drugs on expert advice and the recommendations of drug companies, though the trend in recent reforms has been towards a gradual liberalisation of drug prices. The coverage of spending on dental or eye care is generally capped, including under the CMU. The system is broadly fair though some inequalities remain (eg, for those on low incomes who nevertheless earn more than the CMU maximum, geographical inequalities linked to practitioners' freedom of establishment). Practitioners are paid on a fee-for-service basis and patients are partially reimbursed by public health insurance funds (*ticket modérateur*). The balance may be paid by complementary private insurance, which limits the effect of co-payment on consumption. Certain categories of patients (the elderly, the indigent, those with long-term illnesses,

² For further details, see the very full description of the French health-care system in Imai *et al.* (2000).

etc.) are exempted from co-payment. The combination of almost complete reimbursement and unrestricted and potentially diversified access to health care has been held responsible for the rapid rise in health-care spending.

The main drawback of the system is its cost to the public sector. An imbalance between income and expenditure emerged during the Eighties, giving rise to many reforms (see Appendix 2 and Figure 4). They can be divided into three phases: 1975-91: attempts to control demand for health care, mostly by increasing compulsory contributions; 1992-2001: attempts to control the supply of health care by contractual means; 2002-05: current attempts to restructure the health-care system by redefining the scope of public coverage and encouraging the players in the system to behave more responsibly.

Figure 4



Early corrective measures sought to bring the budget back into balance *ex post* by increasing revenue through higher compulsory contributions and the introduction of co-payment (*ticket modérateur* and *per diem* charges for hospital stays). Until the early Nineties, the only budget restrictions were on the block grants to public hospitals. In the ambulatory sector, the government sought merely to limit the rise in practitioners' fees and to reduce drug prices and reimbursement rates. However, these measures were insufficient: practitioners increased the number of surgery visits to maintain their incomes (successfully in real terms between 1985

and 1995), while patients with supplementary insurance remained unaffected. Hospital budgets were kept at artificially high levels due to rigidities and historic budget bases. As a result, health insurance deficits continued to worsen despite the creation of the CSG (a compulsory contribution) in 1991. In 1996, the Juppé Plan undertook a comprehensive reform of the system, introducing more microeconomic measures and wide-ranging budgetary reforms through amendments to the Constitution. It created annual Social Security Financing Acts and national targets for health insurance expenditure (ONDAM). The ONDAM, not being mandatory, is not a cap on expenditure, but it does help to set priorities in the public funding of health care. Health-care spending as a proportion of GDP fell back slightly following the Juppé Plan only to rise again after 1998, partly for cyclical reasons. The lack of credibility of the financial sanctions against practitioners, clinics and drug companies contained in the Juppé Plan is a further factor. Thus, attempts to reform the system with the aim of curbing the growth of health-care spending have failed, achieving only temporary slowdowns followed by a catching-up phase and a return to the previous growth rate.

towards greater alignment of the systems seems to be emerging, since the objectives pursued (potentially contradictory) are the same in all countries: to guarantee universal health care coverage through national solidarity, to ensure high-quality and effective health care, to guarantee a high level of freedom for patients and health care providers, and to keep the public cost of the system under control. As each system prioritises some of these objectives and neglects others, it is not surprising that reforms have varied according to the type of system in place. The 1990 New Public Management reform in the UK introduced competition between health care providers; the Dekker reform in the Netherlands and the Seehofer reform in Germany introduced competition between health insurance funds; in the US, Health Maintenance Organisations (HMOs) have been introduced to encourage insurers and health care networks to integrate.

Policy choices designed to keep the system in equilibrium have also changed over time. The revenue-increasing policies preferred by most European countries in the Seventies and Eighties had the advantage of keeping the structure of health-care systems intact. But they can only go so far, partly because fiscal pressure cannot be stepped up indefinitely and partly because higher social contributions increase labour costs in an economic environment that has become highly international and competitive. In the late Eighties policies started to focus on rationing expenditure. Countries with national health systems (UK and Sweden) showed the way to countries with health insurance systems which, under pressure from European budget rules (first the Maastricht criteria, then the Stability and Growth Pact), sought in their turn to control expenditure growth (1994 Simons Plan in the Netherlands, 1995 Juppé Plan in France, 1992 Seehofer reform in Germany). More recently, Germany has embarked on a wide-ranging structural reform designed

simultaneously to reduce contribution rates and public benefits and to increase co-payment and the assumption of certain expenditure by private supplementary insurance schemes (Schröder, 2003).

Drawing on international experience (Lequet-Slama, 2004), some broad conclusions can be drawn about these reforms. Problems of sustainability exist, whether financial or of a public health nature, whatever the type of health-care system. The mainly macroeconomic reforms of the last twenty years have liberalised most systems by introducing competition (UK, Netherlands) and have achieved greater decentralisation (Sweden, Spain, Italy). However, they have proved insufficient to secure the long-term future of health-care systems. Microeconomic reforms that focus on giving the players involved (patients, insurers, medical staff and drug companies) incentives to change their behaviour are essential in order to improve the way health-care systems currently operate and enable them to face up to the inevitable increase in spending in the years to come. However, government intervention is also essential in order to regulate the system and prevent undesirable effects specific to the health-care sector.

2. The theoretical context of health care economics

The health-care sector does not work like a normal economic sector. Government intervention is very frequent to make up for the existence of many uncertainties and negative externalities (propagation of disease, links between state of health and poverty, need for an implicit choice between different public spending priorities like education and other categories of social protection, etc.). Health, as both an individual and a collective good, is also at the intersection between a microeconomic and a macroeconomic approach.

In the health-care sector, the many information asymmetries mean that the market does not guarantee the optimum allocation of resources. Moreover, relations in the medical sphere involve three parties (patient, care provider, third-party payer/insurer), making the underlying theoretical model more complex than the dual relation customary in the principal/agent model (Ventelou, 1999). Arrow (1963) points out that the specific features of the health-care sector impede insurance mechanisms, allowing for the emergence of dysfunctions, namely adverse selection, moral hazard and information asymmetry between principal and agent, even though insurance is necessary to cover medical expenditure (Drèze, 1997). Because they have insufficient medical information, patients have to delegate treatment choices to health care providers. This information asymmetry makes demand dependent on supply. If health care providers are paid on a fee-for-service basis and therefore have an incentive to provide as many services as possible, the problem of demand inducement appears (see for example Cutler and Zeckhauser, 1999). The information asymmetry between patient and insurer also causes moral hazard (patient's choice of behaviour not disclosed) and adverse selection (information about state of health not shared).

Moral hazard exists when the risk borne by the seller of insurance may be aggravated by the buyer's behaviour. In other words, the hazard appears when people with generous insurance cover spend more than those with no insurance.³ A risk of over-consumption exists when insurance covers the cost of the chosen tests and treatment without reserve. As a result, they seem to be free of charge *ex post* to both patients and practitioners. The existence of moral hazard has little effect on demand except in cases of doctor-shopping. In contrast, on the supply side Newhouse (1996) shows that doctors tend to choose a larger quantity of care or more expensive treatment when a patient has insurance.

The usual counter to moral hazard is co-payment (*ticket modérateur*, limits on coverage or reimbursement, etc.), but it mainly affects the demand side and generally results in less insurance (Newhouse, 1993). It must therefore be accompanied by regulating mechanisms like exemption from co-payment for certain illnesses or conditions or categories of patient. The key parameter on the supply side is remuneration. Mechanisms designed to make providers more aware of the costs incurred presuppose *ex ante* methods of payment, such as block per-case or capitation payments. In a system where real expenditure is reimbursed *ex post*, providers have no incentive to make an optimal cost/effectiveness trade-off. On the contrary, a fee-for-service system can lead to preference being given to the most expensive technologies and treatments (since they can give the impression of being more effective), without the patient or insurer being able to make a judgment, which aggravates over-consumption. However, while flat-rate salaries may not trigger induced demand, they encourage practitioners to limit the number of their patients or the quality of treatment. Conversely, a fee-for-service system encourages practitioners to maximise their income and to benefit from the rent that their information advantage confers on them (Pauly, 1974). They increase their clientele and the quality of their services since they are in competition, but they also increase the total expenditure funded by the community. The same trade-off between block grant and activity-based payment exists in hospitals. Thus, some countries require the insurer's prior consent before a patient embarks on costly treatment or have introduced *ex ante* funding agreements (fee-for-service payment on the basis of real expenditure is replaced by *ex ante* flat-rate pricing, as in the case of diagnostic-related groups – DRGs – in the US). The development of systems in which care providers and insurers come together in the same organisations is also used to help reduce over-consumption, through health maintenance organisations (HMOs) in the US, health insurance funds in Switzerland and competition between funds in Germany. Practitioners, who have a financial interest in the insurer's profits, have to provide the best possible treatment at the lowest cost. Unnecessary or excessively expensive treatments penalise in the short term, while insufficient or inappropriate treatments penalise in the medium term since they increase the risk of further and potentially greater expenditure. The other side of the coin is that measures to control over-consumption curtail patient freedom, since their choice of

³ Moral hazard also exists when less use is made of prevention. However, several studies show that, on the contrary, the fact of having insurance tends to encourage preventive behaviour with regard to health.

practitioner is limited, and impose greater restrictions on practitioners, who have to comply with treatment guidelines.

Adverse selection has its origins in uncertainty about the future health of any individual and asymmetrical information about that state of health. Buyers of health insurance are better placed to assess their individual risk than insurers. When insurance is optional, insurees have a greater incentive to obtain cover as their risk level rises, causing them to mask their true state of health. Low-risk individuals do not take out insurance because the premiums are too high. As states of health differ throughout the population, private insurers cannot offer the same guarantees in an equitable manner without regulation. They will try to sign up and keep the most healthy and hence low-risk individuals, for example by offering policies to large firms, or specialise in well-reimbursed specialities to the detriment of other, less profitable ones (adverse selection highlighted by Akerlof, 1971). Consequently, they leave the highest-risk individuals to the public system or without insurance, whence the need for regulation (Hsiao, 2000). The market imbalance can even lead to creaming-off. In such cases, government intervention is needed to restore balance. To solve this problem, Rothschild and Steglitz (1976) propose diversified insurance policies with the possibility of an excess for those paying the lowest premiums. However, adverse selection continues to cause a loss of welfare to low-risk individuals, who are unable to find full coverage at a truly attractive price (though Newhouse (1976) is less categorical on this point with reference to the US).

To overcome these difficulties, countries have emphasised universal access to insurance under conditions (premium and coverage) that are independent of the insuree's state of health (though they may depend on other characteristics such as income). But some of this insurance has to be compulsory, at least for a first layer of risk, especially in market-based systems like the one in the US.

3. The determinants of health-care spending

Although demand is the most important factor explaining the level of health-care spending in both theory and practice, the residue in econometric models is nonetheless still substantial. Other factors not captured by demand variables must therefore be involved. Two of them may be supply factors and institutional factors. This section is in two parts. The first rapidly outlines all the factors that may explain the level and trend of health-care spending. Their relevance will be empirically tested in the second part on a panel of height countries.

3.1 The determinants of health-care spending in economic literature

The literature distinguishes three types of explanatory variable among the medium-term determinants of health-care spending, relating to demand, supply and institutional factors. Most existing empirical research takes a macroeconomic approach, looking principally at demand factors. These studies generally focus on

the impact of income, price and demographic effects on the volume of health-care spending. Most of the time, the two other types of determinants are treated residually. The results obtained in all the studies mentioned in this section are reported in Tables 2 and 3 (see below).

Demand factors

- *The income or standard of living effect*

The income effect is measured by GDP per capita and is the principal explanatory variable for health-care spending, whatever the study. However, researchers are not unanimous about the value of the elasticity between health-care spending and income, since estimates do not converge on a single value (Tables 2 and 3). In some studies (Newhouse, 1977; Murillo *et al.*, 1993; Gerdtham and Jönsson, 2000), the elasticity is greater than 1. This property means that health is a luxury good since its expenditure grows faster than the GDP. In other studies (OECD, 1995; L'Horty *et al.*, 1997; Mahieu, 2000), this value is less than 1. The value seems to be sensitive to the modelling method (time series or cross-section between countries) and to the unit of measurement of the variable (PPP or current exchange rates). In all events, demand remains the essential determinant of the growth of health-care spending.

- *The price effect*

In theory, an increase in the price of health-care spending is expected to have a negative impact on demand. Some recent empirical research (Mahieu, 2000; Bac and Cornilleau, 2002) supports this hypothesis. However, several factors related to the health sector economic features, may affect this ratio. First, consumers do not always control their consumption decisions, most of which are taken by the medical profession. Second, insofar as health-care spending can be covered by public and private insurance, consumers do not always face the real price. Third, in some countries like France, prices are not truly fixed by the market since they are at least partially regulated by the government. One way of measuring the price effect in such cases is to take public-sector coverage of health-care spending into account. At given prices, an extension of social coverage entails an increase in health-care spending (L'Horty *et al.*, 1997). All in all, these conflicting effects could cancel out and be reflected in an inelasticity of health-care spending to prices.

- *The demographic effect*

There is a widespread belief that ageing could have an alarming medium-term effect on public spending. Yet a mechanical calculation of what health-care spending would be if the shape of the demographic pyramid were changed (structure effect) shows a moderate impact: it explains only 0.5 to 1 point of the annual rise in spending. However, this approach (all other things assumed to be equal) neglects changes in the structure of consumption by age and changes in

morbidity⁴ at a given age. First, there is a positive link between age and medical consumption (the age effect). But the link changes over time: that is the generation effect (differences of behaviour). The sum of both effects gives the period effect, which generates J-curves: recent generations consume more overall than previous generations and not in the same proportions at a given age. From one generation to another, medical consumption increases more and more rapidly with age (Grignon, 2003). These factors confirm that ageing increases expenditure. On the other hand, other factors put into perspective this relation. Ageing is at once a cause and a consequence of rising health care expenditure, making any measurement of its effect on expenditure artificial. If life expectancy increases due to improved survival techniques and technological progress in a given state of health, average expenditure per capita will rise faster than in the mechanical scenario. In contrast, if increased life expectancy is due to improved quality of life linked to fundamental economic and social factors such as nourishment, the labour law, anti-pollution measures, etc., the rise in expenditure per capita will be lower than in the central scenario. Given that studies of morbidity by age tend to show improved health at a given age (Robine *et al.*, 1998; ESPS surveys,⁵ 1998), the optimistic scenario could be the dominant one in the medium term.

Population ageing, measured by the number of over-65s as a proportion of the total population, is often included in studies of health-care spending. Nevertheless, its explanatory power is both moderated and likely to disappear in the next coming years. Thus, Hourriez (1993) shows that in France, ageing had an effect between 1980 and 1990. The effect was marginal, however, explaining only one-tenth of the rise in health-care spending over the period, a result confirmed by most recent research (Gerdtham *et al.*, 1995; L'Horty *et al.*, 1997; Blomqvist and Carter, 1997). However, this indicator might in fact capture only the impact of greater life expectancy or the generational effects referred to as "cohort effects". According to the empirical research (L'Horty *et al.*, 1997; Mahieu, 2000), these two effects could fade away in the future. Greater life expectancy could diminish the impact of ageing insofar as the care received by over-80s in the last year of their life is less expensive than the care that people who die younger receive in the last year of their life.⁶ And while cohort effects have been marked on post-war generations, which had easier access to health care than previous generations, they are likely to be attenuated because cohorts' behaviour is now becoming more homogeneous. Lastly, in cross-sectional studies, ageing either cannot explain country-by-country differences in health-care spending trends or can do so only marginally (Patkin *et al.*, 1987; Mahieu, 2000).

⁴ Morbidity is the set of causes which can produce disease. The morbidity of a population is defined as "the number of the sick or the number of the cases of illness in a defined population at a given time".

⁵ Surveys of an ongoing sample of social insures (EPAS) conducted by public health insurance funds in tandem with the CREDES health and social protection survey (SPS).

⁶ Medical consumption before death declines sharply as the age of death rises (almost 17,000 euros in the last year if death occurs between the ages of 45 and 54, compared with 9,000 euros after the age of 85. Annual expenditure begins to accelerate one year before death.

Supply factors

a) "Exogenous" supply factors

- *Medical density* – The labour factor (measured by medical density or, even more concretely, by the number of practitioners per 1,000 inhabitants) has increased considerably in most countries since 1980 even if levels are not identical (Appendix 3). This sustained growth in supply, parallel with the increase in health-care spending, might suggest that supply creates demand or, to put it another way, that demand is induced by supply. If an agency relationship is assumed to exist between practitioners and patients, this phenomenon should be even more prominent in countries where practitioners are paid on a fee-for-service basis. However, empirical studies, whether cross-sectional or transverse (Gerdtham, 1992; Rochaix, 1997; Jacobzone, 1997), find it very hard to confirm the hypothesis of induced demand. First, a comparison of levels of health-care spending with the number of practitioners shows that countries with a high medical density, like Italy, do not have the highest expenditure. Second, it is apparently not so much an increase in the number of those employed in the sector that affects health-care spending as the organisation of the health-care system. Lastly, medical density may capture directly demand effects. The causal link between health care supply and demand can be reversed. In this configuration, the increase in the labour factor would be due to growing demand from patients, demographic change (an ageing population) or catch-up effects between countries. On this basis, medical density would be correlated with other demand variables and the rise in health-care spending would therefore be only the expression of a consumption need already captured by the income term. Medical density can be measured by other variables like the number of beds per 1000 inhabitants. In theory, a rise in this variable would lead to higher health spending. However, the number of beds declined in most countries without lower health-care spending. This result can be accounted for by the way in which hospitals were funded in the Eighties, *i.e.* with block grants, hence the weak sensitivity of health-care spending to a better allocation of resources.
- *Relative prices* – Relative prices could be both a demand and a supply factor. In the latter case, their effect on health-care spending is ambiguous. Higher prices can encourage practitioners to produce more, causing the volume of expenditure to rise. In a context where practitioners are exposed to competition, it may be in their interest to offer patients higher quality care that may lead to the use of more effective but more expensive drugs, greater prescription and more tests, etc., ultimately causing expenditure to rise. This is all the more plausible in health-care systems where the patient bears little of the funding burden and where the practitioners' degree of freedom is high. But higher prices can also allow the practitioners to work less for the same income, which would in fact cause the volume of expenditure to fall.

b) “Endogenous” supply factors

The hypothesis that technological progress has an impact on health-care spending dates back to Manning *et al.* (1987) and Newhouse (1992) and has since been borne out by many other studies (L’Horty *et al.*, 1997; Mahieu, 2000; Jones, 2002; Okunade and Murthy, 2002). However, it is difficult to determine from first principles whether the elasticity between health-care spending and the advance and spread of technological progress in the health sector is positive or negative. First, technological progress is difficult to measure and is badly represented by the available proxies. Besides, most of the time, the impact of technological progress is generally measured by difference, once the effects of other determinants have been identified. Second, it is not always clear whether technological progress is a supply factor or a demand factor, making it difficult to say whether elasticity will be positive or negative.

- Considering health care to be a service not a good, and insofar as technological progress spreads less rapidly in the tertiary sector, a higher volume of jobs will be needed in the sector. Assuming that remuneration is homogeneous between sectors, this higher volume of jobs implies a higher relative cost. This is an application to the health-care sector of Baumol’s model of unbalanced growth (Baumol, 1967). If the model is validated in practice, the elasticity between health-care spending and technological progress will be positive.
- Another effect of technological progress is to identify and treat more diseases. The appearance, diagnosis and treatment of new or hitherto unknown diseases could increase health-care spending. In that case, the elasticity will also be positive.
- Technological progress can also be reflected in greater efficiency and productivity (prevention through vaccination, more effective treatment). In that case, the elasticity between health-care spending and technological progress will be negative.

As a general rule, when the technological progress variable is significant in a model, it produces a demand effect with a positive but relatively low-value elasticity, much smaller than that of income per capita (L’Horty *et al.*, 1997; Mahieu, 2000). Another question is who will benefit from the innovations generated by technological progress. If it is young people, and if such innovations mean that long-term illnesses are prevented, their cost will be moderate in the short term and remain so in the longer term. But if, as is the case today, they continue to be concentrated on the oldest people, who make up a growing proportion of the population, the trends observed over the last 10 years will be amplified and health-care spending will continue to accelerate (Grignon, 2003).

Institutional factors

Institutional factors include not only the structure of the health-care system, which mainly concerns coverage of the population, and the way in which

practitioners are paid but also the way in which health-care spending is funded as between government, private insurance and the patients themselves. Empirical estimates highlight three stylised facts:

- extending social coverage increases expenditure. L'Horty *et al.* (1997) show that extending social coverage by one point induces a 2 per cent rise in the volume of expenditure;
- in countries where practitioners are paid on a fee-for-service basis, health-care spending is higher than in countries that use the capitation system (Mahieu, 2000; Bac, 2004);
- health-care spending falls as the share of spending borne by the private sector rises. Bac (2004) shows for example that a one-point increase in the share of health-care spending borne by households induces a 1.4 per cent drop in health-care spending.

Table 2

Panel and Pooled Estimations

| | GDP | Relative price | Demography | Financing | Technical progress | Beds |
|------------------------------------|-------|----------------|------------|-----------|--------------------|-------|
| Hitiris (2004) | | | | | | |
| 1960-1990 | 1.070 | | 0.590 | 0.270 | | |
| 1960-1994 | 1.100 | | 1.030 | 1.010 | | |
| Bac and le Pen (2002) | | | | | | |
| OLS | 1.210 | -0.001 | | | | |
| Adjusted OLS | 1.210 | 0.001 | | | | |
| FMOLS | 0.940 | -0.460 | | | | |
| DOLS | 1.140 | 0.146 | | | | |
| Atella and Marini (2004) | | | | | | |
| <i>Static model (1)</i> | | | | | | |
| OLS | 1.262 | -0.452 | 0.027 | 0.342 | -0.006 | |
| Within | 1.017 | -0.834 | 0.640 | 0.770 | 0.013 | |
| GLS | 1.030 | -0.819 | 0.327 | 0.745 | 0.012 | |
| <i>Static model (2)</i> | | | | | | |
| no distinction | 0.878 | -0.091 | 0.207 | 0.361 | 0.017 | |
| NHS | 0.858 | 0.099 | -0.761 | 0.458 | 0.017 | |
| non-NHS | 0.895 | 0.174 | 0.606 | 0.069 | 0.021 | |
| <i>Dynamic model</i> | | | | | | |
| OLS | 0.392 | 0.150 | 0.394 | 0.395 | | |
| Within | 0.395 | 0.197 | 0.581 | 0.333 | | |
| FD-2SLS | 0.272 | 0.125 | 0.996 | 0.349 | | |
| Within 2SLS | 0.366 | 0.237 | 0.636 | 0.372 | | |
| 2SLS | 0.363 | 0.225 | 0.543 | 0.399 | | |
| Gerdtham and Jönsson (2000) | | | | | | |
| <i>General model</i> | 1.217 | -0.463 | 0.341 | | | 0.003 |
| <i>Reduced model</i> | 1.222 | -0.448 | 0.356 | | | |
| Mahieu (2000) | | | | | | |
| | 0.66 | -0.630 | | | 0.05 | |
| Bac and Cornilleau (2002) | | | | | | |
| | 0.98 | -0.770 | | | | |

Table 3

Time Series Estimations

| | GDP | Relative price | Financing | Technical progress | Medical density | |
|-------------------------------------|------|----------------|-----------|--------------------|-----------------|------|
| | | | | | Practicians | Beds |
| Murillo <i>et al.</i> (1993) | | | | | | |
| Germany | 1.41 | -0.51 | | | | |
| Belgium | 1.36 | -0.59 | | | | |
| Denmark | 1.13 | 0.06 | | | | |
| Spain | 1.95 | -0.60 | | | | |
| France | 1.36 | -0.64 | | | | |
| Ireland | 2.17 | -0.78 | | | | |
| Italy | 1.34 | -0.29 | | | | |
| Netherlands | 1.23 | -0.55 | | | | |
| UK | 1.61 | -2.21 | | | | |
| Mahieu (2000) | | | | | | |
| France | | -0.40 | | 0.35 | 1.03 | |
| Germany | | -0.28 | | 0.59 | 0.30 | |
| Netherlands | | 0.07 | | 0.23 | 0.15 | |
| United States | | -0.19 | | 0.08 | 1.45 | |
| Italy | | 0.32 | | 0.48 | 0.83 | |
| Denmark | | 0.03 | | 0.24 | 0.64 | |
| L'Horty <i>et al.</i> (1997) | | | | | | |
| France | 1.51 | -1.48 | 0.009 | | 0.14 | |
| | 1.04 | -1.24 | 0.02 | | | 0.21 |

3.2 The results of econometric estimates for eight industrialised countries

Method and data

This section aims to contribute to the debate on the short- and medium-term determinants of health-care spending by proposing estimates for eight industrialised countries (France, Germany, Italy, Netherlands, Sweden, United Kingdom, United States and Canada). The econometric method used is thoroughly traditional except for the fact that it is based on time series, less common where health-care spending is concerned than a cross-sectional approach. The choice is not an arbitrary one. It was motivated in particular by the results of a previous cross-sectional study (Hervé and Maréchal, 2004), which proved to be rather unconvincing. Disparities between countries are such that, in the model used, after GDP per capita it is country fixed effects that do most to explain health-care spending trends in each one. Moreover, using time series makes it possible to estimate a specific relation for each country and to consider a greater number of explanatory variables. The data are annual and taken from the OECD 2004 health economics database (See Appendix 4). As long-period data are not available, it was not possible to carry out a satisfactory multivariate estimate. The estimates were therefore carried out in two stages in the manner of Engle and Granger over the period 1980-2002. The first stage was to

estimate a level relation between volume health-care spending per capita and the explanatory variables, using ordinary least squares. The stationarity of the residuals of the long-term relation was then tested using a Dickey-Fuller cointegration test. The results of this first step estimation are reported in Table 4. In the second stage, if the unit root null hypothesis was rejected and the residuals were stationary, they were introduced into an error correction model to determine the short-term dynamic (Table 5).

In the medium term, demand factors explain most of the level of health-care spending

Income per capita is unarguably the chief determinant of the level of health-care spending in the medium and long term. The variable is significant for the eight countries studied. In the US and in Canada, the estimated elasticities are less than one and lower than those of the European countries in the sample, respectively 0.76 and 0.58. In Europe, the elasticity is close to 1 and actually exceeds 1 for the UK (1.03) and Germany (1.17). This result bears out the hypothesis that health is a superior good. However, the elasticities estimated in our study are slightly lower than those of Murillo *et al.* (1993), who found elasticities significantly greater than 1 for all the countries in their study. But the comparison is tricky because our estimates concern a more recent period. Indeed, the variance in income per capita may be supposed to be smaller in our sample than in that of Murillo *et al.* (1993) because of the catching-up in living standards that occurred in the Eighties and Nineties. Our results are borne out by those of Herwartz and Theilen (2003), who show that the elasticity between health-care spending and income per capita has decreased substantially since the early Eighties. In contrast, they explain this phenomenon by the fact that demand came up against restrictive supply policies in the Eighties and Nineties. A more recent study (Mahieu, 2000), using cross-sectional data, produces similar results and concludes that the elasticity between health-care spending and income per capita is approx. 0.9 and hence less than 1.

Relative prices, when significant, have negative elasticity, reflecting a demand effect. In France and in Sweden, the elasticity between health-care spending and relative prices is respectively -0.43 and -0.55 . Murillo *et al.* (1993) obtain a similar elasticity for France. The number of surgery visits per capita has an impact in three of the eight countries studied namely Italy (0.23), France (0.49) and Sweden (1.05). In the case of France, in a context that facilitates access to health care, the increase in the number of surgery visits seems to bear on health-care spending. In Italy, the number of surgery visits has fallen over time, but as the initial level was the highest at the beginning of the period, that can explain the high level of health-care spending (base effect). The ageing variable appears to have little significance, a result consistent with all the empirical studies in the literature, except in the Netherlands, where its impact is minimal. A one-point increase in the proportion of the total population represented by the over-65s appears to cause a 0.5 per cent rise in health-care spending. Ageing also seems to have an effect in France, with a relatively low elasticity of 0.3, though only if the measurement is based on the proportion of the population aged over 80 (and not over 65).

Table 4

Long-term Regressions
Long-term Relation

| | France | Germany | Italy | Netherlands | Sweden | UK | US | Canada |
|------------------------------|------------------|------------------|------------------|----------------|------------------|------------------|-----------------|------------------|
| Explanatory variables | | | | | | | | |
| Revenue per capita | 0.92 (6.31) | 1.16 (17.65) | 0.93 (4.73) | 0.79 (8.00) | 0.88 (5.34) | 1.03 (7.46) | 0.76 (13.69) | 0.58 (13.99) |
| Medical Consultation | 0.49 (2.78) | | 0.23 (5.83) | | 1.05 (3.64) | | | |
| Aged | 0.32 (2.55) | | | 0.52 (2.09) | | | | |
| Relative Price | -0.45 (-1.69) | | | | -0.56 (-3.88) | | | |
| Practicians | | | | | 0.58 (2.76) | 0.35 (3.46) | | |
| R&D | 0.03 (1.85) | | | | | | 0.07 (1.69) | 0.03 (1.49) |
| Scanners | | | 0.12 (4.72) | | | | | |
| Priv | | -0.62 (-7.86) | -0.29 (-4.35) | | | -0.27 (-4.08) | | -0.55 (-4.18) |
| Cover | | | | 0.46 (4.12) | | | 0.7 (6.04) | |

Cointegration test

| | | | | | | | | |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| t-stat | -3.76 | -3.08 | -5.01 | -4.99 | -4.37 | -3.78 | -4.54 | -2.63 |
| Critical values | | | | | | | | |
| 1% level | -3.77 | -3.77 | -3.81 | -3.83 | -3.79 | -3.77 | -3.79 | -3.79 |
| 5% level | -3.00 | -3.00 | -3.02 | -3.03 | -3.01 | -3.00 | -3.01 | -3.01 |
| 10% level | -2.64 | -2.64 | -2.65 | -2.66 | -2.65 | -2.64 | -2.65 | -2.65 |

| | | | | | | | | |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Adjusted R squared | 0.995 | 0.947 | 0.985 | 0.987 | 0.963 | 0.982 | 0.978 | 0.977 |
| Standard error | 1.67% | 2.31% | 2.27% | 1.72% | 3.75% | 2.32% | 2.00% | 2.05% |
| Durbin-Watson stat | 1.59 | 1.28 | 1.36 | 1.34 | 1.70 | 1.39 | 0.95 | 0.95 |

Supply factors have little significance

The number of practitioners appears to have little or no significance in the majority of empirical studies. This finding is borne out in our study, insofar as the variable is significant for only two countries, Sweden and the United Kingdom. There was a substantial increase in the number of practitioners in these two countries between 1990 and 2000, making up for previously imposed restrictions. Technological progress, as we have already said, is not easy to measure. We have used two variables in this study: the share of GDP allocated to research and development (R&D) in the health-care sector and the number of scanners. In France, the United

States and Canada, R&D appears to have played a part in the rise in health-care spending, though the effect remains marginal. Higher R&D spending appears to have caused a rise in health-care spending of 0.03 per cent in France and Canada and 0.07 per cent in the US. This result is close to that of Mahieu (2000) for the United States (0.08), though less so for France (0.35). In Italy, it is the number of scanners that appears to be significant. The figures (Appendix 3) show that Italy had about the same number of scanners as other countries in 1980 but that the number has increased considerably over 20 years and was substantially higher than in other European countries in 2002.

Table 5

Short-term Dynamic
Error Correction Model

| | France | Germany | Italy | Netherlands | Sweden | Canada |
|--------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Short term coefficients | | | | | | |
| Revenue per capita | 0.31 (1,42) | 0.41 (2,62) | 0.81 (1,93) | 0.38 (1,78) | | 0.15 (1,39) |
| Medical Consultation | 0.36 (3,41) | | 0.14 (1,79) | | 0.7 (3,51) | |
| Aged | | 0.15 (1,29) | | | | |
| Relative Price | -0.27 (-1,42) | -0.73 (-1,59) | | -0.23 (-0,92) | -0.32 (-2,23) | |
| Practicians | 0.09 (1,52) | | | | 0.33 (1,89) | |
| Beds | | | | | 0.37 (1,58) | |
| R&D | 0.02 (1,69) | | | | | |
| Scanners | | | 0.07 (1,19) | | | |
| Priv | | | -0.14 (-1,45) | | | -0.47 (-2,91) |
| Cover | | | | 0.31 (2,72) | | |
| ECM coefficient | -0.75 (-3,95) | -0.79 (-2,88) | -0.75 (-2,13) | -0.63 (-2,90) | -0.72 (-3,79) | -0.48 (-3,22) |
| Adjusted R squared | 0.55 | 0.37 | 0.44 | 0.41 | 0.51 | 0.52 |
| Standard error | 1.03% | 2.29% | 2.02% | 1.43% | 2.08% | 1.18% |
| Durbin-Watson stat | 1.63 | 1.59 | 1.59 | 1.55 | 1.82 | 0.93 |

Institutional factors are more or less significant in the different countries

In the United States and the Netherlands, the extension of social coverage could cause an increase in health-care spending. In the United States, where social coverage is low, a one-point extension would cause a 0.7 per cent increase in health-care spending. In the Netherlands, the increase would appear to be only 0.46 per cent. In the other countries studied, social coverage is not a significant factor. This can be explained by the fact that the social coverage rate in those countries was already over 90 per cent in 1980, whereas in 2002 it was only 70 per cent in the Netherlands and 20 per cent in the United States. The proportion of health care expenditure covered by the private sector is significant in estimations for Italy, Germany, the UK and Canada. In these countries, the increase in private funding appears to have contributed to limit the rise in health-care spending between 1980 and 2002. A 1 per cent increase in the health-care spending assumed by the private sector appears to curb expenditure by 0.27 per cent in the UK and 0.29 per cent in Italy. The impact in Canada and Germany is double that, with respective elasticities of -0.55 and -0.62 .

The short-term results are relatively similar to the medium-term results: increases in health-care spending are mainly attributable to demand factors

Growth in income per capita or GDP explains change in health-care spending in five out of eight countries (France, Italy, Germany, Netherlands and Canada). With the exception of Italy, however, the elasticity between expenditure and income growth is much lower than in the long term. Relative prices have a short-term impact in France and Sweden, the Netherlands and Germany. For the first three countries, the elasticity between health-care spending and relative prices ranges between 0.2 and 0.4, a result consistent with those of other studies (Mahieu, 2000). For Germany, in contrast, the elasticity is greater than 0.7. Whereas ageing is a significant factor for France and the Netherlands in the medium and long term, it is not in the short term. In contrast, it seems to have an impact, albeit rather small, on the rise in health-care spending in Germany. A one-point increase in the proportion of the population aged over 65 appears to cause a 0.15 per cent rise in health-care spending. Results for the other variables (number of practitioners and surgery visits, R&D, number of scanners, institutional factors) are almost identical to medium- and long-term results.

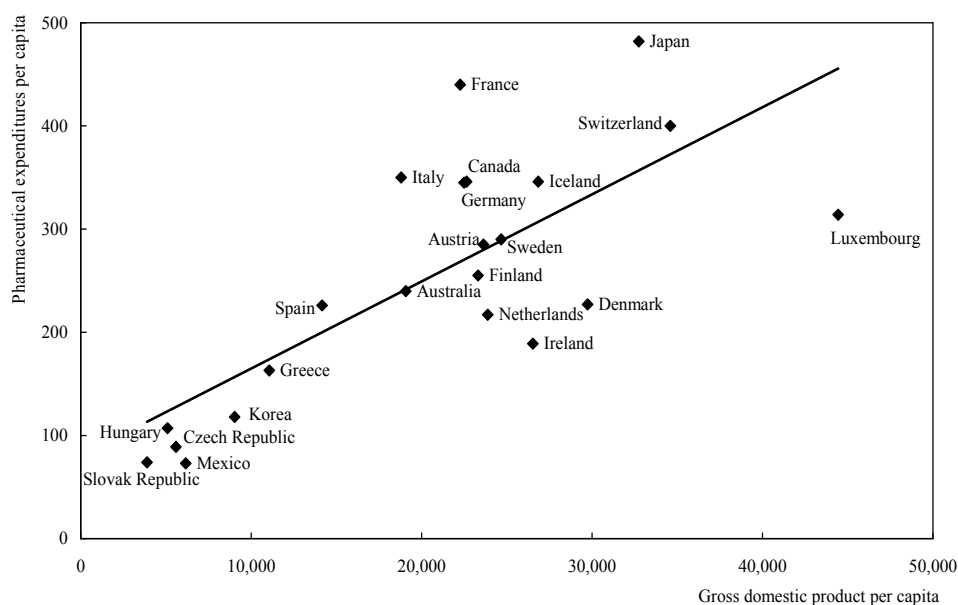
Health-care spending mainly reflects variables that represent economic development (income per capita, technological progress) and structural patterns (demography). It is hardly conceivable to run counter to these determinants. In fact, the reforms that have been implemented in a number of countries have focused on other factors. Yet, as already shown in this paper, these factors have hardly affected the level and change in health-care spending. These results make it possible to understand why past macroeconomic reforms failed to yield satisfactory results and why policies have been shifting towards microeconomic measures which focus on the behaviour of health care actors.

4. What could be the characteristics of an effective reform in France?

The French health-care system has undergone many transformations as a result of the numerous reforms to which it has given rise. Now, almost the entire population has health insurance cover for a minimum basket of health care services. Equal access to health care for all seems guaranteed. In contrast, the level of public coverage has diminished over time, especially for ambulatory care, with some of the cost of routine treatment being transferred to the private sector. This privatisation has generated a new problem of inequality that universal coverage does not entirely solve. The way in which the system is funded has changed since social security contributions from wages were replaced by the CSG, a tax on all income. There has been a switch from a system based on insurance to a system based on national solidarity at least for the first layer. The central government has been much more involved in regulation since the 1995 Juppé Plan. That set of reforms successfully initiated a change in the way health care providers are funded by introducing market mechanisms. Thus, hospitals benefit from activity-based pricing (via PMSI, the French equivalent of DRG) and drug prices have been gradually freed in the hope that higher prices will result in less consumption. Overall, the French health system has converged on those of other countries, with a first layer approximating to the public-integrated model (universal entitlement, funding out of tax revenue) and a

Figure 5

Per Capita Pharmaceutical Expenditures and GDP, 2001
(US dollars, 1996 exchange rate)

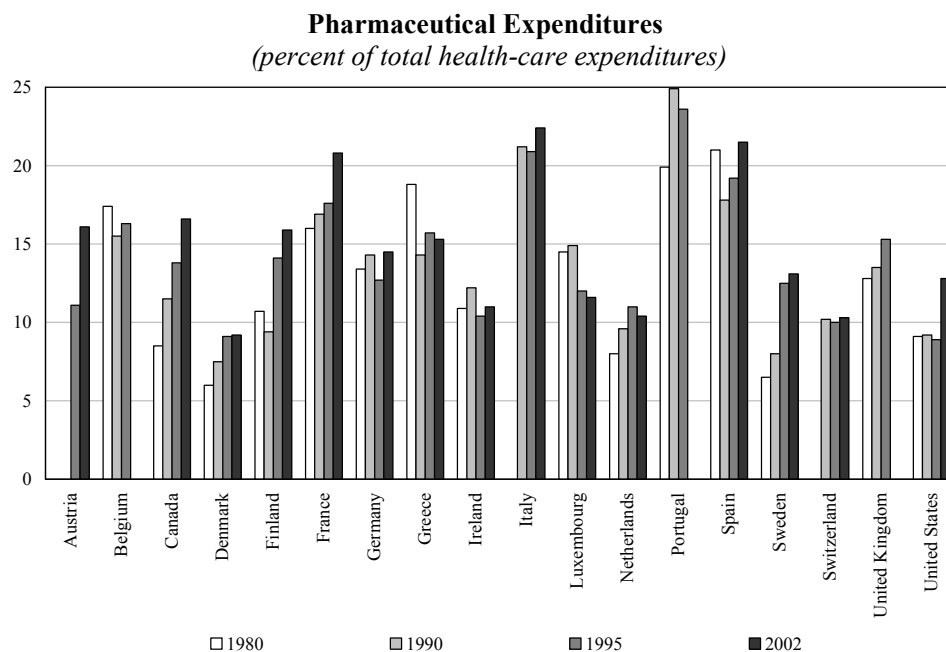


second, partly privatised layer in a context of regulation by performance and competition between health care providers.

But even these far-reaching changes have not managed to curb the surge in health-care spending, on the contrary, a situation which most studies attribute to a set of factors. Although government involvement in regulation has increased (creation of ONDAM and of social security finance acts), there is no *a priori* means of limiting the budget or ensuring that players in the health-care sector comply with it. Resistance or non-cooperation by the medical professions and drug companies is holding back the success of structural reform. More specifically, it seems difficult to call into question the method of payment for ambulatory care and the freedom of patients and practitioners. Lastly, in France, drug spending to GDP ratio is one of the highest (Figure 5). Moreover, drug spending is also one of the fastest-rising items of expenditure (Figure 6) and great changes have taken place in the pharmaceutical sector recently, with the advent of globalisation and consolidation.

Several avenues of reform have been proposed in the literature, some of them already included in the Douste-Blazy reform of 2004. Patient monitoring through personalised medical records and the choice of a primary practitioner coupled with better quality health care can help to rationalise health-care spending and achieve greater cost-effectiveness. However, some specialists on the subject (Cercle des

Figure 6



Economistes, 2004) do not believe that these measures are sufficient to bring the system under lasting control. The 2004 reform, which some regard as incomplete, would arguably bring about only a temporary restoration of health care finances. A short-term improvement linked to a cyclical upturn and the hoped-for savings could occur. But the trend towards a steady rise in health-care spending would not be reversed and the difficulties of funding the system would reappear in the medium term (Cornilleau and Ventelou, 2004).

The main thrust of reform should be to revise the current principles of ambulatory medicine by changing the way in which practitioners are paid, adapting their freedom of establishment and proposing closer links between insurers and health care providers. In addition, the scope of national solidarity should be strictly defined, especially as population ageing is likely to increase the proportion of treatments that the market is not willing to insure (long-term illnesses, geriatric ailments, etc.).

The proposals put forward in the literature (Cercle des Economistes, 2004; Artus, 2004; Imai *et al.*, 2000; Ulman, 2004) draw on the experience of other countries:

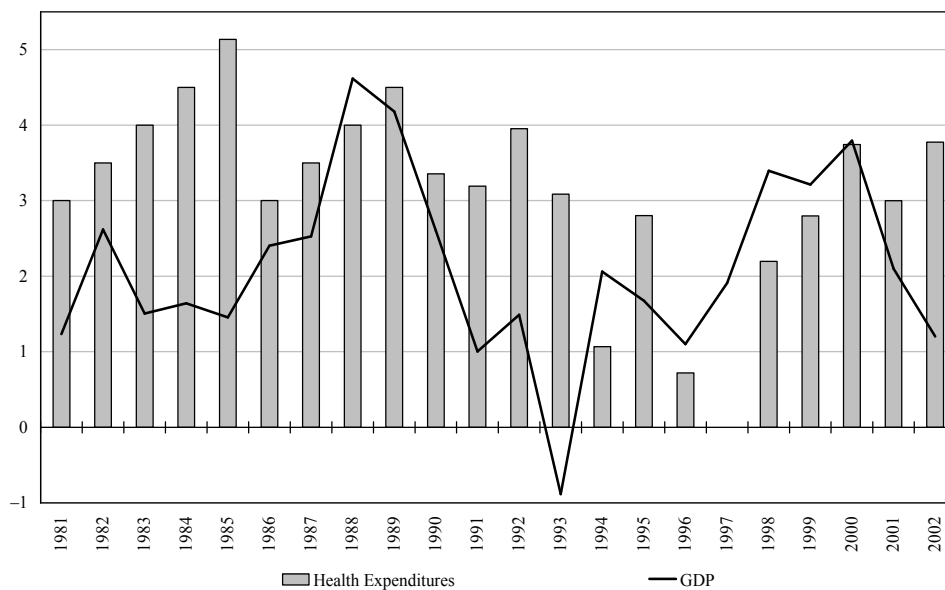
- create health care centres where surgery visits can take place, treatment can be dispensed and tests and small operations performed, so as to optimise costs;
- develop groupings of health care providers and insurers so as to raise practitioners' awareness of health care costs, or even link their pay to the cost-effectiveness of the service they provide;
- support innovation and R&D for drugs and bio-technologies by encouraging the creation of industrial centres (European "bio-clusters" along the lines of those in the United States, meaning the concentration of independent firms in the health-care sector);
- develop tools to assess the performance of practitioners, hospitals and drugs;
- define more precisely the role of players in the system (insurers, health care professionals, government) so as to get away from a "co-irresponsibility" mindset (Mougeot, 1999);
- promote prevention (vaccination, campaigns against tobacco and other narcotics, cancer screening, regular check-ups, etc.);
- introduce incentives to limit expenditure in private insurance (bonus-malus schemes, excess payable by the insuree, etc.).

This list, which does not of course pretend to be exhaustive, shows that current thinking is clearly heading in the direction of microeconomic solutions. However, it is unlikely that a miracle solution can be found that will lead in the short term to any significant modification of trends that twenty years of assiduous reform have been unable to reverse for more than a few months. Other countries' experiences may be a source of inspiration but they confirm that fundamental changes resulting from structural reform of a health-care system take a long time to come about and that their effectiveness does not become apparent for many years.

APPENDIX 1

Figure 7

Total Real Health Expenditure and Real GDP Growth
France



Germany

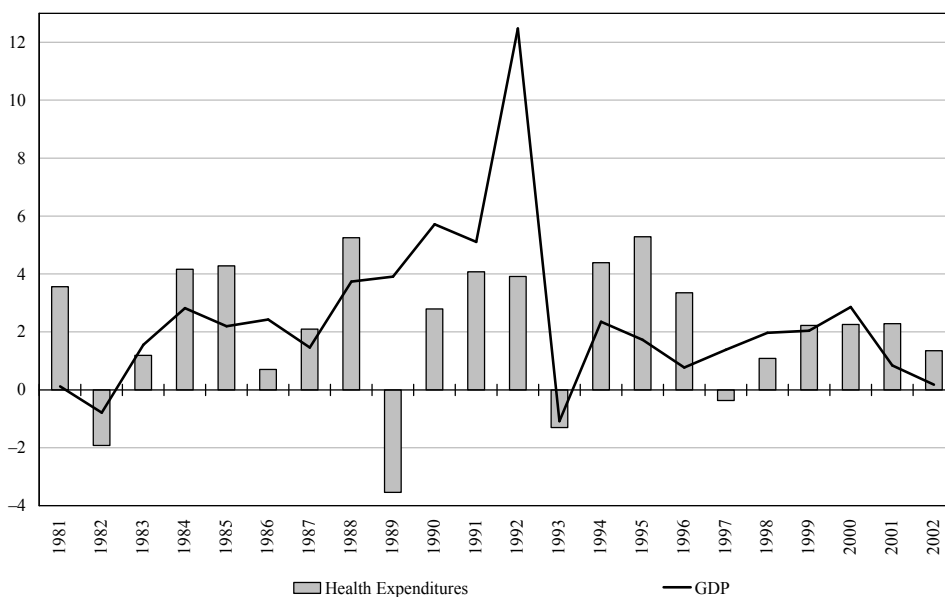
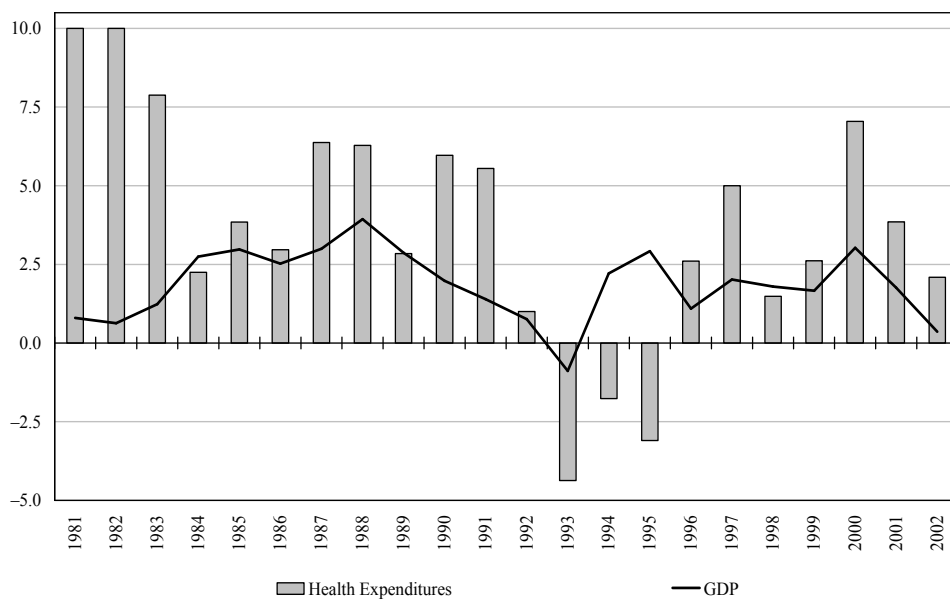


Figure 7 (continued)

Total Real Health Expenditure and Real GDP Growth
Italy



Sweden

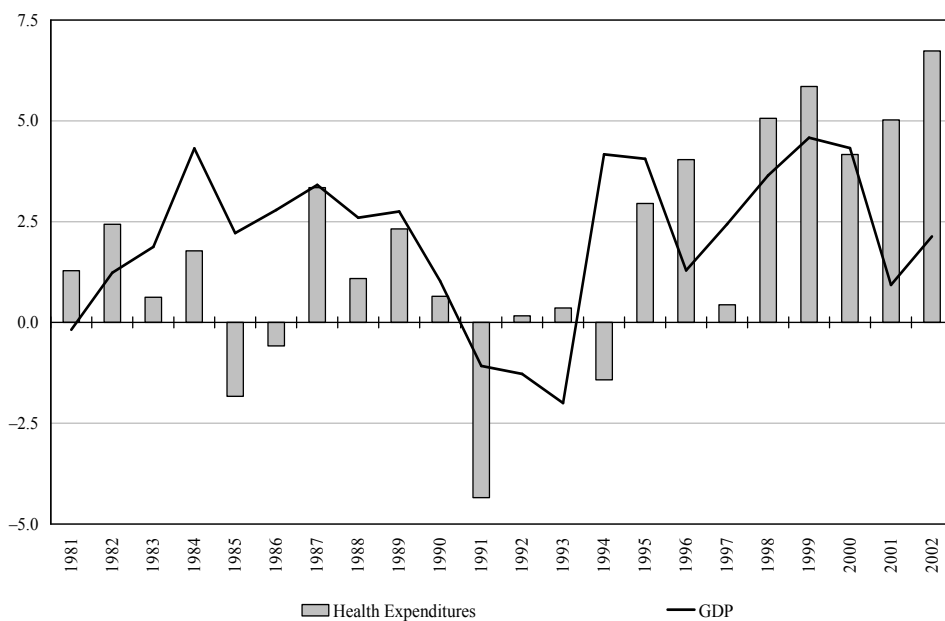
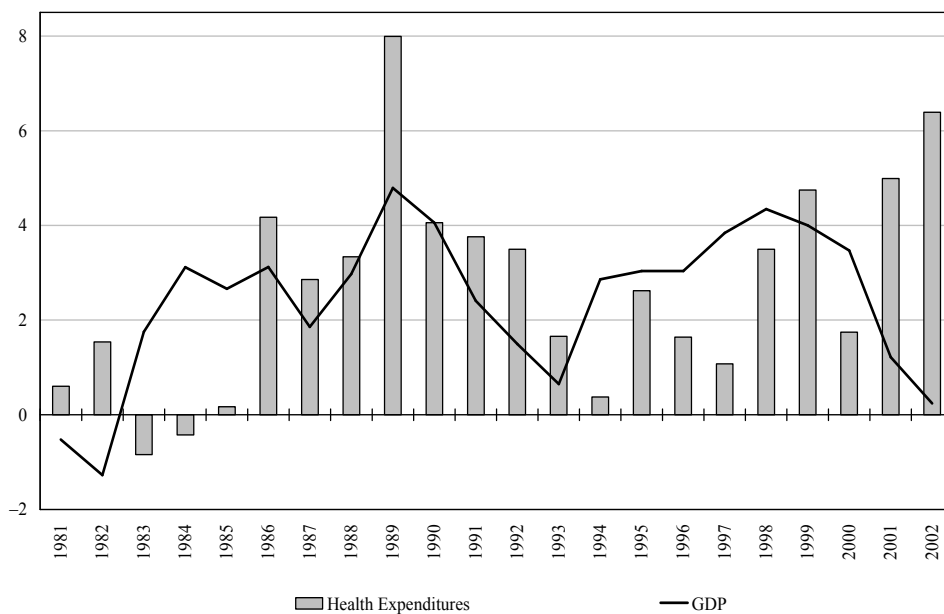


Figure 7 (continued)

Total Real Health Expenditure and Real GDP Growth
Netherlands



Canada

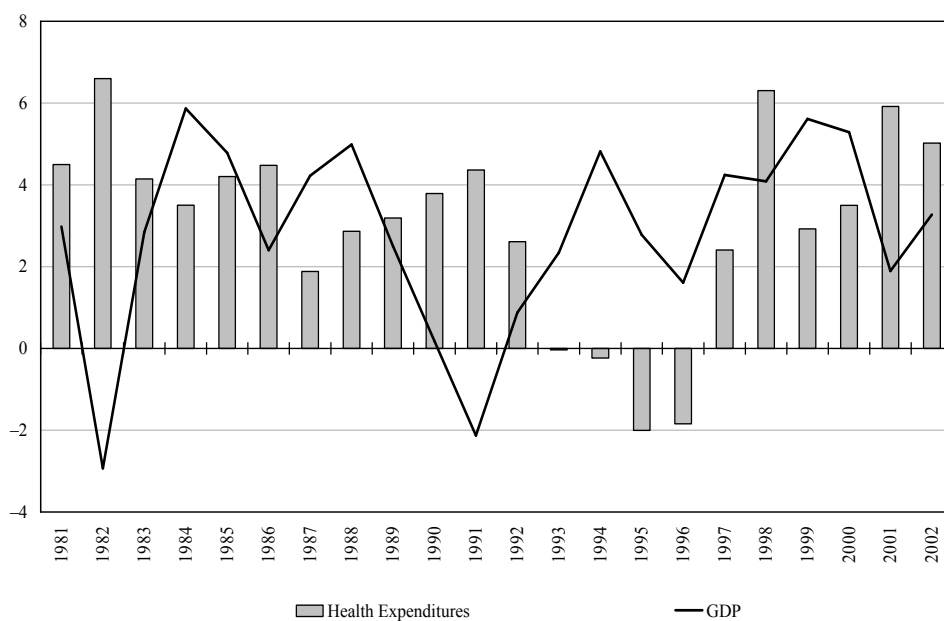
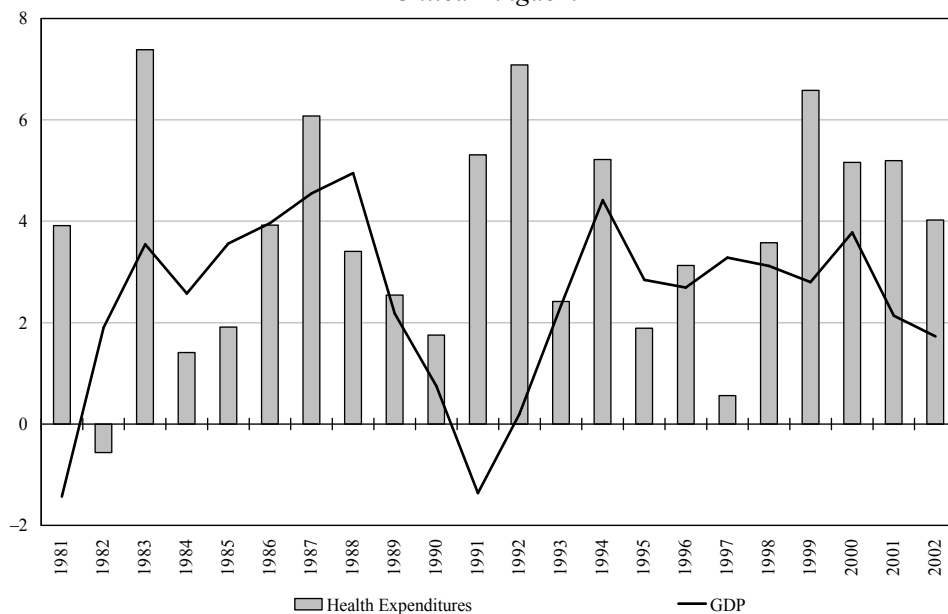


Figure 7 (continued)

Total Real Health Expenditure and Real GDP Growth
United Kingdom



United States



APPENDIX 2 HISTORY OF HEALTH SERVICE REFORMS IN FRANCE SINCE 1975⁷

In the early Seventies, a freeze on health care prices (bed-day prices in hospitals, practitioners' fees that rose more slowly than wages, drug prices aligned on the lowest) caused players in the health-care sector to adapt their behaviour. Hospital stays became longer, drug prescriptions increased and priority was given to the newest treatments, while the number of surgery visits increased so that practitioners could maintain their income. These habits are at the origin of the successive reforms and current rigidities of the health-care system.

| First Period: Demand-centred Actions | |
|---|---|
| Plan Durafour (December 1975) | Reduction in VAT on drugs |
| Plan Barre (September 1976) | Increase in co-payment (<i>ticket modérateur</i>) |
| Plan Veil (April 1977 - December 1978) | Increase in contributions and reduction in the rate of refund on certain non-essential drugs |
| Plan Barrot (July 1979) | |
| Plan Questiaux (November 1981) | Increase in compulsory contributions through social security charges and earmarked taxes like those on alcohol and tobacco |
| Plan Bérégovoy (November 1982 - March 1983) | Introduction of the <i>per diem</i> fixed charge for hospital stays (<i>forfait hospitalier</i>), increase in co-payment, introduction of contribution on unemployment benefits |
| 1984 | Introduction of block grants for hospitals |
| Plan Dufoix (June 1985) | |
| Plan Séguin (June 1986 - May 1987) | Some "convenience" drugs no longer reimbursed, restrictive revision of the list of illnesses giving exemption from co-payment, exceptional contributions, plan to rationalise expenditure |
| Plan Evin (September 1988) | Regulation of alcohol and tobacco advertising, tighter conditions for access to Sector II (unregulated fees) |
| Plan Rocard-Evin (December 1990 -1991) | Some drugs no longer reimbursed, introduction of the CSG, tax on pharmaceutical advertising |
| Plan Bianco (June 1991) | Increase in wage-based contributions and the hospital <i>per diem</i> charge, some drugs no longer reimbursed, introduction of National Quantified Targets (agreements between public health insurance funds and ambulatory doctors to control expenditure) |

⁷ This list draws in particular on Ventelou (1999), Imai *et al.* (2000) and Sandier *et al.* (2004).

| Second Period: Strategies for Controlling Health-care Provision by Contractual Means | |
|---|---|
| Loi Teulade (December 1992) | Introduction of mandatory medical guidelines (RMO) setting out recommended treatments for certain illnesses |
| Plan Veil (August 1993) | Conclusion of the first price-volume regulation agreements with drug companies, increases in hospital <i>per diem</i> charge, co-payment and CSG |
| Plan Juppé (November 1995 and 1996 ordinances) | Government given a greater role through the introduction of ONDAM (national health spending targets covering ambulatory doctors, private clinics and cash benefits) and parliamentary control over social security via the annual voting of a Social Security Finance Act, creation of personal medical record, computerisation, care groups, policy of penalising ambulatory practitioners in the event of budget overruns (from 1997), creation of supervisory agencies (ANAES, under the aegis of the Health Ministry), redeployment of hospitals, RDS levy and exceptional contribution for practitioners, increase in <i>per diem</i> hospital charge, <i>ex ante</i> funding of hospitals based on performance and activity via PMSI (French equivalent of DRG) |
| Aubry measures (Social Security Finance Act for 1998) | Authorisation for pharmacists to replace practitioner-prescribed drugs by generics, incentives for patients to choose primary practitioners, computerisation of doctors' surgeries, introduction of the VITALE card, shift of employee health insurance contributions to CSG, mandatory regional spending targets, mandatory reduction of radiologists' fees confirmed in the Social Security Finance Act for 1999 |
| Aubry measures (1999) | Hospitals managed by the state, ambulatory care by the CNAMTS, introduction of regional hospitalisation agencies (created by the Juppé Plan) responsible for relations with private hospitals, DRG payments encouraged, exceptional contribution levied on drug companies' sales |
| 1999 | Legislation introducing universal coverage (effective from 1 January 2000), meeting of all the players in the health-care sector called by the government |
| 2001 (Secretary of State for Health: D. Gillot) | Meeting of all the players in the health-care sector called by the government |

| Third Period: Redefinition of the Scope of Public Coverage and Incentives for Responsible Behaviour | |
|--|---|
| 2002 | “Hospital 2007” plan: activity-based pricing, greater autonomy in HR management, greater investment, simplified planning |
| Plan Mattéi (2003) | Reduction in rate of refund for many drugs, acknowledgment of the failure of cost control policies and consequent relaxation of ONDAM, increase in practitioners’ fees (20 euros for a surgery visit), gradual freeing of drug prices |
| Social Security Finance Act for 2004 (September 2003) | Creation of the high council for the future of health insurance, increase in tobacco taxes, increase in <i>per diem</i> hospital charge (13 euros instead of 70 FF since 1995), reduction in the rate of refund for certain drugs deemed to be of insufficient medical value, tighter definition of long-term illnesses exempt from co-payment and exclusion of pre- and post-operative care |
| Douste-Blazy reform (August 2004) | Greater coherence of health-care provision (personalised medical record, coordination of treatment around a primary practitioner, best practice guidelines, higher charges for several types of medical consultation), promotion of generic drugs, gradual introduction of flat fees, modernisation of hospital purchasing, tighter controls on doctor’s certificates, out-of-pocket payment by patients of a non-reimbursable 1 euro fee, annual 1 euro increase in <i>per diem</i> hospital charge for three years, new revenue (extension of the tax base for the CSG, increase in the corporate social security levy) |

APPENDIX 3
EVOLUTION OF THE MAIN DETERMINANTS OF HEALTH EXPENDITURE

Figure 8

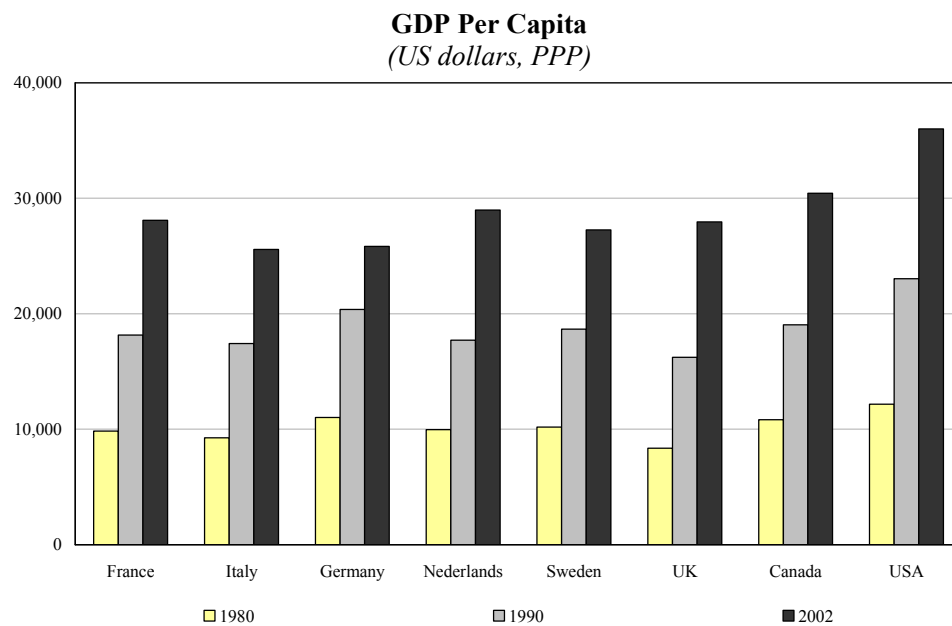


Figure 9

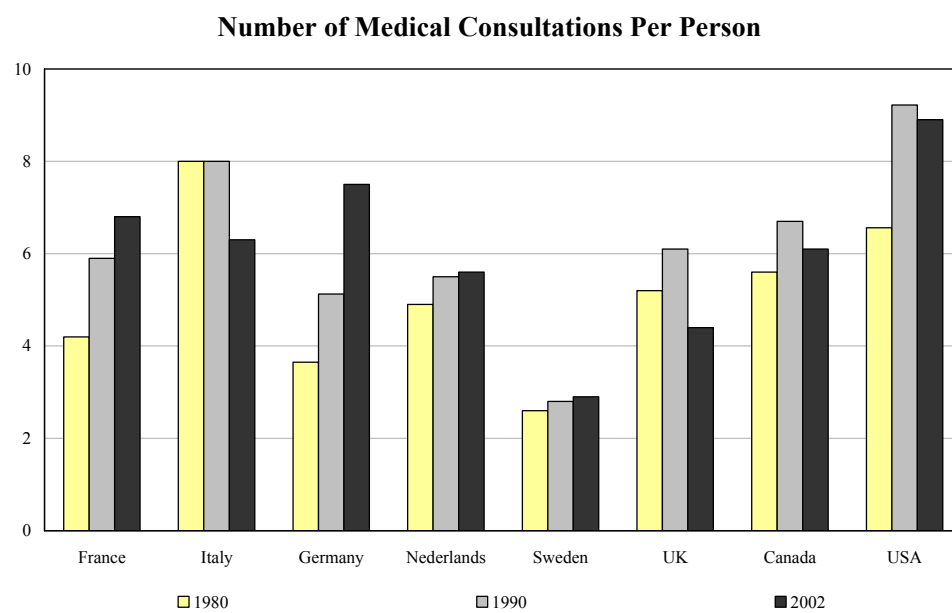


Figure 10

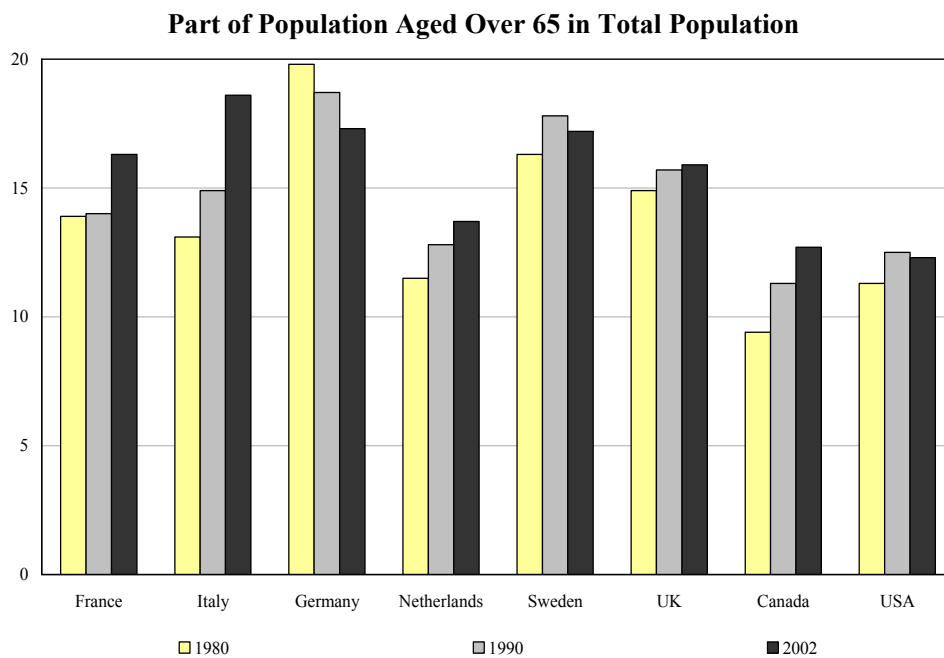


Figure 11

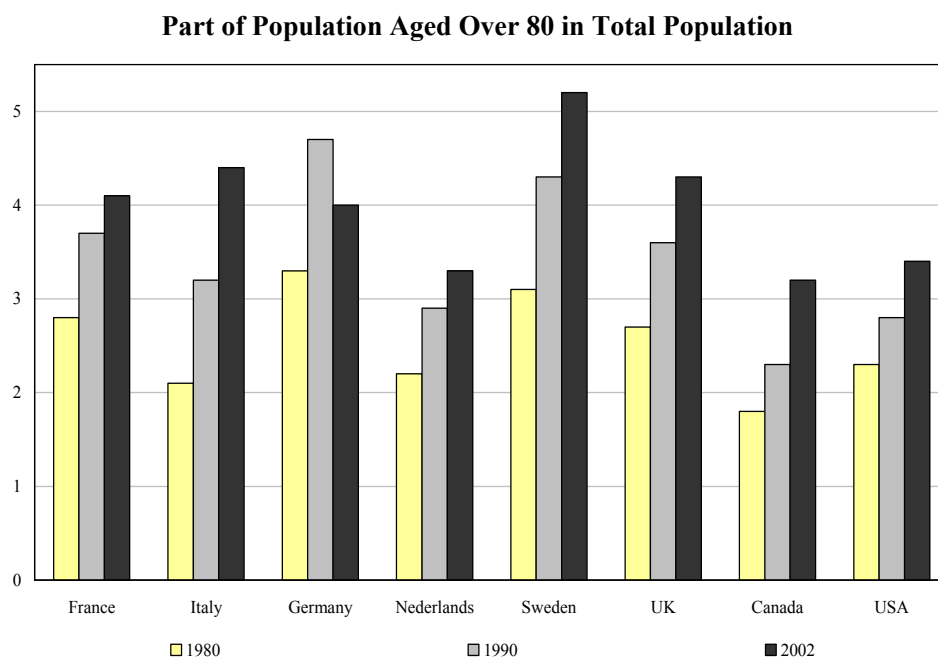


Figure 12

Relative Prices (Health Expenditure on Consumers' Prices)
(1995 = 100)

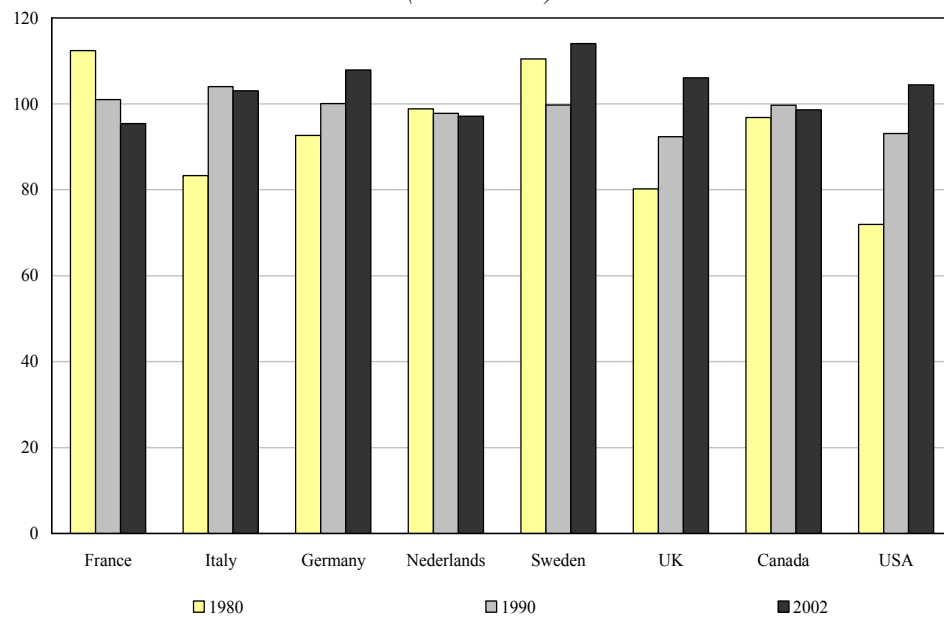


Figure 13

Number of Practitioners for 1,000 Persons

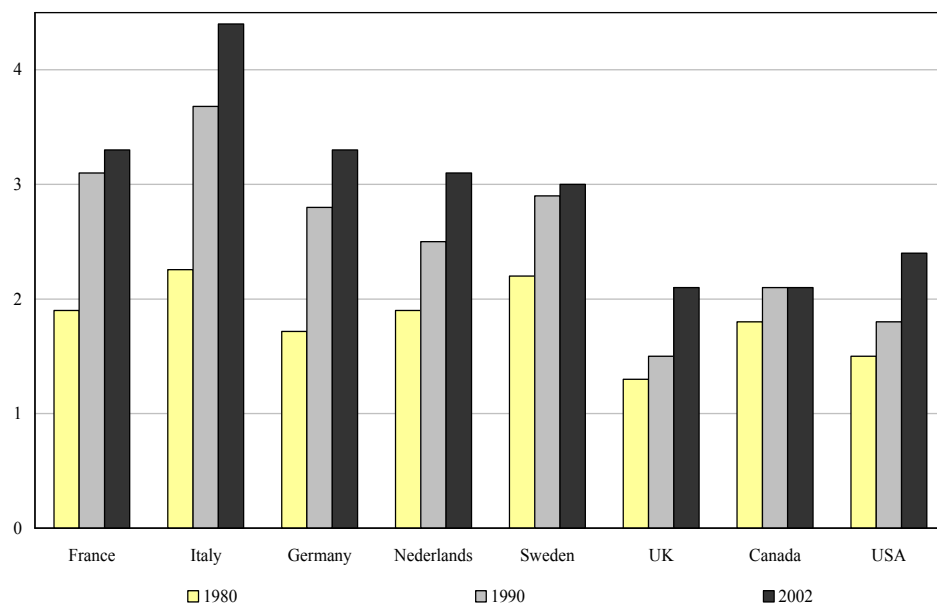


Figure 14

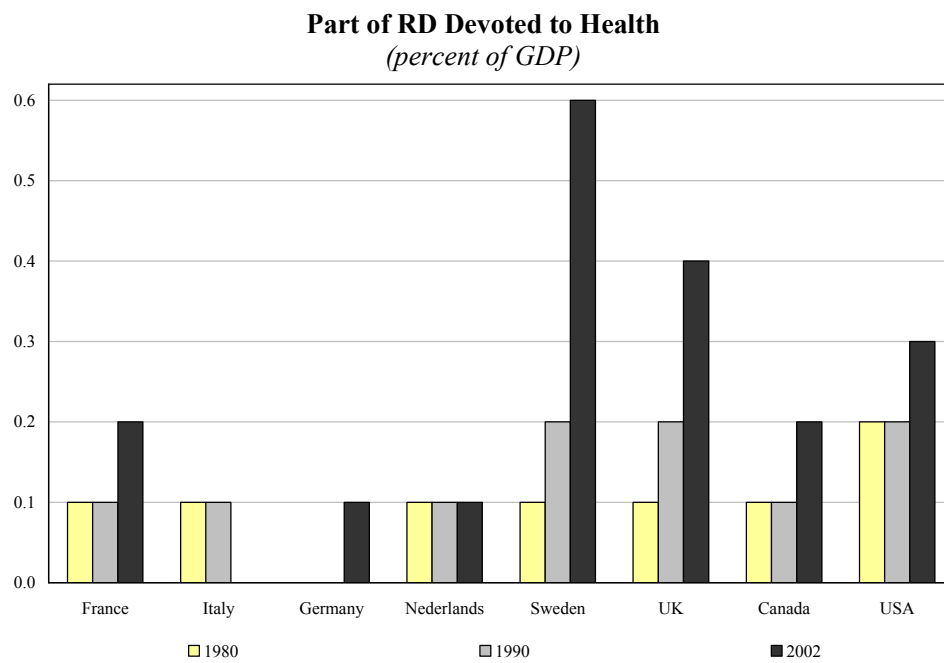


Figure 15

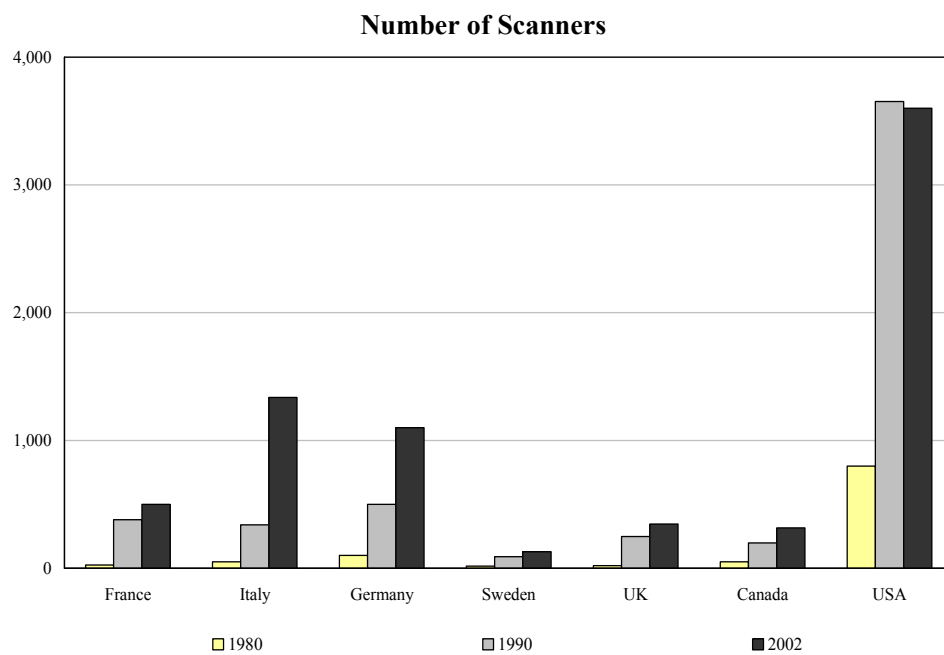


Figure 16

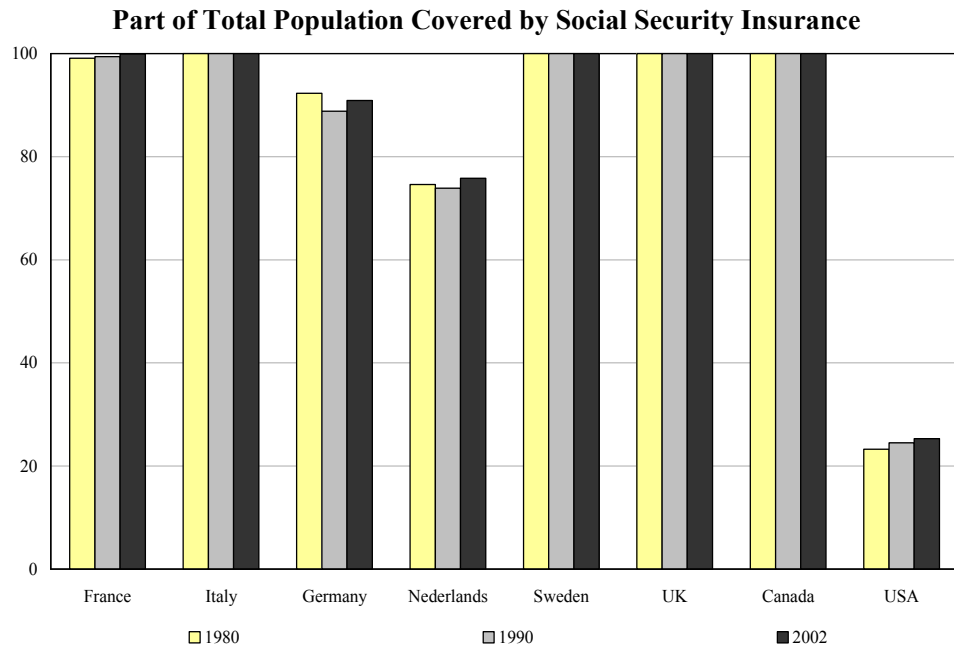
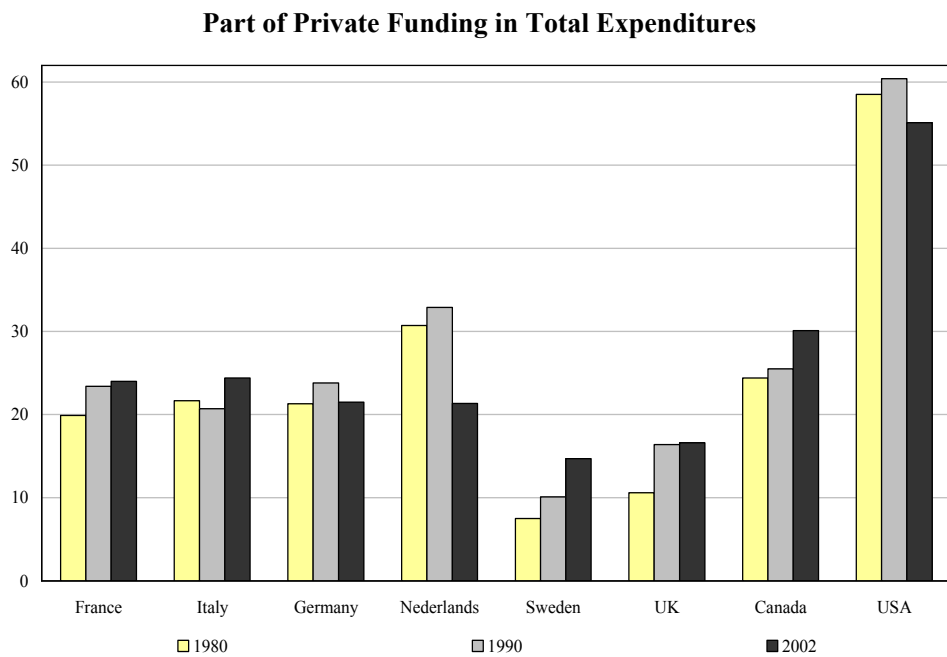


Figure 17



APPENDIX 4
DESCRIPTION OF THE VARIABLES RETAINED FOR THE ESTIMATIONS

| Variables | Definitions |
|--------------------|---|
| EXP | Total expenditure on health <i>per capita NCU 95 TEH PRICE</i> |
| REVENU | GDP per capita US\$95 PPP |
| GDP | GDP NCU 95 GDP PRICE |
| YOUTH | percent of population aged 0 to 14 |
| AGED | percent of population aged 80 and over |
| AGED65 | percent of population aged 65 and over |
| CONSULT | Visits to practitioners per capita |
| RELPRICE | TEH Price on CPI, 1995 = 100 |
| PRACTICIANS | Practitioners for 1,000 persons |
| R&D | Total expenditure on health R&D, <i>percent of GDP</i> |
| SCANS | Number of scanners |
| BEDS | Acute care beds for 1,000 persons |
| TURNOVER | Acute care turnover rate-cases per available bed |
| COV | Public expenditure on health, <i>percent of total expenditure on health</i> |
| PRIV | Private expenditure on health, <i>percent of total expenditure on health</i> |

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PUBLIC INVESTMENT IN THE UK

*Pietro Toigo and Robert Woods**

1. Introduction

In 1997 the UK adopted a new fiscal and expenditure policy framework, including the requirement to adopt clear fiscal rules enshrined in the 1998 Code for Fiscal Stability and a reformed system of budgetary controls. One of the drivers of the reform was to create a framework through which the historic shortfall in public investment in the UK could be addressed.

Part 2 of this paper lays out some general considerations for public investment policy:

- Section 2.1 introduces the interlinkages between microeconomic policy and efficiency concerns on the one hand and macroeconomic policy and fiscal sustainability on the other;
- Section 2.2 then reviews the case for a separate treatment of capital and current expenditure;
- Section 2.3 considers a range of fiscal rules and their implications for investment policy;
- Section 2.4 looks at how aspects of the micro-economic framework can influence the macro-economics;
- Section 2.5 discusses the use of Public-Private Partnerships as a tool to increase the efficiency and level of investment in the economy;
- Section 2.6 establishes some guiding principles.

Part 3 moves on to consider the policy implications and describes how these considerations have shaped the UK framework, both at the macroeconomic level, through the fiscal rules, and at the microeconomic level, through the system of budgetary controls and capital appraisal procedures.

2. Some general considerations for public investment

2.1 *Public investment and fiscal policy*

Two sets of considerations should inform policy decisions on public investment. On the one hand, there are microeconomic considerations which concern efficiency and the costs and benefits of individual projects. On the other

* HM Treasury. The views expressed here are those of the authors and are not necessarily the views of the UK Treasury or the UK Government. We are grateful for contributions from Dylan Schumacher and Frank Eich.

hand, the macroeconomic dimension focuses on the aggregate level of public investment, its short-term effect on the economy and the long-term sustainability of the public finances.

Microeconomic considerations justify public investment (as opposed to private investment) on the basis of market failures arising from the difference between financial returns¹ and social returns. An investment should be undertaken whenever its social returns exceed the cost of finance. However, the public good nature of some investment goods means that financial returns will be lower than social returns and costs. The private sector cannot internalize social returns and will therefore underprovide for these type of investments. Where governments can internalize the social returns, direct government investment is justified.

The **macroeconomic dimension** introduces two separate considerations. In the short term, as a component of public expenditure, investment has an impact on the cyclical position of the economy. It is the total deficit rather than its distinction between the capital and current budgets that determines the impact of fiscal policy on aggregate demand.² The microeconomic criterion does not take into account the timing of investment expenditure in relation to economic stabilisation objectives.

Second, there are longer-term fiscal sustainability issues. Due to the difference between social and financial returns, a set of public investment projects financed through government borrowing, each of which passed a microeconomic efficiency test, could still lead to an unsustainable fiscal position. A large body of literature has considered the adverse economic impact of unsustainable levels of debt;³ here it will suffice to note that high levels of debt affect *inter alia* the economy via:

- “crowding out” otherwise efficient private investment via higher interest rates;
- increasing the budget resources needed to be diverted to “unproductive expenditure” on debt interest repayments; and
- reducing the room for manoeuvre available to the government to implement stabilisation policies.

Sustainability considerations are important because, while each investment project taken on its own merits could be welfare enhancing, their aggregate impact could put the public finances on an unsustainable path with potentially large welfare losses arising from macroeconomic instability or worsening structural conditions. This process could be thought of as the marginal investment that took debt above the level deemed to be sustainable, despite being socially valuable on its own, having a negative externality on the economy as a whole, for example in terms of its impact on long-term interest rates.

¹ Note that for governments the financial returns include the indirect revenue effects of investment, insofar as they increase through the effect on economic growth for example.

² The composition of expenditure might have some impact (e.g., the multiplier effect of capital expenditure might be different from current expenditure) but this is likely to be a second order effect.

³ See Woods (2004) for a brief overview of problems arising from high levels of debt.

If instead an investment is financed through taxation rather than through borrowing, then the sustainability consideration gives way to a different microeconomic efficiency. The deadweight loss of the distortionary effects of taxation would need to be factored in when weighing up the benefits of a project against its costs. In this case, the aggregate constraint on investment would be the overall sustainable level of taxation.

It is therefore key to reconcile the three criteria of: microeconomic efficiency, fiscal sustainability and stabilisation in a comprehensive framework to guide fiscal and public investment policy.

Part C of the paper discusses how these concerns have shaped the approach in the UK. However, before moving to policy implementation, Section 2.2 takes a step back and reviews the economic case for distinguishing the treatment of public investment when setting fiscal policy.

2.2 *The case for separate treatment of public investment*

There are at least three arguments that have been made which highlight the specific nature of capital expenditure:

- the potential to be self-financing;
- intergenerational fairness; and
- political economy issues leading to a bias against public investment.

First, **public investment can be self-financing** both through the cash flows generated by projects themselves (for example through user charges) or through long-term positive effects on economic growth, the tax base and therefore government revenues. The economic literature has identified a variety of channels through which public investment enhances growth,⁴ it can:

- constitute an intermediate input to private sector production that helps lower costs. This is partly through the effect on transaction costs, increased access to markets and market information and improved competitiveness in import/export markets;
- raise the productivity of other factors (labour and other capital) by allowing use of complementary technologies, improving access and information flows, as well as may induce crowding-in of additional private resources;
- have a structural impact on demand and supply, for example public infrastructure contributes to the diversification of an economy (especially for open source technology such as communications, which allows the application of modern technologies to a wide range of sectors).

⁴ For a more comprehensive discussion on this see Kessides (1993).

A significant and growing body of empirical literature has examined the potential impact of public capital investment on output, productivity and factors of production. The Appendix provides a brief survey.

It is theoretically plausible that investment could be self-financing. However, a number of qualifications apply. First, a project could be socially valuable because it raises economic growth, but, depending on the effective tax rate, the government's financial return might still be lower than the opportunity cost of the funds (including the distortionary costs associated with either debt or tax finance). Moreover, the estimate of the GDP impact of some investment projects will be highly uncertain due to long lead times, and sensitive to the discount rate and interest rate assumption, which may change over time. When planning for the public finances, a prudent approach would suggest discounting uncertain projects heavily.

Second, even when a project raises welfare without generating economic growth (for example, by decreasing travel times or by providing an educational facility such as a museum),⁵ there would be the theoretical possibility to extract users' willingness to pay for the service. However, the ability to apply user charges depends on the nature of the investment. If the investment generates an asset or a service that is a public good, the characteristic of non-excludability makes it impossible to charge for its use. Even when the investment is not a public good, considerations of other market failures, for example asymmetric information (such as the consumers' difficulty in deciding on the right amount of health services to consume), merit good arguments or distributional concerns might lead policymakers not to charge users for the service generated by public investment.

A third caveat is that growth-enhancing properties do not solely apply to those components of public expenditure classified as investment in national accounting. Some current expenditure items can also generate financial returns so as to be self-financing. For example, expenditure in human capital accumulation (e.g. skills, education, etc.) can have a beneficial effect on long-term growth and on the tax base, but a large part is classified as current expenditure. This might point to distinguishing more broadly "growth enhancing expenditures" rather than solely capital expenditure.⁶

Some commentators have suggested that a fiscal framework that treated capital expenditure separately from current would result in a bias in favor of physical assets, overlooking other productive expenditures.⁷ However, there is a trade-off between taking full account of this consideration and preserving the transparency of a fiscal framework. It is difficult to agree on a robust definition of growth enhancing expenditure once generally accepted accounting standards are departed from. By contrast, the national accounts provide a clear, workable

⁵ Notwithstanding the fact that cultural institutions have sometimes been at the heart of successful regeneration projects that have led to increased growth.

⁶ See Hoppner and Kastrop (2004) for a more detailed discussion.

⁷ See for example Balassone and Franco (2000).

definition.⁸ (There may also be other political economy reasons for preferring this definition, discussed below).

It should also be noted that some capital projects are not self-financing simply because they are of poor quality, and their effect on growth, or user charge yields, are overestimated or misjudged. A fiscal framework cannot drive the quality of investment by itself; therefore, to underpin a special treatment for investment at the macroeconomic level, a rigorous capital appraisal system needs to be implemented.

Second, the **intergenerational impact** of capital expenditure is different from current expenditure. Large infrastructure projects such as roads produce a flow of services over the investment's effective life, which might be in excess of 40 years, while the benefits generated by current expenditure materialize at the time the expenditure is undertaken.

The principle of intergenerational fairness implies that the cost incurred to generate a flow of services should be spread across the generations that benefit from it. Empirical evidence, for example, suggests that returns to public capital investment tend to be significantly greater in the long run (see Box 1). Hence, current expenditure should be financed through current tax revenue, while capital expenditure should be financed through current and future tax revenue. The easiest way for a government to spread the cost of capital expenditure over different generations is to finance at least part of it through raising debt. This debt can then be repaid by future generations which also benefit from the investment.

The concept of intergenerational fairness is a relatively simple one, but its application can be complex. Public expenditure funds a vast range of public services, which are used by different age groups at any one time. In order to judge the intergenerational impact of public expenditure, the mix of goods and services provided, and not only the distinction between current and capital expenditure is important.

Therefore, a recognition of the different impact of current and capital expenditure over time is only one of the elements that help achieving intergenerational fairness, but there are also rather complex dynamics that affect the distribution of expenditure across cohorts within one generation. A fiscal framework needs to balance these complexities with the need for clear and simple rules.

A third argument for treating public investment differently concerns the **political economy considerations**. Since the benefits of capital expenditure materialize in the longer term, public investment tends to receive an unfavorable treatment *vis-à-vis* current expenditure in times of fiscal retrenchment. As the literature on the political economy of fiscal policy emphasizes,⁹ pressure groups and

⁸ Take the example of current education expenditure. Although it gives rise to a stream of benefits overtime, the capital value of education and its depreciation is not something that can be estimated easily or reliably.

⁹ See Alesina and Perotti (1994).

Box 1**What is intergenerational fairness?**

There are many ways to think about generational fairness. The UK Government's approach to distinguish between current and capital spending provides one option.

Another approach has been advocated in the *generational accounting literature*. According to this approach, intergenerational fairness is established when different generations pay the same net lifetime tax transfers (as a share of their incomes) to the government.

The *sustainable development literature* provides an alternative interpretation.¹ Policies are considered to be fair if they satisfy the needs of the present without compromising the needs of the future. In addition to pure financial transactions, these ideas capture, for example, the environmental effects of current policies, which could lead to future generations being worse off, such as through climate change and the depletion of fossil fuels.

These factors can be brought together under the idea that the government will pass on a "portfolio" of assets, which includes, *inter alia*, public and private physical capital, the public debt stock, human capital, stock of technology and knowledge and natural resources, to the next generation. Some of these factors are included in alternative indicators such as the index of sustainable economic welfare (ISEW) and living standards measures.

¹ *The United Nations Commission on Environment and Development: Our Common Future*, Gro Harlem Brundtland, 1987.

Box 2**Fiscal adjustment and investment: empirical evidence**

A significant body of evidence supports the conjecture of an inbuilt policy bias against capital expenditure, showing that a disproportionate amount of fiscal adjustment generally falls on public investment. Blanchard and Giavazzi (2003) note that net investment fell by 0.8 per cent of GDP in the 12 EMU countries in the run-up to the euro between 1993 and 1997, a period marked by pronounced fiscal consolidation. Balassone and Franco (2000) show that the adjustment to investment was particularly marked for high debt EMU countries (Italy, Belgium and Ireland).

In its 1988 World Development Report, The World Bank found that during periods of fiscal adjustment, government cut capital spending on average by 35 per cent against 10 per cent for current expenditures. In a successive study The World Bank (1994) notes that structural adjustment policies in Africa in the Eighties coincided with cuts in capital budgets. This is supported by Hicks (1991), who identifies a fall of 27 per cent in capital expenditure against 7 per cent in current expenditure over the Seventies-Eighties in a range of developing countries.

The result also holds for Latin American countries, where Calderon, Easterly and Serven (2003) find that even after controlling for country-specific factors, a small but statistically significant negative association between the change in primary balances and infrastructure investment could be found. The study also finds that in the same sample the fall in public investment was not offset by a surge in private investment.

These results are replicated for OECD countries by Roubini and Sachs (1989) and de Haan *et al.* (1996). Lane (2003) also shows that investment is the most pro-cyclical component of government expenditure.

There are obviously different explanations for the decline in capital investment observed in developed countries since the Seventies, such as privatization decisions and a long-term trend to reduce public investment (a view taken by Galí and Perotti, 2003).

vested interests tend to create a bias in favor of current expenditure. As Hemming and Ter-Minassian (2004) note, it is operationally easier to reduce capital than current expenditure, simply by allowing capital assets to depreciate more quickly by reducing maintenance expenditure, or by stopping a few large infrastructure projects. Current expenditure instead tends to be focused on entitlement-based programmes, public sector employment, wages and pensions, which are politically harder to reduce. Box 2 overleaf surveys the main findings of the empirical literature on the relation between fiscal adjustment and investment policy.

This focus on short-term political economy considerations over long-term efficiency leads to welfare losses, as genuine growth-enhancing investments are foregone, but the effects of the neglect of investment in public infrastructure only materialise after a long time.

The costs of short-sightedness are significant, however. A lack of planning and a stop-and-go approach to public investment leads to deadweight costs, as unfinished projects are left to depreciate before they can yield economic benefits. Once the public capital stock is run down it can take many years of sustained public investment to build it up again. Moreover, sharp cuts in public investment programmes not motivated by efficiency concerns can have a “hysteresis effect”, in terms of loss of project management and capital appraisal skills in the public sector. When necessary investment is resumed, there may be a lack of people with the right skills, making it hard to build up capacity quickly.

A fiscal adjustment based on curtailing efficient public investments, rather than controlling current spending or strengthening receipts, could also lead to a misleading assessment of a county’s structural fiscal position.¹⁰ Hard choices are deferred to a later date when the investment will need to be resumed in order to respond to the political and economic consequences of the history of under-investment in public capital.

A similar misjudgement could be made for the impact on intergenerational fairness. If the impact of a fiscal tightening were only assessed in terms of its deficit and debt implications, it might appear to favour future generations as public liabilities are reduced. However, a fiscal consolidation which cut public investment might actually worsen the inheritance of future generations due to the loss of welfare-enhancing investment. This suggests that the balance between assets and liabilities (net worth) rather than just liabilities (debt) may have advantages in estimating the impact of policy on generational fairness. This is considered further in the next section.

2.3 *Fiscal rules and public investment*

In the recent past, a number of countries have moved towards the adoption of explicit rules and targets for the fiscal aggregates. By adopting fiscal rules,

¹⁰ See Easterly (1999).

governments have sought to overcome the time-inconsistency problem in fiscal policy, pre-committing to a course of action and then working to establish a reputation for meeting their fiscal rules.

To achieve this, fiscal rules need to be reasonably simple, understood by the wider public and easy to monitor. In order to commit policy credibly, the fiscal rules need to be assessed on the basis of independently defined fiscal aggregates (e.g., by an independent statistical office).

The most straightforward type of fiscal rule is one that targets the total level of borrowing and the total stock of debt¹¹ – the rules underlying the Stability and Growth pact (SGP) adopted by EU member states are a well-known example.

Targeting debt and overall borrowing does not distinguish between capital and current expenditure, however. In order to incorporate the considerations discussed above, an increasing number of commentators have been arguing for an approach that targets the current budget (see Blanchard and Giavazzi, 2003) and net worth.¹² A borrowing rule leads to a steady state debt outcome that is independent of choices about the desirable amount of capital. Depending on the deficit ceiling chosen and on nominal GDP growth, the rule could potentially drive the debt ratio to zero, which could be argued to be a sub-optimal policy in terms of tax smoothing objectives and in terms of intergenerational equity.

Borrowing rules are not necessarily inconsistent with an investment-oriented fiscal policy. They do not, however, build in positive incentives for investment. If one accepts the political economy explanation for a bias against investment, there is a strong case for introducing a distinction between capital and current expenditure in the fiscal framework (such as in the UK's "Golden Rule").¹³

In the case of a current budget target ("Golden Rule"), deficits will be allowed only to be equal to the amount of net (or gross) investment. It can be shown that, under a Golden Rule, there would be a direct link between total amount of capital and debt in the steady state. Therefore, the golden rule is consistent with positive levels of debt backed by capital assets.

As noted by Buitter (2001), a Golden Rule does not ensure the sustainability of the public finances, because it puts no constraints on the total level of public debt

¹¹ A rule targeting a level of debt implicitly targets a path for public borrowing as well. Therefore, an explicit borrowing rule may be unnecessary alongside a debt rule. One reason for considering the addition of a specific borrowing rule is for the policymaker to commit to a fiscal adjustment within a specific time frame.

¹² Recent, high profile contributions to the debate have been the proposals by Brazil's President Lula da Silva and Mexico's President Vicente Fox, who argued that the growth enhancing properties of public investment made a case for excluding investment from the fiscal targets that developing countries need to meet to qualify for assistance from International Financial Institutions. Buitter and Grafe (2002) also called for: "priority in government spending for public investment".

¹³ There is some recognition of the importance of public investment in the SGP framework, Article 103(4) of the EC Treaty states that the assessment of whether a country's deficit is excessive should take into account: "...whether the government deficit exceeds government investment expenditure".

while investments do not necessarily yield a sufficient financial return to cover their costs.¹⁴ The considerations made in the first section would therefore suggest the need to combine a Golden Rule with an overall debt target.

The Golden Rule has a clear link to the concept of net worth, defined as the difference between total assets and liabilities accumulated to date held by a government. The main difference between net worth and net debt is therefore that the former also includes illiquid assets such as roads or school buildings.¹⁵ For a given level of steady state inflation and real growth, the steady state level of capital stock will determine the level of debt, and implicitly the level of net worth.

Targeting **net worth** or **changes in net worth** instead of debt has been proposed as a desirable feature of a fiscal framework so as to better incorporate the asset-creating nature of public investment. Net worth is a useful guide to fiscal policy, because it incorporates the beneficial effects of investment on government's asset position, and therefore puts further emphasis on the importance of capital expenditure.¹⁶

However, there are well-known drawbacks in adopting net worth (or changes in net worth) as the main target for fiscal policy. A key problem is the lack of robust data. Many government assets, especially illiquid assets, are difficult to measure accurately. Estimates of tangible assets for example are dependent on broad assumptions, which might not be appropriate in every case, and are subject to fluctuations from year-to-year due to revaluations of their market value. It could be hard to explain that a fiscal target has been missed because of revaluations and this could dilute the credibility of the framework.

Another drawback is that net worth could give a misleading impression of a government's solvency. This is because illiquid assets cannot be disposed of quickly to offset short-term liabilities. Indeed, many of the assets concerned are likely to be highly illiquid. The government could not, for example, sell off schools, hospitals and roads to offset the negative impact of high debt on interest rates and interest

¹⁴ Creel (2003) takes a different view, arguing that a golden rule poses an implicit constraint on debt levels. As the share of interest rate payments in the current budget increases, the fiscal authorities will find they need to reduce debt to make room for necessary non-capital expenditure. Interest payments will therefore create an implicit constraint to debt and public investment growth. However, the objective of a fiscal framework should be to avoid the risk of getting to the point where the interest/debt dynamics become so binding that a sudden fiscal retrenchment becomes necessary. At that point, capital expenditure would bear the burden of a sudden adjustment, with detrimental effects on microeconomic efficiency.

¹⁵ There are two concepts of debt. Gross debt includes only the liabilities in the government's balance sheet, while net debt also includes liquid financial assets. Net worth provides a more comprehensive coverage of government's balance sheet. The national accounts measure of net worth does not, however, include any future liabilities arising from past activities, such as public service pensions (see discussion in Chapter 3 of the *2003 Long-term Public Finance Report: Fiscal Sustainability with an Ageing Population*, HM Treasury, December 2003, for a further discussion). However, these are included in GAPP-based measures of net liabilities (for example, as shown in the *2004 Long-term Public Finance Report: An Analysis of Fiscal Sustainability*, HM Treasury, December 2004).

¹⁶ This might be important in a situation where the debt ceiling was binding, for example. In such a case, total borrowing rather than just current spending would be directly constrained, and for the marginal investment the distinction in the framework between capital and current spending would be weaker.

payments, without causing unacceptable disruption to the provision of essential public services. This suggests that net worth should be seen as complement to debt in a fiscal framework rather than a replacement for it.

One might argue about the extent to which solvency should apply to government. After all, government has the right to tax in the future, which is a fundamental difference from the private sector. However, even if the risk of insolvency is a lesser issue for governments than for companies, the level of debt affects long-term interest rates in the economy.¹⁷ Indeed, some evidence points to a non-linear relationship between debt and interest rates: the higher the level of debt, the higher the marginal impact on an increase in debt on interest rates.¹⁸ Therefore debt remains a key fiscal indicator.

2.4 The interaction between the macroeconomic and the microeconomic dimension

The need to reconcile fiscal sustainability with microeconomic efficiency considerations suggests a comprehensive policy framework, allowing for the interaction of the two policy perspectives. There are a number of ways in which the macroeconomic dimension (fiscal framework) and the microeconomic dimension (budgetary controls, capital appraisal systems) could interact.

A stylized description of a possible mechanism is as follows. First, the micro dimension ranks new projects by each department on the basis of capital appraisal techniques and costs/benefit analysis. Risk factors are generally incorporated into the monetary evaluation of projects through conventional appraisal techniques. Then the role of the macroeconomic dimension is to provide a cut-off point (e.g. through the debt ceiling) that determines which projects can be implemented. This cut-off implies taking a view on the level of debt that can be sustained without triggering the negative macroeconomic effects discussed above, and it can be interpreted as the point at which the marginal investment, albeit efficient, starts having a negative externality on the economy.

The microeconomic dimension can also feed back to the macroeconomic level. For example, suppose there are decreasing returns to capital and consider the case of a country that has a high capital to GDP ratio but low levels of debt. A macroeconomic sustainability assessment might suggest a relatively high total level of capital that could be financed through borrowing. However, an effective system of budgetary controls would capture the low returns and value for money of the additional project, which would fail the efficiency test. In such a case, it would be

¹⁷ See Brooks (2003) for a survey of the empirical evidence of the link between debt and interest rates.

¹⁸ Conway and Orr (2002).

the microeconomic considerations – the lack of worthwhile projects – rather than the debt ceiling that posed the binding constraint on the level of investment.¹⁹

Note also that there is a link between good micro-economic decisions and macro sustainability. While not necessarily true (many socially valuable projects do not bring financial returns by nature), strong budgetary controls should lead to better value for money decisions and better quality projects, which in turn is likely to raise the financial returns of the investment, thus improving fiscal sustainability.

Rigorous capital appraisal will also reinforce generational fairness of fiscal policy, by ensuring that the future returns, financial or social are actually realized. This will increase future generations' welfare, and the political acceptability of shifting some of the cost of today's decisions to them.

2.5 *Involving the private sector in investment decisions*

The generally positive effect of investment on growth has also led to consideration of how the private sector could be involved more actively in delivering public investment projects. The use of private capital to fund public infrastructure through Public-Private Partnerships (PPPs), and more specifically in the form of Private Finance Initiatives (PFIs) has recently emerged as a means of increasing value for money in public investment by injecting specialist project management skills from the private sector into public capital projects.

Moreover, if fiscal sustainability is considered to be about the overall amount of risk that the public sector can bear without endangering macroeconomic stability. To the extent that PFI projects shift the balance of financial risks from the public to the private sector, their adoption can release extra resources for investment. However, in order to ensure that this risk transfer is real, and that there is a clear efficiency case for use of PFIs rather than standard procurement, a robust framework of independent controls needs to be enforced. Hence, the assessment of the accounting treatment of PFI projects needs to be conducted independently and on the basis of clear and transparent criteria that take account of the balance of risks between the private and public sector and that are backed by robust reporting standards. This will prevent PFIs being used to shift fiscal demands off-budget that should really be scored in the public finances.

In addition, in order to guarantee that the decision to undertake a PFI is based on efficiency considerations, competitive tendering procedures, and robust processes for project appraisal and prioritisation are needed. Another important requirement is

¹⁹ This obviously assumes away the political economy problem. It will be much harder for a government to pre-commit to a rather complex appraisal system, rather than to a clear and high profile fiscal rule. But the signals coming from the capital appraisal system can be incorporated in the fiscal framework by informing the desirable level of the debt target.

that the quality of the service is contractible, or that at least the contract covers a broad range of contingencies.²⁰

2.6 *Conclusions: some guiding principles*

On the basis of the considerations above, some guiding principles for managing public investment can be established:

- Build an environment conducive to overall fiscal discipline. The need for sudden fiscal adjustment is the primary cause of retrenchments of capital investment. At the macro-economic level, fiscal policy must be set in a forward-looking manner within a framework addressing sustainability concerns. This allows more efficient planning of individual public investment projects.
- In addition to this there is a strong case for removing the bias against capital expenditure by targeting the fiscal indicators that recognize the different nature of current and capital expenditure.
- The microeconomic benefits of investment depend on the quality of expenditure undertaken. An approach focused on the aggregate level of capital expenditure is not sufficient to guarantee that the right projects are selected. Therefore the macroeconomic-fiscal framework needs to be integrated with a budgeting framework that offers the right microeconomic incentives, and makes extensive use of cost/benefit analysis.
- Microeconomic efficiency concerns should include consideration of the provision of capital by the private sector through appropriate risk-sharing arrangements with the government that do not endanger fiscal sustainability.

3. **Public investment in the UK**

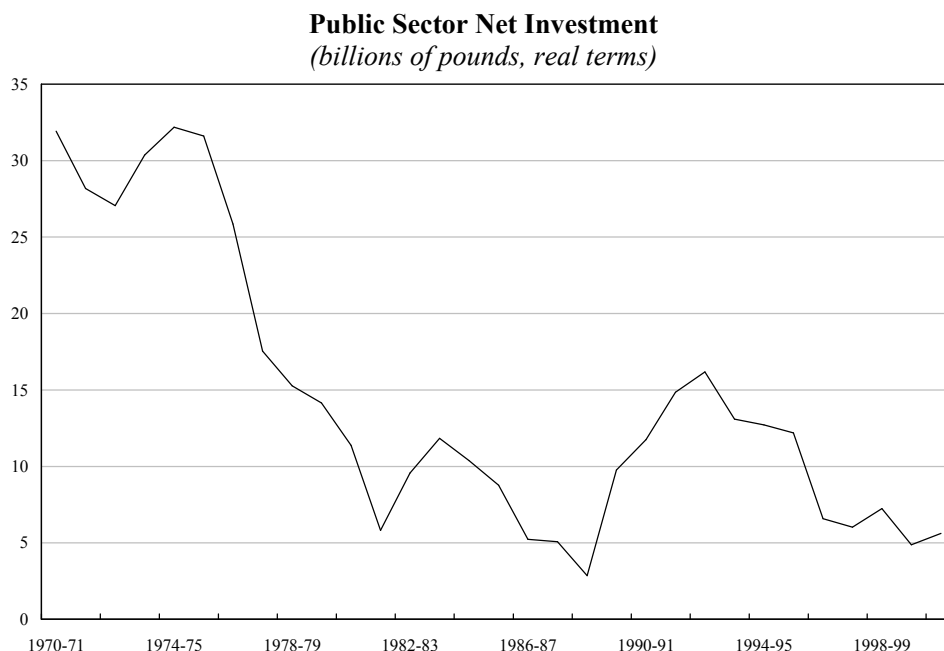
3.1 *Historical trends*

Figure 1 shows the trend in real public sector net investment (PSNI) in the UK between 1970 and 1999. PSNI is defined as gross investment minus depreciation, and therefore measures the change in total public sector capital stock. The figure shows a sharp decline of public investment in real terms in the second half of the Seventies, before more or less stabilising at a low a level (or at a declining level as a share of GDP).

Part of the fall reflects decisions to shift some activities from the public sector to the private sector. These included privatisation decisions, affecting the amount of investment undertaken by public corporations (which were reduced in number), and

²⁰ The incomplete contracts literature (see Grossmann and Hart, 1986) highlights the difficulties of writing contracts that cover all states of nature. A clear definition of ownership rights however can solve most of the inefficiencies deriving from contract incompleteness.

Figure 1



the disposal of a large part of local government's housing stock. However, decisions on the size of the public sector do not fully explain this decline.

Figure 2 shows gross fixed capital formation (measuring net acquisition of capital assets) by government sector as a share of GDP. The figure highlights the decline due to the reduction in the number of public corporations over the Seventies and Eighties, but also an ongoing decline in general government investment expenditure (Central Government plus Local Authorities) as a share of GDP.

The relatively low level of public investment in the UK is also apparent in comparison with other EU15 countries.

These relatively low levels of investment were partly caused by the inbuilt bias against capital expenditure discussed above. Previous arrangements focussed on a cash measure of net borrowing (the PSBR, now termed the public sector net cash requirement), which did not distinguish between current and capital expenditure.²¹

²¹ In the early Nineties the fiscal policy objective did begin to recognize the different nature of capital expenditure as a subsidiary objective, for example: "...to ensure that when the economy is on trend the public sector borrows no more than is required to finance its capital spending" (*FSBR*, November 1995). However, this did not help promote public investment rather it was an additional constraint on the medium-term deficit path.

Figure 2

Gross Fixed Capital Formation by Government Sector, 1970-97
(percent of GDP)

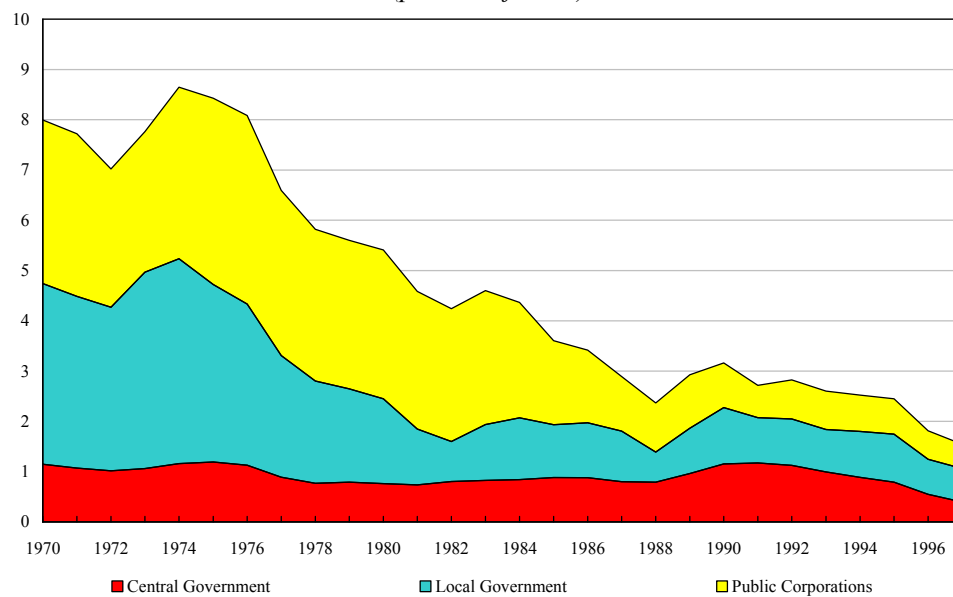


Figure 3

Public Investment, 1971-2000
(average percent of GDP)

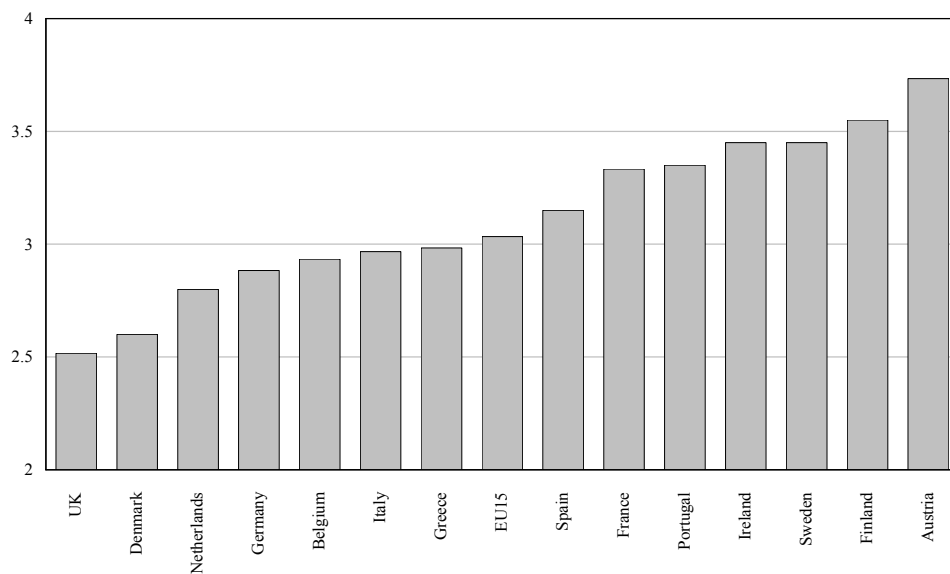
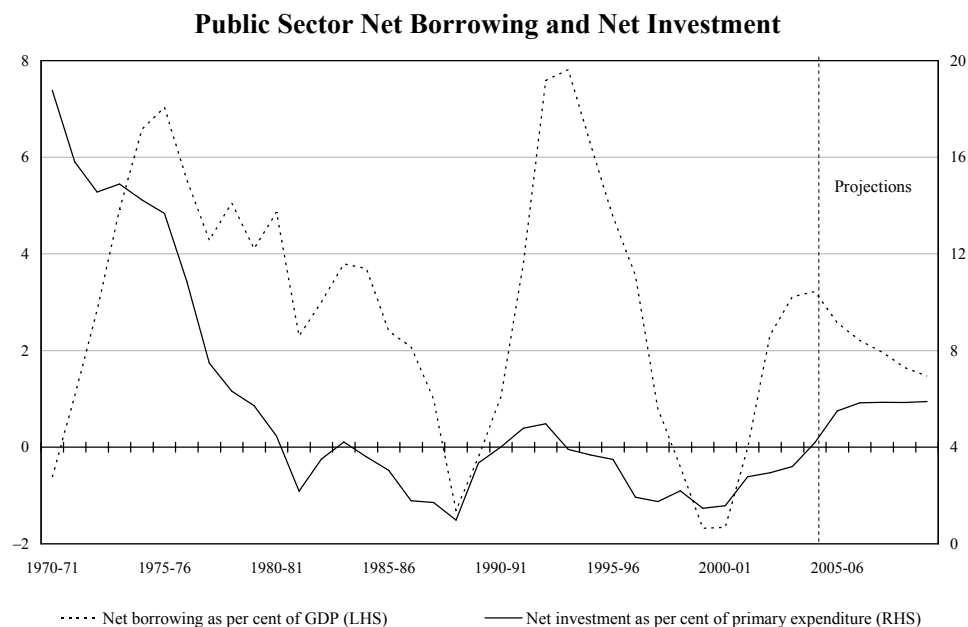


Figure 4



When a sharp fiscal retrenchment was needed (for example, net borrowing was reduced by 8 percentage points in cyclically adjusted terms between 1976 and 1982), capital expenditure tended to be sacrificed in favour of current spending. This is shown in Figure 4, that plots net borrowing and the share of investment over primary expenditure (that is total expenditure net of interest payments).

The figure highlights a striking correlation between borrowing and the share of investment, suggesting that investment tended to bear most of the adjustment in times when fiscal policy was tightened (and conversely, it tended to be expanded more than other expenditure in times of fiscal expansion).

Part of the decline in general government asset base has been due to a reduction in maintenance expenditure, confirming the tendency to reducing capital expenditure “by inertia”. In 1997 government departments estimated a backlog in maintenance of around £7bn (0.9 per cent of GDP) in schools, £3bn in National Health Service buildings (0.4 per cent of GDP), £7bn in roads (0.9 per cent of GDP) and £10bn in council housing (1.2 per cent of GDP) – implying a maintenance backlog of around $3\frac{1}{4}$ per cent of GDP in total.

Moreover, investment policy did not incorporate a long-term perspective, and therefore did not give departments the planning horizon needed to pursue effective long-term investment strategies. Budgets were set and revised on an annual basis and unspent resources were usually clawed back by the Treasury. This led to a

wasteful end-of-year spending surge, as departments saw no benefit in delaying spending for efficiency reasons. Indeed, the way plans were set meant that unspent budgets were often the first to be scaled back.

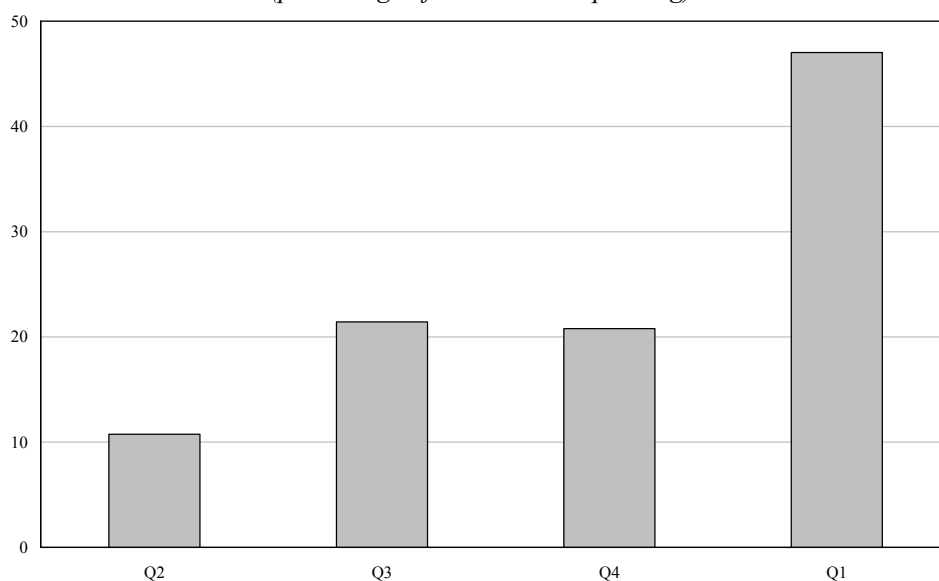
Figure 5 highlights this trend. It plots the average quarterly profile of investment expenditure between 1970 and 1998, it shows that on average over 45 per cent of annual spending was in the final quarter of the financial year (Q1 for the UK) and only just over 10 per cent in the first.

3.2 *The current UK framework for public investment*

The framework that guides public investment in the UK is based on two key elements: a set of fiscal rules that underpin the Government's commitment to sound public finances and guide the macroeconomic management of the economy; and

Figure 5

Quarterly Investment Expenditure, 1970-98
(percentage of total annual spending)



budgeting rules and procedures that create the right incentives at the microeconomic level.

3.2.1 *The fiscal rules*

The current UK Government has adopted two fiscal rules:

- **the golden rule:** over the economic cycle, the Government will borrow only to invest and not to fund current spending; and
- **the sustainable investment rule:** public sector net debt as a proportion of GDP will be held over the economic cycle at a stable and prudent level. Other things being equal, net debt will be maintained below 40 per cent over the economic cycle.

The Government adopted the fiscal rules as part of a commitment to a sound and prudent fiscal policy. One of the drivers for the design of the fiscal rules was also to overcome the historical trends towards under-investment in the public services.

The golden rule adopts the current balance as the key fiscal aggregate. This allows fiscal policy to incorporate the key distinction between capital and current expenditure discussed above. The key objective of this distinction is to ensure intergenerational fairness: acknowledging the different intergenerational implications of capital expenditure, borrowing is allowed only to fund public investment, the benefits of which will accrue partly to future generations.

The golden rule is assessed over the economic cycle, so that fiscal policy can support monetary policy to achieve short-term stabilisation objectives through the full operation of the automatic stabilisers allowing cyclical fluctuations in current revenue and spending. By contrast, investment policy needs to be planned for the long term, on a different timeframe from short-term fluctuations of the economy.²² This gives greater certainty to departments that their capital allocations will not be altered over the planning period.

As discussed above, a balanced current budget does not by itself ensure fiscal sustainability, as public investments often do not generate sufficient financial returns to offset the Government's cost of capital. Thus the Sustainable Investment Rule is designed to "close the system" by putting a ceiling on the total amount of net debt at a level that is considered to be consistent with a prudent approach to fiscal sustainability. The 40 per cent of GDP ceiling puts an overall constraint on the total level of public investment.²³

²² While the decision to go ahead with investment decisions should be guided by efficiency considerations, the timing of the investment might nevertheless take into account the cyclical position of the economy – especially if a large component of government spending is made up of capital expenditure, investment could be delayed or anticipated in order to avoid pro-cyclical effects.

²³ There is no clear consensus in the literature about the optimal level of public debt, with estimates ranging widely. The UK debt ceiling (which has however been set with an objective to ensure prudence and *(continues)*

Another operational feature of the fiscal framework is the explicit margin of caution applied to the fiscal projections. This is built in by budgeting for expenditure reserves, stress testing the fiscal projections and applying some explicitly cautious assumptions in key areas of the forecast (such as applying a lower trend growth assumption than the central estimate for the main fiscal projections). This margin of caution helps insulate investment plans from forecast errors, and therefore guarantees a further degree of certainty to the planning process.

3.2.2 The UK budgetary control and appraisal framework

In addition to the fiscal rules, that make an important distinction between current and capital expenditure at the aggregate level, and ensure the overall affordability of spending plans, controls at the microeconomic level are needed in order to ensure that specific investment decisions are taken on the basis of efficiency and value-for-money considerations.

Longer budgeting horizon

One of the problems with the spending framework in place before 1997 was that the budgeting horizon was too short to allow Departments to plan their investments properly. Under the framework introduced in 1997, Departments were allocated fixed three-year budgets which are reviewed every two years. In July, the Chancellor announced that the next Spending Review would be in 2007 and it would cover the three years, 2008-09 to 2010-11.

Capital budgets are set separately from current budgets, and only switches from current to capital expenditure are permitted, avoiding the incentive in the past for departments to defer capital expenditure when budgets were tight. In the case of particularly complex and large investment programmes, where a comprehensive view of a sector is needed, such as health and transport, the budgetary framework allows for longer time horizons than three years.

The introduction of “End of Year Flexibility (EYF)”, under which Departments can carry forward unspent funds from one year to the next, aims to remove the perverse incentives to accelerate expenditure towards the end of the budgeting year (as illustrated in Figure 5). This, combined with the three-year budgeting horizon, shelters investment plans from the uncertainty of a annual budgeting round, giving Departments a flexible timeframe to undertake expenditure, consistent with the lumpy nature of capital investment.

Since 1998, departments have also been asked to produce Departmental Investment Strategies (DIS), setting out the plans to deliver the agreed level of

sustainability rather than optimality) falls within these estimates, and in general is set at a conservative level by international standards. See Balls and O'Donnell (2001) and Woods (2004) for a more detailed discussion.

public services and the capital stock needed to underpin their objectives. The DIS cover three years and are revised every two, in line with the budgeting horizon. They include information on Department's plans to manage its existing capital stock, the strategic approach to new investments and the plans to ensure the delivery of investment programmes.

Incentives to improve asset management

As is clear from the Departmental Investment Strategies, the current framework is concerned not only with better planning of new investment, but also with more effective management of existing assets. In this area, the framework seeks to:

- improve the quality and availability of information on government assets; and
- build the right incentives for asset managers, by ensuring that they directly enjoy the benefits (or pay for the costs) of their decisions.

The first step was the creation of a comprehensive register of all assets owned by government departments and sponsored bodies, the **National Asset Register (NAR)**. The NAR was first published in 1997 and then updated in 2001.

The move towards a full **resource accounting and budgeting (RAB) framework**, incorporating accrual-based measures according to generally accepted accounting practices (UK GAAP), is another important tool. RAB implies disclosure of all liabilities, providing a better guide to future costs and risks of present decisions.

Accrual accounting prices into departments' budgets the cost of poor asset management. From 2003-04, Departmental Expenditure Limits have included a charge for future liabilities (e.g the cost of cleaning up a contaminated site). Moreover, Departments pay capital charges on their capital assets, reflecting depreciation and an estimate of the opportunity cost of capital, reflecting the cost of Government borrowing. Charging the true cost of holding capital to departments will encourage better decisions on whether an asset is put to its best use or whether the asset should be disposed of. In order to further encourage asset disposal when economically efficient, departments are allowed to retain receipts from asset sales for future reinvestment, rather than returning them to the Treasury. This creates an immediate return from seeking the best disposal strategy.

Capital appraisal

A budgeting framework that aims to deliver efficient capital investment needs to be complemented with the right analytical tools and processes for managers to carry out decisions.

In the UK, the framework for undertaking project appraisal in government is set out in the guidance issued by the Treasury (the so-called *Green Book*). The *Green Book* provides Departments with a consistent tool to evaluate investment

decisions. The latest version of the *Green Book*, published in 2003,²⁴ introduced some important changes to the approach to project appraisal:

- the government discount rate was lowered from 6 per cent to 3½ per cent in real terms. By putting a higher weight on future costs and benefits, the lower discount rate encourages forces decision-makers to take greater account of the long-term consequences of policies. This provides a better approach to assess investment decisions that span long time frames,²⁵
- in order to maintain a prudent approach to costing of new policies, an explicit adjustment for optimism bias is now required, to take into account the tendency to underestimate costs (overestimate benefits). While the higher discount rate somewhat counterbalanced the tendency towards optimistic projections previously, the new approach requires appraisers to account directly for it, and allows for some variation according to historical experience with the project type, see Box 3.

Box 3

Optimism bias: how is it calculated?

The Green Book provides guidelines to departments on the parameters to use when calculating the optimism bias of a project. Optimism bias is applied both to cost overruns and to completion times (and benefits, where information is available, otherwise sensitivity analysis should be carried out). The recommended approach¹ to costs and time overrun is based on a study of past experiences and different ranges of optimism bias are recommended for different types of project depending on how advanced the business case is. For example, non-standard civil engineering has quite large recommended adjustments associated with it (a range between 66 and 6 per cent of estimated costs).

However, appraisers in each Department are actively encouraged to substitute guidelines with case-specific estimates when they are available.

¹ See Mott-McDonald (2002), "Review of Large Public Procurement in the UK", July, http://www.hm-treasury.gov.uk/media/A00/D3/greenbook_mott.pdf

²⁴ HM Treasury (2003).

²⁵ The change is also in line with the observed decline in long-term real interest rates.

The internal capital appraisal system, which is applied ahead of the decision to undertake an investment, then needs to be followed by a mechanism that monitors the implementation of the project as it progresses. It is important to ensure that lessons from previous projects are assimilated through the promotion of best practice. In the UK, this is particularly important in order to consolidate the public sector's project management skills as investment levels pick up again, and to minimise inefficiencies.

Two institutions have been set up to fulfill this role. The **Office of Government Commerce (OGC)**, created in 2000, has the remit to improve the efficiency and effectiveness of public sector procurement. It operates across the civil service to promote improved procurement and management. The OGC also operates the Gateway reviews, which is a process that tests investment projects through a series of procurement gates, see Box 4.

Partnership UK (PUK) was created in 2001 to support the public sector to develop PPP projects. PUK is a PPP developer, providing finance for PPPs where this will achieve better value for the public sector, and working with public bodies to identify and structure new opportunities for cooperation with the private sector. PUK is itself a PPP, with the public sector owning a minority interest and the private sector a majority stake.

Box 4

OGC Gateway reviews: how do they work?

An OGC review involves a thorough examination of the project, including its management structures, at initiation and then at the key decision points in its development. There are five review stages in the process: three before the contract is awarded and two looking at service implementation and confirmation of the operational benefits. A project is reviewed by the OGC Gateway Review according to the point reached in its lifecycle.

The review process applies to all acquisition or procurement processes in central civil Government, although Departments can decide not to subject some low risk projects to the review. The judgement on risk to the project is formulated using a standardized Risk Potential Assessment tool, which takes account of a broad range of risks.

Over 500 projects, covering proposed spending in excess of £40bn, have been reviewed to date.

Box 5
How a hypothetical project would be treated
in the budgeting and appraisal system

Assume that a Department considers undertaking a £100m capital project. The Department's appraisers will use the Green Book's guideline to produce a cost-benefit analysis of the project in order to decide whether it should go ahead.

As the value of the project is above the delegation limit (that is, the maximum value on which the Department can commit funds without the Treasury's authorization), the project would need the Treasury's approval before funds would be committed. The relevant spending team in the Treasury would scrutinize the project on the basis of the cost-benefit analysis, and therefore its expected outcomes and value for money. The Treasury would also consider the project from the point of view of its funding structure, its impact on the Departmental allocation and, for larger projects, its wider fiscal impact. If all these aspects were satisfactory, the Treasury would then sign it off.

At the same time, the Department would need to decide whether to enter an OGC Gateway Review process by compiling a risk assessment. Assuming that the Department defers the project to the OGC, the first step of the review would assess the project before the contract was awarded to a constructor. The focus of the review would be to promote professionalism in the department's management of the project. Each gateway in the review would emerge with recommendations based on a "traffic light system", recommending remedial actions if needed.

The full OGC Gateway process covers implementation and management of the contract, and finally, benefit realization after the implementation. The Department would be recommended to conduct the final stage of Gateway review repeatedly until the project was closed.

*PFI*s

As discussed in Section 2, policy-makers have looked with increasing interest at Public Private Partnerships (and specifically PFIs) as a means of improving the delivery of public investment and at the same time reducing the risk to the public finances. The UK has been at the forefront of using PFIs to deliver public investment projects. There are two key advantages to PFIs:

- they bring private sector expertise into the management of investment projects and, when appropriately designed, this provides the right incentives to higher performance by putting private money at risk; and

- provided that the appropriate risk-sharing arrangements have been implemented with the private sector, it reduces the risk to the public finances, freeing resources for other policy objectives.

When a PFI contract is signed, the private contractor enters in a long-term arrangement with the Government, and it is responsible for the quality of the work undertaken throughout the contract period. The service delivered by the investment, rather than the physical asset being built, is the object of the contractual obligation. The compensation or fee paid to the private contractor is dependent on the quality of the service, preventing false economies during the construction period that would worsen the quality of the service delivered.

Clearly, the decision to undertake a PFI project needs to be driven by value for money considerations, and not all projects are undertaken through PFIs. PFI accounts for a relatively limited proportion of the UK government's capital spending, with the majority of investment being carried out through conventional forms of procurement. Figure 6 illustrates the component of expenditure on public services in the UK, including PFIs.

The pick-up of overall investment expenditure has been paralleled by the increase in PFI projects, as shown in Figure 7.

The evidence supports the expectation that the use of PFIs leads to efficiency gains in the delivery of public investment. PFI projects tend to be delivered more

Figure 6

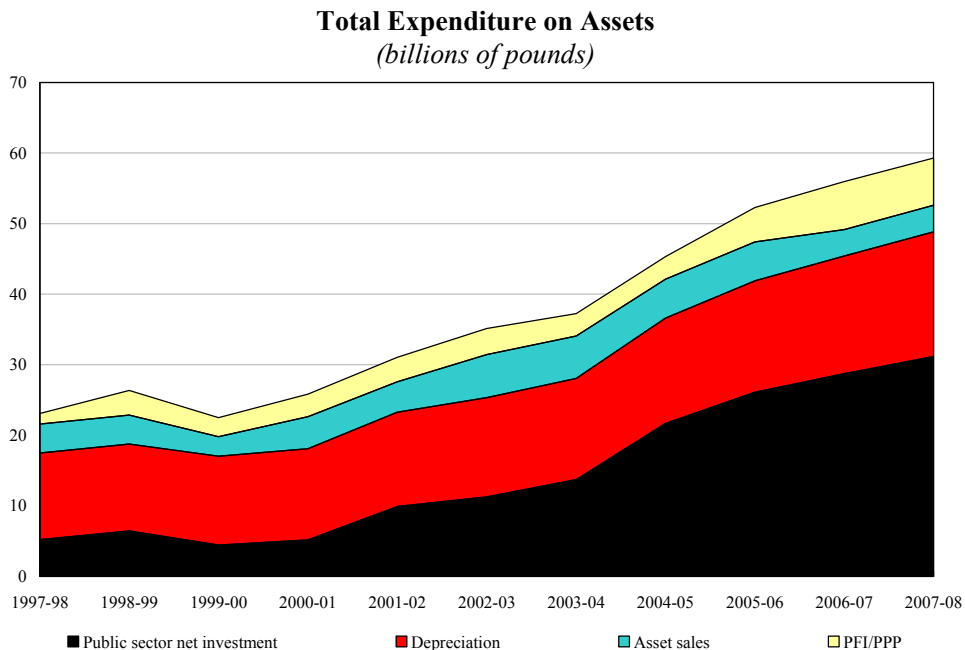
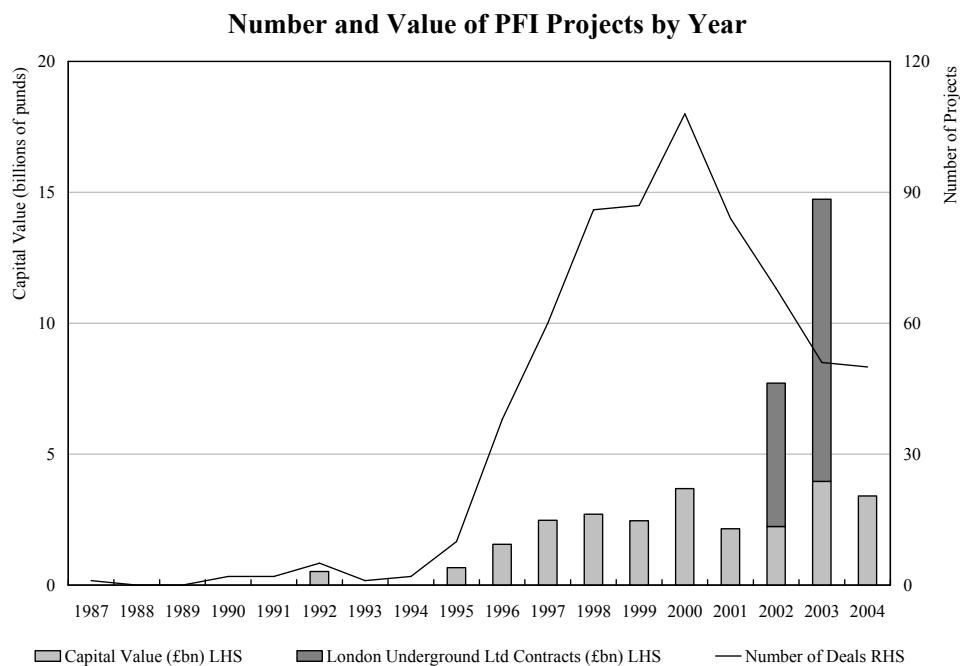


Figure 7



often on budget, providing higher price certainty for the public sector. Figure 8 shows that the percentage of PFI projects that lead to a price change is around 21 per cent versus over 70 per cent for previous non-PFI projects.

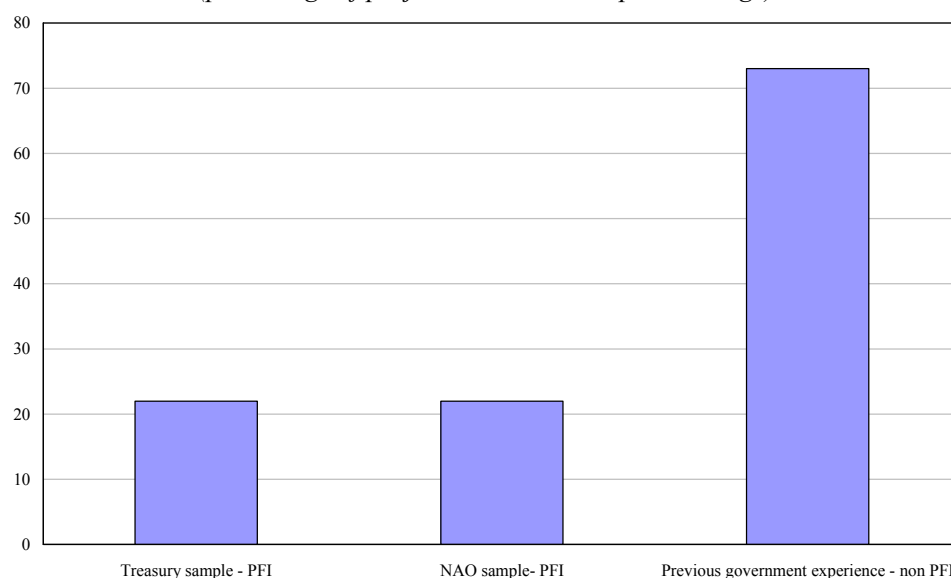
In the same way, the data show that nearly 90 per cent of PFI projects were delivered on time, against only 30 per cent of previous non-PFI projects.

An effective use of the PFI approach requires that an independent assessment of the fiscal risk of the investment (and therefore its accounting treatment) is carried out. The accounting treatment of PFIs follows the generally accepted accounting principles (GAAP) developed by the independent Accounting Standards Board. This is required by the Code for Fiscal Stability and the 2000 Government Resources and Accounts Act, committing the Government to adopt best-practice accounting methods for the public sector. The National Audit Office (NAO), reporting to Parliament, audits the Government accounts, and the treatment of PFIs within them. In particular, the NAO performs a project-by-project assessment of the balance of risks for every PFI undertaken by central government, in order to decide on the balance sheet treatment of the project.²⁶

²⁶ The Audit Commission, another independent auditor, performs the same role for Local Authorities' PFI projects.

Figure 8

Delivering to Budget – Price Uncertainty in Public Procurement
(percentage of projects that lead to a price change)



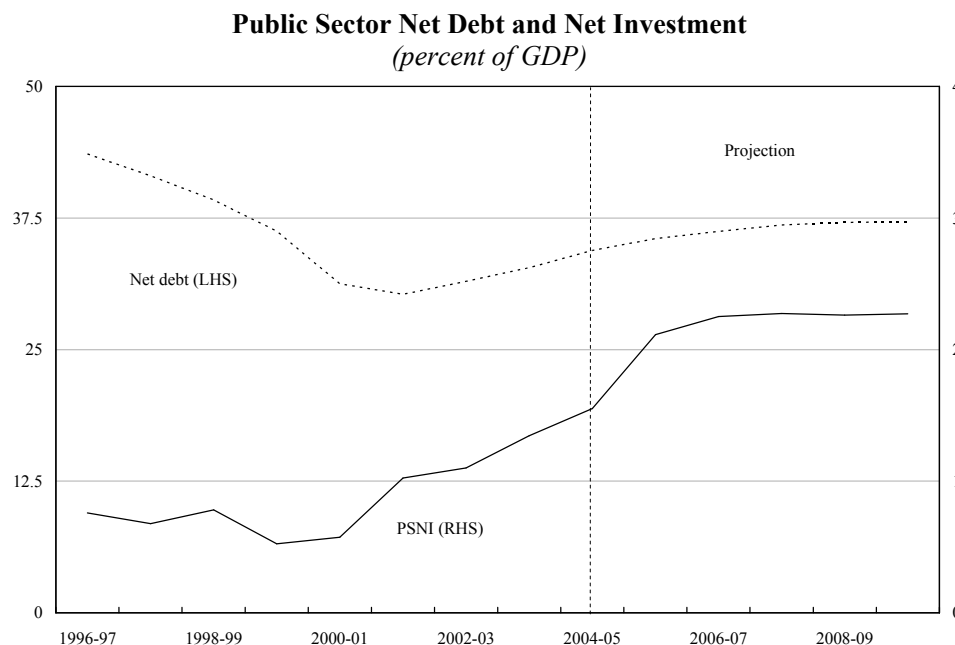
The key principle that drives the accounting treatment of PFIs is that the party bearing the balance of risk of ownership should put the asset (and the corresponding liability) on its balance sheet. Based on this judgment, around 50 per cent of PFI projects by capital value are reported on Departmental balance sheets. Note that ownership risks are only a subset of the risks that a PFI addresses, and even if a project is scored on the government's balance sheet, substantial risks (for example the construction risks) would still be shifted onto the private sector.

3.3 *Public investment strategy, objectives and policy since 1997*

In 1997 in order to redress the consequences of the perverse incentives in the budgeting system, the UK Government developed a strategy aimed at improving the delivery of public services by bridging the historic shortfall in public investment. In order to do so, it was necessary to:

- create a fiscal framework that could deliver fiscal sustainability;
- introduce rigorous controls at the microeconomic level to ensure quality and value for money of investment;
- within these limits, deliver a significant increase in public investment.

Figure 9



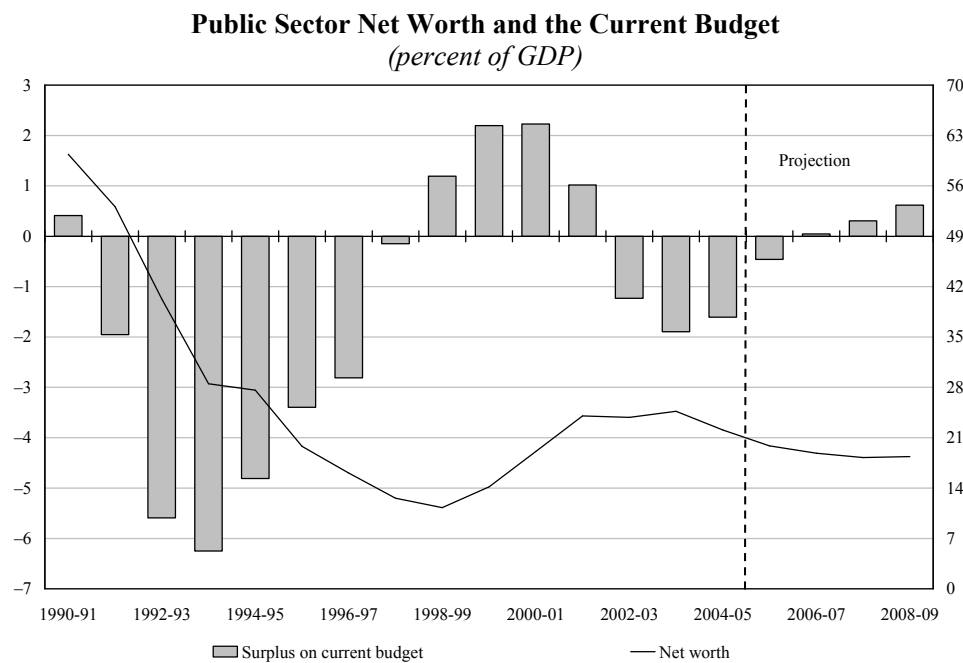
In order to create room for an increase in net investment at a later stage, the Government initially consolidated the public finances. Figure 9 traces the levels of net debt and net investment and it shows that between 1997 and 2001 net debt was reduced from over 40 per cent of GDP to 30 per cent.

Figure 9 shows that, based on Budget 2005 projections, the Government plans to continue to address the historic shortfall in public investment over the coming years, with PSNI projected to amount to 2¼ per cent of GDP until at least 2009-10, while net debt is projected to stabilise around 37 per cent of GDP by the end of the forecast horizon. This is consistent with addressing the ongoing shortfall in public investment that is still identified as a structural burden on the UK economy (for example, see OECD 2003).

As discussed in Section 2, net worth is a useful measure to assess the Government's net asset position. However, it does not play a central role in the UK fiscal framework due to data definition problems discussed earlier in this paper. Figure 10 charts the link between net worth and the current budget, its broad flow equivalent.

Figure 10 highlights how the steep fall in net worth in the first half of the Nineties was stopped by 1997-98 and then reversed, mainly by running down liabilities by running large current surpluses. From 2002, the current budget moved into deficit to counteract the cyclical downturn. This led to a small decline in net

Figure 10



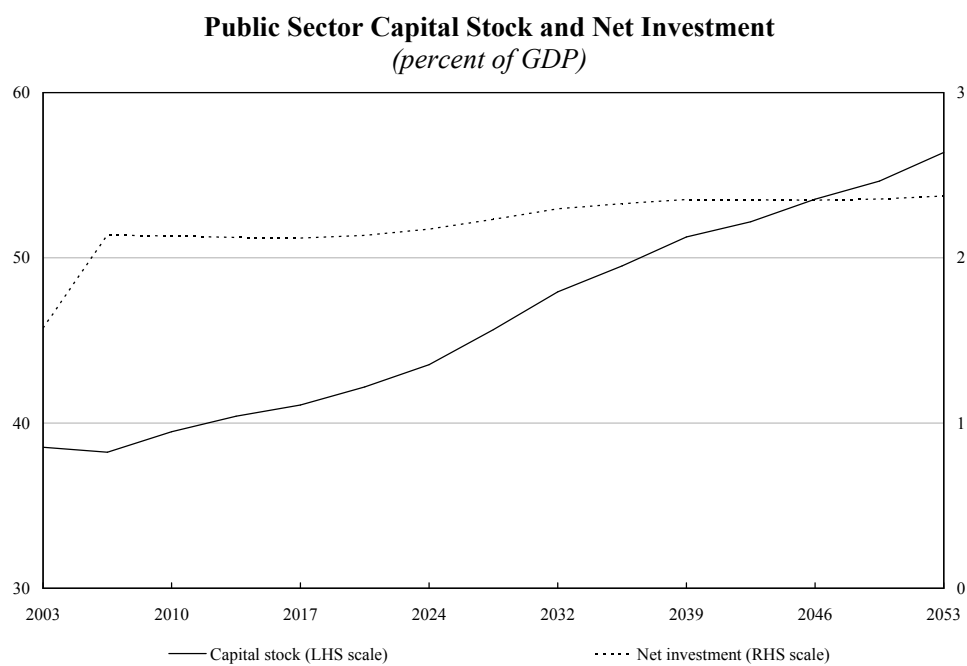
worth, as net borrowing was not backed fully by asset accumulation. Over the forecast horizon net worth stabilises around a level of about 18 per cent of GDP.²⁷

The UK Treasury has published long-term capital stock but not net worth projections.²⁸ The projections are based on a number of assumptions, including that *per capita* capital spending will rise in line with productivity growth beyond the medium term. Being based on the end of the medium-term forecast, the projections lock in historically high levels of investment in the National Health Service and education. Mainly as a result of this, Figure 11 shows that the general government capital stock would rise from just under 40 per cent of GDP in 2002-03 to around 60 per cent by 2052-53. The net investment ratio, which is here defined by what is "needed" to provide for an ageing population given the jumping off point at the end of the medium term, has to rise only modestly – by around $\frac{1}{4}$ per cent of GDP.

²⁷ The 2004 *Long-term Public Finances Report* also published an illustrative historical series for government net liabilities, including provisions (p. 46).

²⁸ 2003 *Long-term Public Finance Report: Fiscal sustainability with an Ageing Population*, HM Treasury, December 2003, p. 52. Note that, using a range of supplementary assumptions, it is possible to project net worth using available information on future capital stock and debt.

Figure 11



4. Conclusions

There are three reasons for designing fiscal frameworks to take account of the specific nature of public investment:

- **public investment can play an important role in facilitating long-term economic growth.** It is not the only definition that could be used for this purpose but it is a clear and tractable one;
- **intergenerational fairness:** public investments are by their nature durable, some are extremely long-lived, and they benefit future generations as well as current generations. This provides a justification for spreading the burden of financing these investments by issuing public debt; and
- **political economy of public investment:** in the short term, running down the public capital stock appears to be easier than cutting current expenditure when there is a need for fiscal retrenchment. Even if this is reversed when fiscal conditions are easier, the resultant stop-go cycle of investment is likely to be inefficient.

While the macro-economic framework is a key factor to correct a bias against public investment, it needs to be underpinned by a robust micro-economic framework. This should ensure that investment decisions are taken on the basis of efficiency considerations and that they deliver the planned benefits. It is also

important that the budgetary framework can provide a regular and predictable flow of resources for investment spending to avoid inefficiencies and capture the benefits.

In the case of the UK, historically low levels of investment made a particularly strong case for designing a macro framework that could sustain an increase in capital formation in the economy. In order to do this, a twin-track approach was adopted:

- at the macroeconomic level, the golden rule allows sustained borrowing for net investment, while the sustainable investment rule, or debt rule, means that when the government does borrow it does so within a debt ceiling that ensures longer-term fiscal sustainability;
- at the microeconomic level, a robust set of budgetary control and capital appraisal processes were established to ensure that investment projects are undertaken on the basis of efficiency and value-for-money considerations. The arrangements also embody incentives to improve the management of existing capital assets;
- the macro and micro reforms acting together have helped ensure a more regular flow of resources to raise public investment, for example at the macro level, by consolidating the public finances at the outset and at the micro level, by ending wasteful end-year investment surges because of the departmental budgetary arrangements.

Within this framework, the UK Government has implemented a strategy to deliver a sustained increase in public investment with net investment rising to 2¼ per cent of GDP, while maintaining a sustainable fiscal position with net debt stabilising around 37 per cent of GDP. Over 2004-05, nominal net investment has increased nearly 40 per cent over the previous year to a level around 1½ per cent of GDP.

APPENDIX
ECONOMIC GROWTH AND PUBLIC INFRASTRUCTURE:
A BRIEF SURVEY OF THE LITERATURE²⁹

Since the late Eighties, academic interest in the role of public investment and economic growth has been revived. This was largely motivated by two factors. First, since the early Seventies the share of public investment to GDP had declined markedly across OECD countries and at roughly the same time productivity growth fell sharply in these countries. Second, following Aschauer (1989), some researchers argued that there were significant linkages between economic growth and public investment, and particularly public infrastructure investment. A third factor was the revival of interest in growth theory, discussed later.

In a series of papers Aschauer (1989a, 1989b, 1989c) attributed the US productivity decline in the Seventies to the substantial reduction in infrastructure investment. He argued that, due to the high rates of return on public capital, policy-makers would be well-advised to divert resources to public investment and particularly investment in public infrastructure in order to boost growth.

In the period since then there have been a large number of empirical studies seeking to determine the impact of public investment employing a variety of methodologies, ranging from: production and cost function approaches, time-series econometrics, vector autoregression (VAR) models, cross-country growth regressions, and more recently panel data studies. The results are summarised below.

The first strand³⁰ of empirical research into the effects of public investment on economic growth, led by Aschauer, reported a significant and large impact of public capital on productivity and thereby economic growth.³¹ It was largely based on Cobb-Douglas production functions, estimated with aggregate time-series data, and conducted mostly at the national level. Among other researchers, Munnell (1990a), Eisner (1994), Fernald (1993), and earlier Holtz-Eakin (1988), employing similar Cobb-Douglas production functions, also came up with statistically significant, and similarly large estimates of rates of return to public capital to Aschauer's.³²

Subsequent work questioned these findings and argued that they suffered from serious methodological pitfalls³³ leading to results which critics dismissed

²⁹ By Dylan Schumacher.

³⁰ For a comprehensive review of the earlier research efforts see, for example, Gramlich, E. (1994), "Infrastructure Investment: A Review Essay", *Journal of Economic Literature* (September) or, for a methodological review, Sturm, J.E., G. Kuper and J. Haan (1996), "Modelling Government Investment and Economic Growth on a Macro Level: A Review", CCSO Series, No. 29.

³¹ Aschauer (1989) found that a 10 per cent increase in the public capital stock would raise multi-factor productivity by almost 4 per cent.

³² Munnell (1990a), for example, established an elasticity of 0.34 for the US, implying that a 10 percentage point increase in non-military public capital would increase productivity by over 3 per cent.

³³ Besides excessively optimistic implicit rates of return, methodological problems relating to endogeneity, spurious correlation and causality were prominent.

“pretty stratospheric”.³⁴ A stream of literature emerged that employed alternative methodologies, based mostly on cost-minimisation approaches, more flexible production functions, and error-correction models, to address weaknesses and reappraise the role of public investment. This slightly later wave of empirical literature produced much more modest estimates of the effects of public investment on growth (see, e.g. Munnell, 1990b, Hulten and Schwab, 1991 and 1994, Baffes and Shah, 1993, Tatom, 1991 and 1993, Holtz-Eakin, 1994, Conrad and Seitz, 1994, Dalamagas, 1995 and Sturm and De Haan, 1995), with some reporting insignificant or even negative relationships.

The inconsistency of these findings, coupled with a degree of ambivalence regarding statistical significance, rendered the early literature relatively inconclusive and therefore somewhat unhelpful for policy-makers. However, notwithstanding this, some more general insights could already be drawn and were further reinforced in ensuing studies using more advanced methodologies. The World Bank (1994) in its review of the literature following Aschauer’s work, thus, concluded that while there was no consensus on the magnitude or the exact nature of the impact of infrastructure on growth, a great number of studies showed that the role of infrastructure is: “...substantial, significant, and frequently greater than that of investment in other forms of capital.”³⁵

The World Bank (1994) also noted the importance of the policy and environmental settings surrounding public investment. It reported that the design, implementation, and operation of infrastructure projects are instrumental in ensuring the potential growth benefits of infrastructure spending are realised. In its view: “...infrastructure represents, if not the engine, then the wheels of economic activity”.³⁶ In other words, infrastructure is a necessary but not a sufficient condition for growth.

One of the dominant features of the literature discussed so far has been that initially most of the analyses focused on a select few countries, particularly the US. More recently, however, researchers have reassessed the relationship for a wider group of countries, increasingly employing more modern analytical tools such as VARs and panel data estimation approaches.

Most analyses carried out using VARs establish cointegrating relationships between public capital and output.³⁷ However, some of these studies fail to report a clear direction of causality and come across feedback effects (see, e.g., Clarida, 1993, and Batina, 1998); while other studies do find evidence of positive effects between public capital and output, yet fail to report measures of statistical

³⁴ Op. cit., Gramlich, E.M. (1994), “Infrastructure Investment: A Review Essay”, *Journal of Economic Literature*, September.

³⁵ Op. cit., The World Bank (1994), *World Development Report 1994, Infrastructure for Development*, p. 15.

³⁶ Op. cit., The World Bank (1994), *World Development Report 1994, Infrastructure for Development*, p. 14.

³⁷ For a comprehensive discussion of VAR relating to the interaction between public investment and growth, see Kamps, C. (2004): “The Dynamic Effects of Public Capital: VAR Evidence for 22 OECD Countries”, Kiel Working Paper, No. 1224.

significance associated with the estimated effect (see, e.g., Flores de Frutos *et al.*, 1998, Sturm *et al.*, 1999, Pereira, 2000, Pereira and Roca Sagales, 2001). However, current appraisals of the dynamic effects of public capital, which benefit from more coherent and broader data sets, do suggest that there are positive and significant long-run output effects (see, e.g., Kamps, 2004). These studies also find evidence that public capital and private capital are long-run compliments, whilst results for the short run are more mixed and less definitive.

On a general note, however, most of the estimates derived from VAR analyses are significantly lower than those obtained from single equations (see, e.g., Lau and Sin, 1997, Pereira, 2000, and Kamps, 2004), possibly indicating that the earlier results missed some of the feedback effects.

Investigation of the relationship between public investment and growth was also given further impetus from the early Nineties by the development of endogenous growth models. Original neoclassical growth theory had ruled out any effect from the level of capital investment on long-run growth (as opposed to the level of output), reflecting the presence of a fixed factor of production and hence diminishing returns to reproducible factors. Although investment could have protracted effects on growth rates, they could not persist indefinitely. In contrast, endogenous growth models such as proposed by Barro (1990), King and Rebelo (1990), Sala-i-Martin (1995) and Mendoza (1997) predict that public investment may alter the long-run growth rate. The essence of the endogenous growth models is to assume that there are constant returns to the factors that can be accumulated, including public investment.

Cross-country regressions typically based on the Barro's approach broadly support the notion that public investment, and particularly public infrastructure investment in transport and communication, positively affects output. Earlier analysis tended to find that growth was insignificantly related to the share or the stock of public investment (see, e.g., Barro, 1991 and Levine and Renelt, 1992), but it did establish evidence of a positive and significant link between public investment in transport and communication and economic growth (see, e.g., Barro, 1991 and Easterly and Rebelo, 1993).³⁸ This bottom-line finding also crystallised from research using physical units of infrastructure rather than expenditure in public investment, showing that physical measures of infrastructure networks, such as transportation and telephone systems have large and significant effects on economic growth (see, e.g., Canning and Fay, 1993), with returns initially accruing slowly but ultimately being very large. More recent analyses generally corroborate the finding of significant positive linkages between public investment and output, although its coefficient generally tends to be smaller than that of private investment (see, e.g., Gwartney, Holcombe and Lawson, 2004).

³⁸ Some studies (see, e.g., Devarajan, Swaroop and Zou, 1993) find a negative and statistically significant relationship between government investment on, for example, transport and communications and per capita GDP growth, but highlight that the absence of a meaningful relationship could be due to political factors in decision-making and other complimentary factors.

In endogenous growth frameworks, empirical studies using panel data by authors such as Cashin (1995), Canning and Pedroni (1999), Kneller, Bleaney and Gemmell (1999), Demetriades and Mamuneas (2000) and de la Fuente (2000), among others, point to public investment being able to affect the steady-state growth rate. However, since these studies also separate out the positive growth impact of investment from the adverse growth effects of the distortionary taxation used to finance it, they suggest a saturation point, beyond which further investment would trigger negative effects.

Some of these studies examine whether the neo-classical case with diminishing returns to capital, or the endogenous growth model with constant returns is substantiated by panel data estimation. They find robust evidence of long-run effects of public capital, more specifically public infrastructure, on output growth, lending support to the endogenous growth model (Canning and Pedroni, 1999, Kneller, Bleaney and Gemmell, 1999, and Demetriades and Mamuneas, 2000). However, in some cases the studies found zero long-run growth effects, which may imply that public capital is already at its growth maximizing or optimal level as the productive effects are offset by the detrimental effect of diverting inputs from other activities (Canning and Pedroni, 1999). This is consistent with evidence from The World Bank that suggests an inverted-U shape relationship between infrastructure (transport and communications in this case) and the rate of economic growth.³⁹

In a similar vein, de la Fuente (2000) also shows that, despite there being a positive effect from public capital accumulation, a saturation point is eventually reached. Demetriades and Mamuneas (2000) corroborate this in their broader country study, which finds that mean short-run rates of return for public infrastructure are relatively low, while the corresponding long-run rates are considerably higher, albeit declining over time. Their study also suggests that the knock-on effects to private capital are larger in the long run, while those to labour are more pronounced in the short run. Moreover, Demetriades and Mamuneas (2000) determine that while in the short run, private capital appears to be more productive than public, the opposite is the case in the long run when spillover effects are fully taken into account. Notably, the full long-run benefits of public capital may take up to fifteen years to materialise.

In addition, and consistent with the emphasis on the importance of the macroeconomic environment in the earlier research⁴⁰ these studies also suggest that zero long-run growth effects may stem from either ineffective or distortionary policy-making. A number of studies investigated the policy impact further and found that the structure of taxation and public expenditure can affect the steady-state growth rate.⁴¹ They find that increases in productive government expenditures –

³⁹ De La Fuente (2000) asserts that the returns to infrastructure investment are probably quite high when infrastructure is scarce, but that they diminish sharply thereafter.

⁴⁰ For example, Kessides (1993).

⁴¹ See, for example, Kneller, Bleaney and Gemmell (1999) and Bleaney, Gemmell and Kneller (2001).

which include those devoted to health, education, general public services' expenditure, defence, education, transport and communication and housing – significantly enhance growth; while non-productive expenditure – such as social security and welfare, expenditure on recreation, expenditure on economic services – do not. By isolating the short-run fiscal effects from the long-run effects they find that productive expenditures have a significant positive effect on growth, most pronounced in the long run.⁴²

In summary, while the body of empirical literature in this field is rich and diverse, and the findings can vary from study to study, the majority of research increasingly concludes that there is a positive and significant relationship between public investment and economic growth.⁴³ The link to economic growth is typically judged strongest from investment in facilitating structures, such as communication, transport and R&D, as well as in productive expenditure items such as education, health and defence. However, the magnitude of the effect is generally found to be lower than that suggested in the earlier analysis. Nor does the link seem to be a simple linear one whereby a given amount of public capital spending leads to a certain increase in growth. Instead, the positive effects from investment appear to be conditional on a number of other complementary factors that help make public investment an “effective catalyst for growth”.⁴⁴ In particular, there is a broad consensus in the literature that the following are important:

- stable macroeconomic conditions conducive to harnessing benefits;
- the availability of other high quality factors of production, like skilled labour and private capital;
- the size and configuration of existing networks when considering marginal units investment;
- efficient management of the infrastructure and efforts to ensure that projects meet effective demand;
- the adherence to commercial principles (e.g. through competition, user charges);
- regular and consistent flow of sufficient resources being devoted to public capital projects to entrench planning stability.

On balance, the literature also emphasises that returns to public capital tend to be greater in the long run. It has also made the important distinction between the positive growth effects of extra investment and the adverse growth effects of

⁴² A 1 percentage point increase in productive expenditure raises the growth rate by 0.3 percentage points, rising to 0.4 in the dynamic panel setting. When allowing for lagged effects to capture the long-run impact, the authors find that investment has a bigger effect over time and one that is statistically significant.

⁴³ Nijkamp and Poot (2004), for example, employing meta-analysis – a technique to undertake a systematic quantitative review of literature that distils a great number of studies into statistical values – assess a sample of 93 studies published between 1983 and 1998. They confirm the long-run importance of education and public infrastructure on growth and, moreover, they find that the longer the sample period in any particular study the higher the probability that public capital positively affects long-run economic growth.

⁴⁴ Op. cit., Kessides, C. (1993), “The Contributions of Infrastructure to Economic Development: A Review of Experience and Policy Implications”, The World Bank, Discussion Paper, p. 9.

distortionary taxation. Part of this strand of literature also points to the existence of constant returns to scale to public investment up until a "saturation point" is reached and marginal returns begin to decline.

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**COMMENTS ON SESSION 4:
REFORMING PUBLIC EXPENDITURE PROGRAMMES**

*Paul Boothe**

I have been asked to comment on two papers that look at government expenditures. The first, by Zvi Hercowitz and Michel Strawczynski (HS), examines the large decline (as a share of GDP) in both total and program spending in OECD countries that began in the mid-Nineties and the subsequent rebound later in the decade. HS examine eighteen countries for the period 1981-2003 – twelve of which are members of the European Monetary Union (EMU) and fifteen of which are Maastricht Treaty signatories. HS take a positive rather than normative approach, developing a set of stylized facts, and also compute projected long-run values for the ratio of government spending (G) to GDP.

What are the stylized facts they observe?

- Contrary to what one might expect, both Maastricht and non-Maastricht countries display the same temporal pattern for the G /GDP ratio.
- Declines in interest payments are accompanied by increases in program spending.
- There is some evidence of ratcheting, *i.e.* asymmetric responses to expansions and recessions.
- Demographic variations (measured by the dependency ratio) are not associated with variations in the growth of government spending. Government spending, however, is positively related to population growth.
- Adjustment to long-run values of G /GDP is very gradual.

In computing long-run values of G /GDP, HS require an additional assumption – a value for the steady-state ratio of government debt (D) to GDP. They use the Maastricht criteria of 60 per cent. The long-run G /GDP values for a number of countries are close to the current values, but some (for example, Canada, Greece, Italy and Luxembourg) are substantially different than current levels.

The groundwork laid by HS provides fertile ground for further research. Four examples include: what theory would predict the same pattern for G /GDP in both Maastricht and non-Maastricht countries? Is there a common factor (or factors) at work? What theory of government spending would predict that program spending replaces interest payments as they fall? Is there some exogenous limit (or value) to G ? Why don't demographic shifts seem to matter for the growth of government spending while simple populations levels do? Finally, suppose the calculations of long-run values of G /GDP are correct. Why is there such a large variation among countries? What are policy implications for countries like Canada and Italy that are

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currently far from their calculated long-run values? Hopefully, the provocative results of this paper will provide impetus to further work on these important issues.

The second paper I was asked to comment on is by Maura Francese, Daniele Franco and Pietro Tommasino (FFT). This paper provides the clearest, most concise expositions of the issues surrounding public pension reform issues I have read and thus does a great services to policy analysts.

The numbers involved in demographic change and the corresponding pension issues are staggering. For example, in the OECD the dependency ratio will rise from 24 to 50 per cent by 2050. In the European Union, the working-age population is projected to decline by 40 million. Age-related public spending in the OECD is projected to rise by 5.5 per cent of GDP (and this probably understates the true impact).

In addition to providing these critical facts, FFT focus on some key policy questions. They make clear that pension reform is not just about fiscal sustainability, but also about labour market reform and capital formation. Different approaches to pension reform will have different impacts on these three issues.

What are the critical ingredients to a successful pension reform and how do we measure success? Canada provides a useful case study. Canada is judged as a success story by the OECD, at least as measured by fiscal sustainability. In the late Nineties, Canada made parametric changes to ensure the sustainability of its public defined-benefit scheme. Contribution rates were raised from 5.4 to 9.9 per cent of insurable earnings. The expansion of benefits was slowed and asset returns were improved. Canada also improved the other two pillars of its pension system by increasing benefits for low-income seniors and increases the tax sheltering of private pension savings. The result of the reforms to the public pension scheme is that it is now judged to be actuarially sustainable for at least the next 75 years – the length of the current projection.

How did Canada achieve this success – especially since agreement of both the federal government and the provinces was required? The process began with broad public consultation where the public became convinced that the public pension plan was going broke and, without action, an unbearable burden would be placed on our children and grandchildren. Thus, the status quo was not an option.

Consultations also clarified public preferences on the direction of reform. A defined-benefit scheme was retained via increased contributions immediately to protect future generations. Investment policies were deregulated to permit higher returns to savings. Finally, increased contributions were phased in over several years.

Reforms had an important impact on labour market efficiency as well. For example, raising contributions rather than using debt finance improved generational equity and work incentives. Further measures will be required to remove biases against older workers remaining in the labour force. On the capital formation side,

deregulation of public and private pension plan investment policy made more savings available for private investment.

A positive side effect of public pension reform in Canada was the building of a constituency for public debt consolidation. Canada's federal debt fell from almost 70 per cent of GDP at its peak to less than 40 per cent today, with a target of 25 per cent by 2015.

Can this approach to public pension reform be applied elsewhere – probably only in some cases. Ideology matters. Thus, the Canadian approach may be more applicable to Europe than the United States. Hopefully, the Canadian experience will be instructive, because, as the FFT analysis illustrates most clearly, coming to grips with this problem is a key factor in overall success of structural reform in Europe.

COMMENTS ON SESSION 4: REFORMING PUBLIC EXPENDITURE PROGRAMMES

*Erdal Yilmaz**

Let me start by thanking Banca d'Italia, and Daniele Franco in particular, for inviting me to be a discussant in this fourth session of the seminar, which is about public expenditure reforms. This is my first experience as a discussant. I will elaborate on the papers "Approaches to Financing and Managing Public Sector Investment in the UK" by Robert Woods and "Analysis of International Health-related Expenditure: Lessons for France" by Carine Bouthevillain and Karine Hervé.

These two papers focus on different public expenditure areas: health-related expenditure in the case of France and investment in the case of the U.K. They also offer different perspectives on reforming public expenditure programmes. I appreciated reading the papers and learned a lot from them.

Both papers provide a comprehensive overview of the theoretical literature on the topics. They examine the nature and the characteristics of public expenditure reforms in the context of macroeconomic development and in light of the issue of fiscal sustainability. As to the microeconomic dimension, the first paper evaluates the incentives that can be introduced in order to change the behaviour of patients, insurers, medical staff and drug companies; while the second one studies the efficiency and the effectiveness of public investment.

For the sake of brevity, I will not reiterate the principal conclusions or the specific arguments of the papers. However, I would like to note that the first paper individuates the factors underlying health-spending developments in France and in other countries, highlighting the need for change. The paper also provides an interesting overview of the reforms implemented in France. The second paper examines the efforts to improve the U.K. budgeting framework (*i.e.* medium-term budgeting and a departmental investment strategy) and the establishment of new institutions, like the Office of Government Commerce. The paper also illustrates the U.K. experience in introducing Public Private Partnerships. These reforms aim at improving the efficiency and effectiveness of public investment.

Following these introductory remarks, I would like to present a few points to consider for a better understanding of the ideas presented in the papers.

The first paper examines the many diverse health-care systems in the world and shows how none of them seems to have struck a perfect balance between the conflicting goals of effective care, equity, freedom of choice (for doctors and patients) and control of public spending. It notes that the failure to achieve any one of these goals produces specific problems: decreased health in the population, partial

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exclusion of the population from the health care system, long waiting lists for patients, in addition to public-sector deficits. The paper notes that the French health system favours equity, provides high-quality care and guarantees freedom of choice, but its downside is high public expenditure.

It would be illuminating to have these findings supported by relevant figures. In particular, what parameters were used to determine high-quality health care? Moreover, it would be interesting to see how the theoretical context of health-care economics (e.g., information asymmetries, adverse selection and moral hazard) plugs into the main determinants of health expenditure. Lastly, I am a little confused about the indicators that were used as proxies for advances in medical science, such as the share of GDP allocated to research and development and the number of scanners. I think we need a new set of indicators to simulate the effects of capital-intensive health services on expenditure.

As to the second paper, it would be useful to understand why both public and private investment are still declining after the institutional change that took place in 1997. One of the figures in the paper shows an increase in PFI projects. It would be valuable to have data concerning the qualitative improvement and any change that occurred in the composition of investment.