

### 3.4 Towards an economically plausible operationalization of public investment

As was shown in the previous two sections the case for applying the Golden Rule to traditional government investment in the sense of the national accounts is quite strong. Traditional public investment can on average be classified as productive and substantially growth enhancing and will therefore benefit future generations who should therefore contribute to its financing via the debt service.

Before turning to other potential expenditure categories to be included under the Golden Rule, some thoughts seem necessary on whether the traditional concept of investment in the national accounts is fully adequate or whether some modifications seem necessary. One important thing to notice in this context is, that the definition of (public) investment has been changed in the recent general revision of the system of national accounts and the transition from the old system ESA 1995 to ESA 2010 (see Dunn et al. 2014). Tables A1-A6 in the appendix compare gross investment, net investment and depreciation as a percentage of GDP for the Euro area, the Periphery and selected other countries under the two systems. In general the transition to ESA 2010 and the accompanying further changes have led to an increase in gross public investment with marked differences between the countries. For net investment on average the changes are small as the increases in gross investment have almost completely been compensated by correspondingly higher depreciation.

A first change has to do with spending on research and development. Whereas before the revision, mostly tangible assets (construction and equipment) and a small fraction of intangible assets were counted as investment, after the revision also spending on research and development is included. From an economic point of view this seems justified as it is highly plausible that public R&D spending in research institutions or universities or also as grants given to the business sector may be productive, although there is no clear evidence as to the growth effects, yet. In addition, public R&D spending suffered under the strong fiscal contraction (see Veugeleers 2014). This change should be the most important quantitatively in explaining the increase in gross investment for many countries.

A second change is highly problematic: Military expenditure on weapons systems is now counted as fixed investment, the reason being that “the new system recognises their productive potential for the external security of a country, over several years.” (Dunn et al. 2014: 10). However, this classification can be criticized on ethical grounds:

Weapons systems are potentially destructive and if really used they destroy productive capital instead of increasing it. Indeed, that was precisely the reason, why they were previously recorded as immediately consumed under ESA 1995. Furthermore, it is highly questionable whether the fiscal framework should actively encourage military spending and a potential arms race. The ethical questions apart, spending on weapons systems can hardly be considered as a particularly growth enhancing expenditure category. Theoretically, it is not clear how the marginal contribution of military investment to national security should be measured. Indeed, military investment was explicitly excluded from many studies on the long term growth effects of public investment. Aschauer's original contribution did not find military spending to be important for economic productivity (Aschauer 1989).

A third change occurred in the delimitation of the government and the private sector. The classification has become stricter in most cases in the sense that some companies/non-profit organisations closely related to the public sector had to be reclassified from the private to the government sector. This statistical enlargement of the government sector may partly remove one shortcoming of the investment definition in the national accounts: Investment grants paid by the public sector to private companies are not classified as investment expenditure. In the case that a formerly private company which receives investment grants increasing its investment expenditures is reclassified to be part of the public sector, the additional investment spending will now be counted as government investment. However, if a public investment grant is spent on investment by a recipient company then from an economic point of view it should generally not make a difference whether the company is classified as public or private. Therefore, for purposes of the Golden Rule, investment grants paid from the public to the private sector should be classified as public investment.

Of course, there may be other expenditure categories that may be equally or even more beneficial. A natural candidate is public spending on education or health care which in the existing system of national accounts is classified as current expenditure. It has been argued that privileging traditional, mostly physical investment in infrastructure and equipment and neglecting those other forms of investment in an economic sense may distort the optimal allocation of resources with potentially unclear implications for efficiency, growth and welfare (Turrini 2004: 29-30). However, in the presence of strong evidence for considerably positive growth effects of traditional public investment it would seem overcautious to forego the advantages of the Golden Rule. Indeed, a stepwise approach is much more convincing. The economic case for including other types of spending into the Golden Rule should be checked. If inclusion seems rational but at the current stage difficult to implement for statistical or other reasons, then the

Golden Rule should as a first step be applied to traditional investment. As soon as the open questions with respect to other expenditure categories are solved, their implementation can follow as a second step.

Should other potentially growth enhancing types of government spending be classified as investment? In principle they should as long as it can be shown that the growth effect to be expected is at least as large as that of traditional public investment. The natural candidate for this would be education expenditure. Education as investment in human capital is crucial within endogenous growth theory (Lucas 1988) and empirical research suggests that the private as well as social rate of return of education can assumed to be very high (Psacharopoulos and Patrinos 2004; Card 2001). Although it is difficult to reliably compare the estimated rate of return for different types of expenditure, it would at least be plausible to include public education expenditures under the Golden Rule. This is also the general conclusion drawn by most advocates of the Golden Rule.

However, at the present stage it is difficult to implement this in a convincing way. First, an exact definition of the relevant education expenditure would have to be given which is not straightforward (see Vesper 2007: 24-29). Second, in order to be consistent with the Golden Rule, net education investment would have to be measured, i.e. depreciation would have to be deducted. According to the SVR (2007: 80-81) based on Ewerhart (2002 and 2003) depreciation of the German human capital stock, relevant for such a calculation, would be in the order of magnitude of 95 per cent of total education spending. This particular result stems from the demographic development in Germany and must not necessarily be a very plausible way of quantifying depreciation of human capital investment. Indeed completely different conclusions in this respect can be drawn from Kunze (2002) and Will (2011). But it shows that there are some difficult conceptual issues that would have to be resolved before education expenditure could be properly included into the Golden Rule.

There are other expenditure categories that might be considered as investment under the Golden Rule. Indeed, from a supply-side perspective some types of social spending may well be highly productive, because they increase labour supply and production: Health expenditures, if effective, will contribute to a more stable and larger workforce. Spending on child care can substantially increase parents' labour force participation (Bauernschuster and Schlotter 2015). And the same may be said for spending on social work and integration. All of this could lead to higher labour force participation and therefore contribute to higher growth and, at the same time, to one of the main

Europe 2020 goals. Obviously, it is not easy to find adequate definitions and estimating depreciation in order to arrive at net investment may be even more difficult.

The fact that at the current stage there are difficulties, however, does not mean that an economically rational and workable definition of potentially relevant other investment expenditures does not exist, at all. It only means, that for the first stage of introducing the Golden Rule one should better rely on the traditional definition of public investment from the national accounts (with the small modifications mentioned).

### **3.5 Some technical questions of implementation**

Even if – for practical reasons – the Golden Rule is initially limited to traditional public investment, some technical questions of implementation will have to be resolved. The prescriptions for the government in terms of the national accounts will have to be operationalized in terms of standard financial government accounts. This usually involves correcting for privatization revenues, loans and investment grants between government units (SVR 2007: 76.). However, for the general government this is a procedure that is familiar also in the current fiscal framework in which all national governments have to regularly submit their stability programmes according to the definitions of the system of national accounts. Problems might arise for the subnational levels of government, particularly for budgetary planning at the local level in which the new conventions would most probably have to be newly implemented.

Furthermore, depending on the design of the existing systems of fiscal federalism in the member states questions as to the vertical and horizontal allocation of the general government investment deficit allowance among and on the different federal levels may occur. For example, if the municipal level is the main investor and a substantial part of its investment is currently financed through own resources then the implied deficit and debt ratios for the municipalities under the Golden Rule may become very large or collide with existing national deficit constraints for the subnational levels. Obviously this problem could be tackled by suitable investment grants from higher federal levels which would then also be allocated the corresponding deficit allowance. The Golden Rule may in the medium term actually be used for an investment-friendly reform of fiscal federalism.

Another problem that has always been stressed in the discussion about the Golden Rule (e.g. Turrini 2004: 5-6) is the estimation of depreciation that is necessary to determine net investment, i.e. gross investment net of depreciation. In the absence of dual accounting in the government financial budgetary accounting systems these have