

## Whither Recovery - Economic Growth and Structural Change after Five Years of Recession

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### Abstract

Five years into the euro-area crisis, some signs of a recovery are starting to appear. Exports are picking up in the core industrial economies. At the same time, the underlying structural problems – notably the ageing of the population with its implications on public spending as well as on labour markets remain. The question in many countries is whether the pre-crisis growth rates are still attainable.

Finland weathered the first years of the crisis remarkably well compared to most EU-countries but she has also experienced a deep structural change in her economy. Many of the key exporting industries are surfacing from the recession significantly leaner than before. This development climaxed in the fall of 2013 with the announcement of the sale of Nokia's – the telecommunications giant – mobile phone branch, which was preceded by the closure of the firm's last mobile phone plant in Finland only a few months earlier. At the same time, the problems and fiscal pressures brought about by a rapidly declining working-age population and the growing costs of an ageing population became more and more apparent. To the mounting distress over the extent of a sustainability gap was thereby added a nagging concern over the growth potential of the economy.

The aims of the present study are to grasp the effects of the structural change on the growth potential of the economy, and to analyse the connection between output growth and the sustainability gap. We do this by studying the contribution of the different sectors of the economy to economic growth in the recent past, taking into account the often dramatic cuts in capacity in many of the key exporting industries. Our analysis corroborates the findings of recent econometric studies that the loss of the ICT sector's boost to productivity growth may well jeopardize future growth. We also turn the findings at the structural level into economy-wide measures of potential GDP growth, using methodology similar to the European Union's in measuring the GDP gap. Our findings point out that bridging the gap is not enough to solve the sustainability problem, as potential GDP has fallen because of the structural changes of past years. Finally, we show that the fall in potential GDP does indeed make fiscal sustainability more urgent.

We are using VATTAGE, a MONASH-style AGE model of the Finnish economy, to assess the effects of the most recent structural policy proposals. Unlike most AGE models that treat the public sector essentially as a burden to the economy, we have modified the model to account for the direct utility effects from free public provision of educational, health care and social services, a characteristic of most Nordic "welfare states". Under this set-up, cuts in these services will have a two-fold effect: they will reduce the welfare costs of financing public services, but they will also have a negative, direct impact on consumers' utility. A third effect is to encourage demand for privately provided services.

## 1. Introduction

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We find support for the view that with the loss of the ICT sector's contribution to productivity growth and with the age-related growth of the service sectors, it is unlikely that past levels of overall productivity growth can be maintained in the future. This may also lead to lower growth in the future than in the recent past, which in turn will necessitate more drastic fiscal measures.

So far, the scope of Finnish austerity measures has been rather limited, but the latest "austerity package", stemming from March 2014. The recent structural policy consists of packages aimed at improving fiscal stance by reforming the labour markets, and by re-defining municipal sector tasks and increasing public sector productivity growth.

The paper is organised as follows. Section 2 overviews the VATTAGE model and introduces the extensions for EU sustainability- style potential GDP, labour markets, and output gap measures as used in the EU methodology and discusses the introduction of these theories in an AGE model. Section 3 shows our main results, starting with structural change and its implications on the macro level. Section 5 studies the implications of GDP growth from the point of view of fiscal sustainability and also discusses the efficiency and welfare implications. Section 6 concludes.

## 2. The VATTAGE model

### 2.1 An outline of VATTAGE

VATTAGE is a dynamic, applied general equilibrium (AGE) model of the Finnish economy. VATTAGE is based on the MONASH-model developed at the Centre of Policy Studies. MONASH-style models are used in countries ranging from China and South Africa to the United States and Australia (Dixon and Rimmer, 2002). In Europe, models based on MONASH have been developed for Denmark, Finland, and the Netherlands. VATTAGE is described in detail in Honkatukia (2009).

Several factors explain the popularity of MONASH. The main ones are the advanced and user-friendly software packages that facilitate data handling and the set-up of complicated policy simulations, and that also allow a very detailed post-simulation analysis of the simulation results. MONASH-type models are also very adaptable to the analyses of different types of policies and different time frames. In forward-looking policy analysis, MONASH-type models offer a disciplined way to forecast the baseline development of the economy. Last, but not least, they also allow the user to replicate and explain the historical development of an economy in great detail, which is not true for most AGE models.

In VATTAGE, there are normally three types of inter-temporal links connecting the consecutive periods in the model: (1) accumulation of fixed capital; (2) accumulation of financial claims; and (3) lagged adjustment mechanisms, notably in the labour markets.

For the present study, we extend the model by introducing theories for potential output and employment determination following the approach taken in EU fiscal sustainability studies (d'Auria et al., 2010). In the EU methodology, potential output is estimated using time series data; here, we use the historical model database, instead.

Change in potential output is given by

$$\text{gdp}_t^{\text{POT}} = S_L I_t^{\text{POT}} + S_K k_t + \text{tfp}_t^{\text{POT}}$$

where  $\text{gdp}_t^{\text{POT}}$ , potential output, depends on the share –weighted change in potential employment  $I_t^{\text{POT}}$  and capital,  $k$ , and the change in potential productivity.

Employment, in turn, is dependent on the Phillips curve, with wages given by

$$\Delta^2 w_t = \Delta^2 (pr_t) + \phi^{\text{ws}} \Delta^2 ws_t + \Delta^2 tot_t - \beta(u_t - \text{nairu}_t) + v_t^w$$

where  $w$  is the log of nominal wages,  $pr$  is the log of labour productivity,  $ws$  is the log of the wage share,  $tot$  is the log of the terms of trade, and  $u$  is the unemployment rate.

It is notable that contrary to usual AGE practice, employment is affected by the wage-setting mechanism not only in the policy simulations, but also on the baseline.

## 2.2 Baseline scenario

VATTAGE baseline is constructed to conform to medium-term official forecasts at the macro level. However, at the sector level, it is based on an extensive study of the structural trends of the economy, as well as a very large scale foresight effort encompassing dozens of sector and regional experts. This section gives a brief description of the procedures followed in forming the baseline.

The structural trends concern changes in demand patterns by commodity and user (domestic consumption, exports to EU and elsewhere, investment, and the public sector) that stem from a historical analysis of the development of the Finnish economy. The baseline forecast also uses macro and, to an extent, industry level forecasts from other studies. We use macroeconomic forecasts for the early years of the scenario, and population and age-related expenditure forecasts for the whole scenario. The main medium-term macroeconomic assumptions in our scenario conform to the medium term forecast of the Ministry of Finance and the EU Ageing Working Group. In the longer run, macroeconomic development is determined by population trends, which affect public demand for services and other public expenditures, as well as private consumption, whereas industry-level development depends on productivity trends and commodity-level export trends. The baseline also evaluates the development of public sector debt and deficit, given policy measures already taken. The sector-specific baselines have been developed in the context of a long term foresight project, where we have benefitted from the scrutiny and comments of dozens of sector and regional experts and interest groups.

Figure 1 shows a decomposition of baseline growth from the supply side. The striking feature is the sharp fall in the contribution of total productivity growth in 2009, which accounts for almost all of the fall in GDP from 2008. This is the ICT story at the aggregate level – the productivity in the exporting sectors collapsed as the financial market crisis destroyed export markets. That exports did have a large impact is clear from figure 2, which shows the demand side decomposition of GDP growth. But where productivity growth has been revived in many other European countries, it is clear from figure 1 that this has not been the case to the same extent in Finland. This is at least partly due to a structural change that has seen the value added share of manufacturing falling from 23 per cent to some 15 per cent over a matter of just five years.

When we combine these data to the potential output approach, we find that the potential has indeed fallen, as depicted in figure 3. The crucial question then is, whether productivity growth will revive. We find it is likely to take some time, even if productivity growth were to resume at its earlier pace. The reason can be seen from figure 4, which shows the contribution to overall growth of productivity growth in each industry. It is clear that the contribution from manufacturing sectors has fallen, and since these sectors have seen the fastest productivity growth in the past, there is ground to suspect that their relative decline will affect overall productivity growth in the future. But since the drivers of public expenditure are essentially unaffected by the change, the share of the public sector has actually increased, and the challenges of public finance have become more urgent.

We next turn to the remedies.

Figure 1

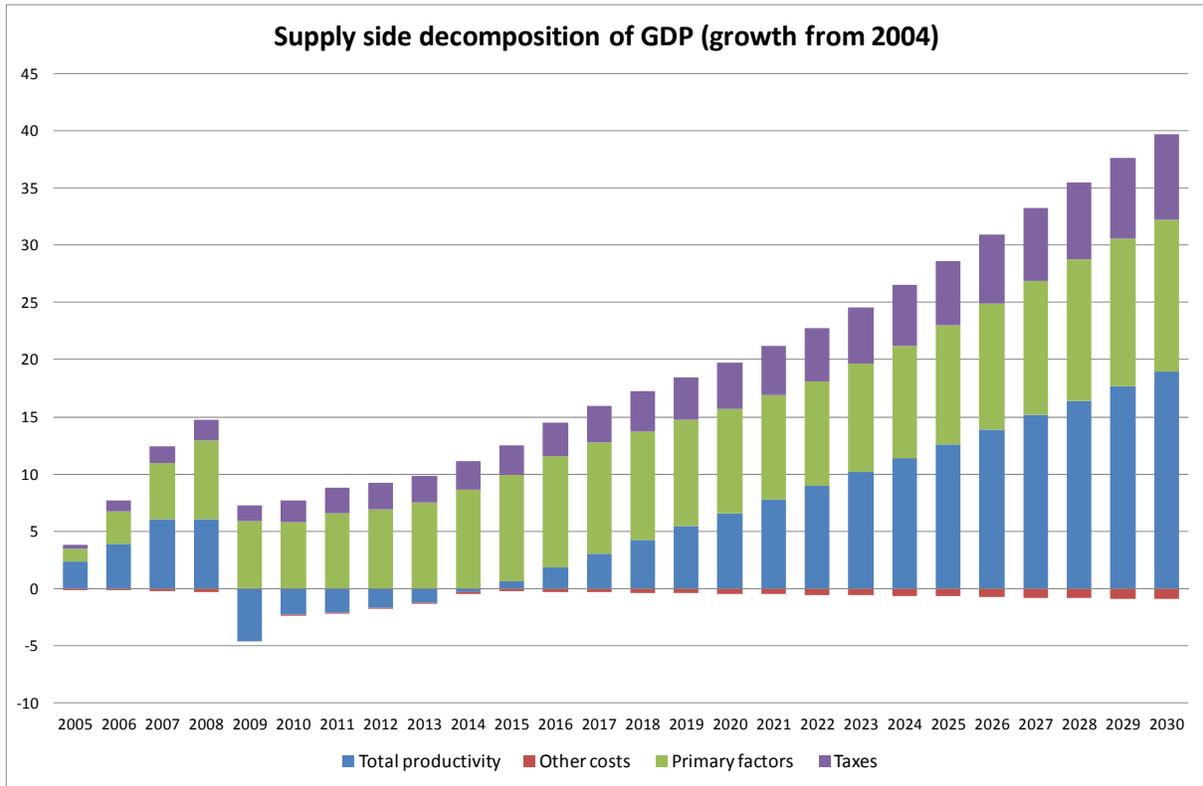
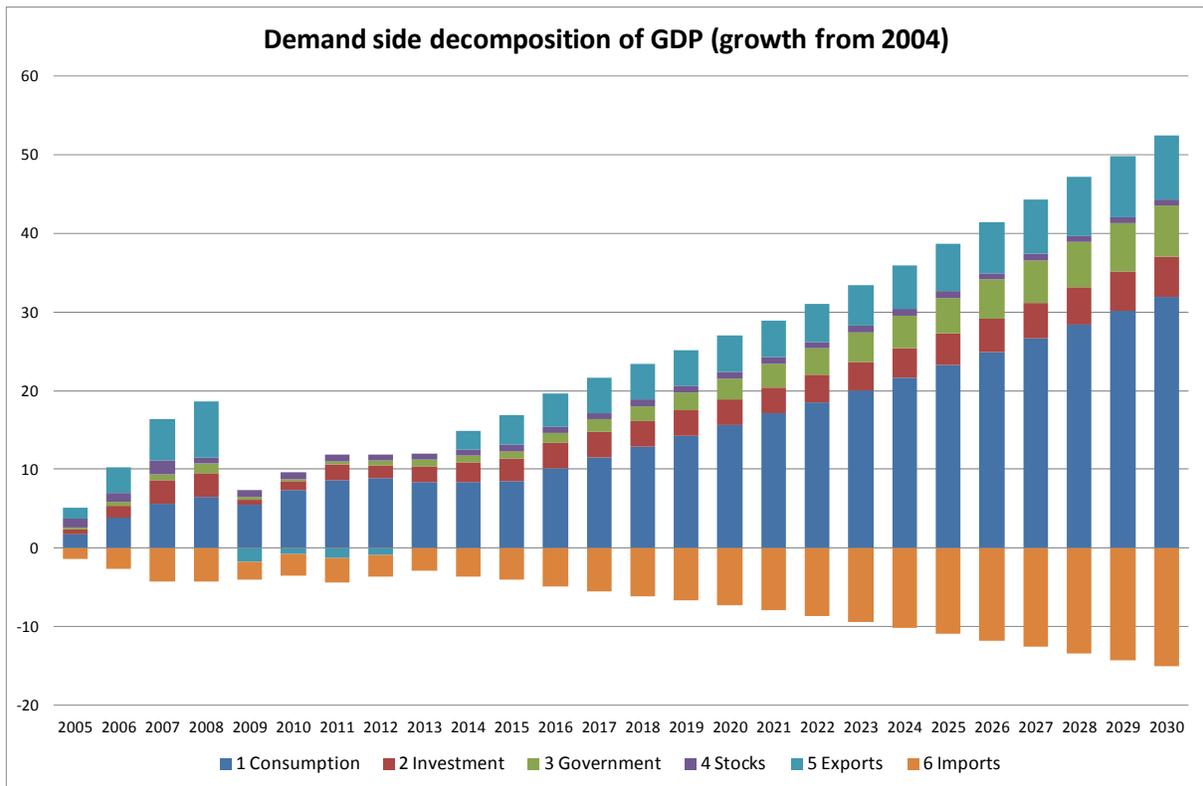


Figure 2





## 4. The macroeconomic effects of the structural policy package

### 4.1 The reform package

The Finnish government agreed on a large policy package in March 2014 comprising several measures for the current electoral period. Unlike the previous “austerity packages”, the current structural policy proposals introduce significant changes both in the public and in the private sectors. The public sector measures aim at savings both by reducing the mandatory tasks of the municipal sector – which provides a major share of public services – and by introducing measures to encourage productivity growth in the public sectors, a major revision of the health care system being among the chief measures under deliberation. The labour market measures aim at lengthening working careers. They involve a reform of the education system that discourages delays in graduation on the one hand; on the other, a pension reform is used to encourage older workers to remain to participate in the labour markets longer.

We study the effects of the policies in scenarios for the labour market measures one at a time – decreasing the NAIRU and encouraging participation in the labour market – as well as combined; the public saving and productivity measures are studied simultaneously. Finally, we study the combined effect of all the measures.

*Table 1. The 2014 Structural reform package*

	Measure	Effect
Education reform	Shorter funding for tertiary studies	0,5 year earlier participation
Pension reform	Incentives for later retirement	1,5 year later retirement
Labour market reform	Benefit reform	NAIRU cut by one percentage point
Public sector reform	Cuts in spending + productivity +0,5%	Up to €2 billion saved

Source: Ministry of Finance

### 4.2 Effects on output and employment

We now turn to the macroeconomic effects of the tax scenarios. Figure 5 shows the effects of the scenarios on employment compared to the baseline. The one per cent decrease in NAIRU results in a similar increase in employment in the long run; the increase in participation rates of the young and the elderly raises employment by almost as much. Combined, the two policies result in an almost three per cent rise in employment. In contrast, the public saving and productivity measures only have a passing effect on employment, which is natural since they mostly affect by freeing labour for other sectors.

The effect on GDP and output potential is shown in figures 6 and 7. The effects of the labour market measures is predictable – in the long run, the three per cent increase in employment turns into an equal increase in output, as investment increases to provide the new workers with capital. Remarkably, the effect of public sector measures is almost as large as that of the labour market measures, stemming in large part from the increased productivity growth in the public sector itself, but also from the shift of labour to the other sectors of the economy.

Figure 5

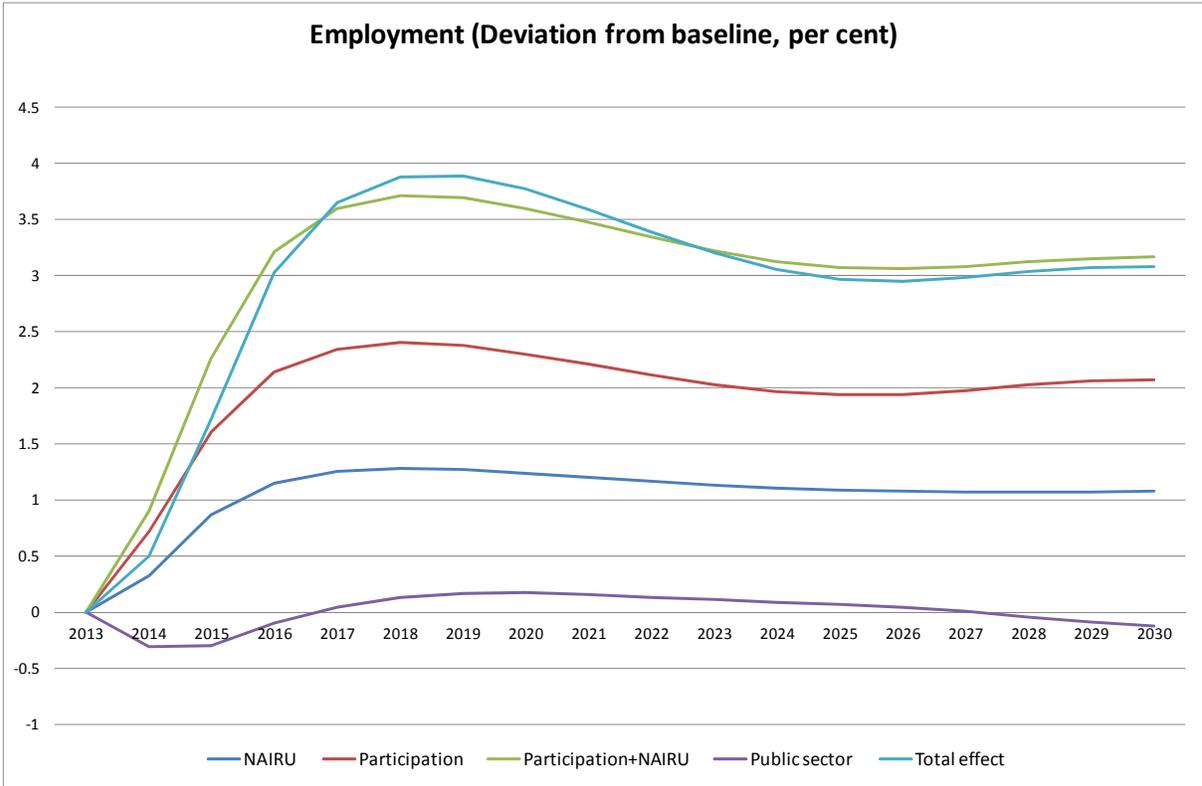


Figure 6

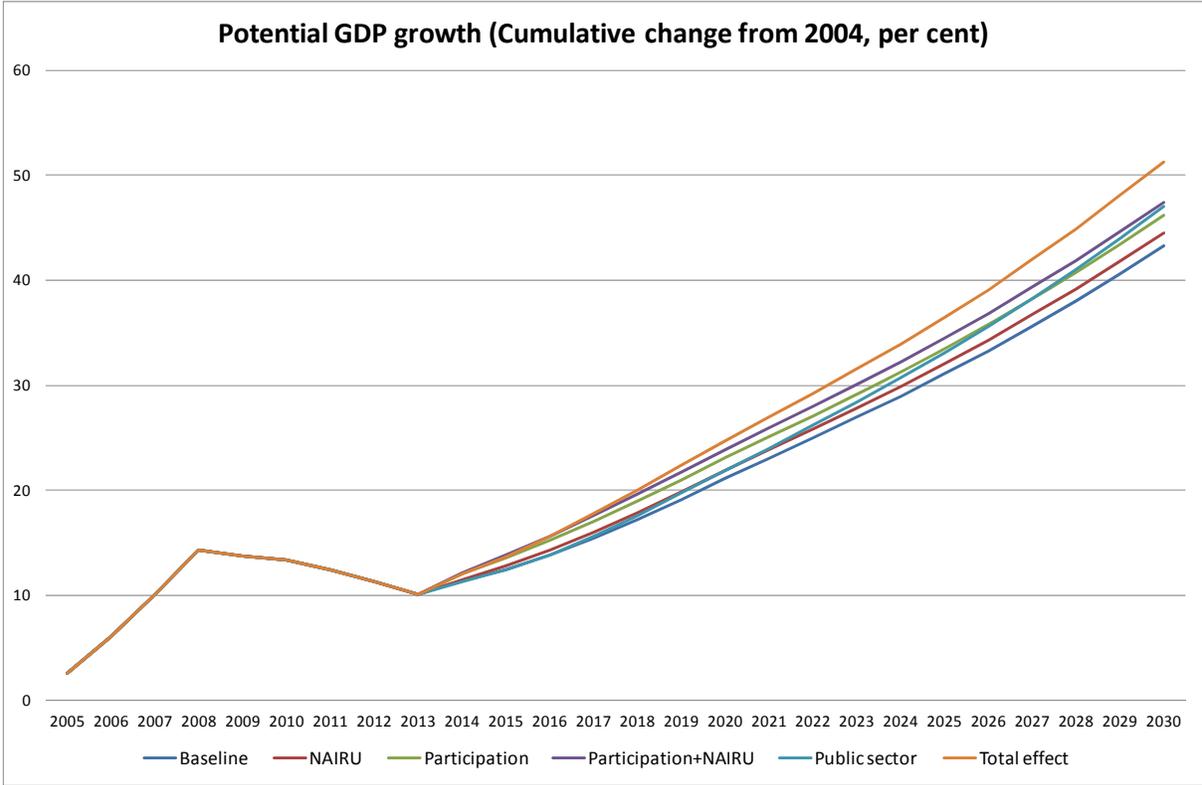


Figure 7

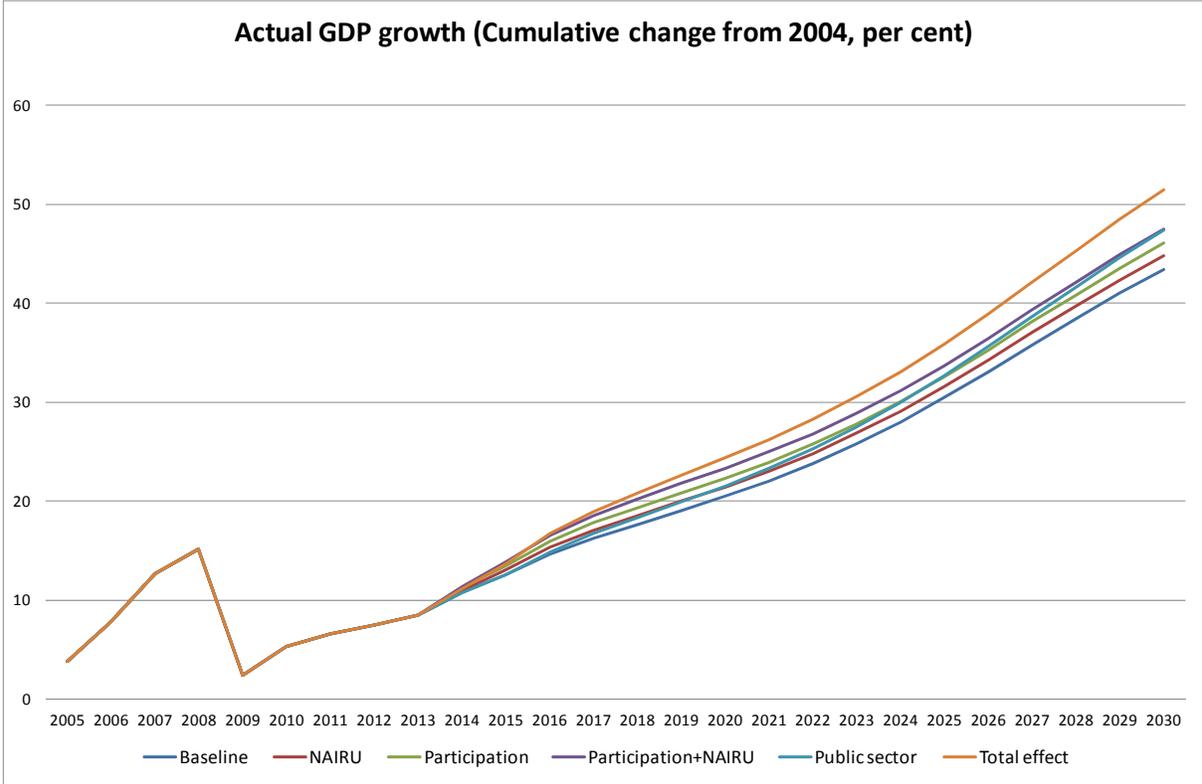
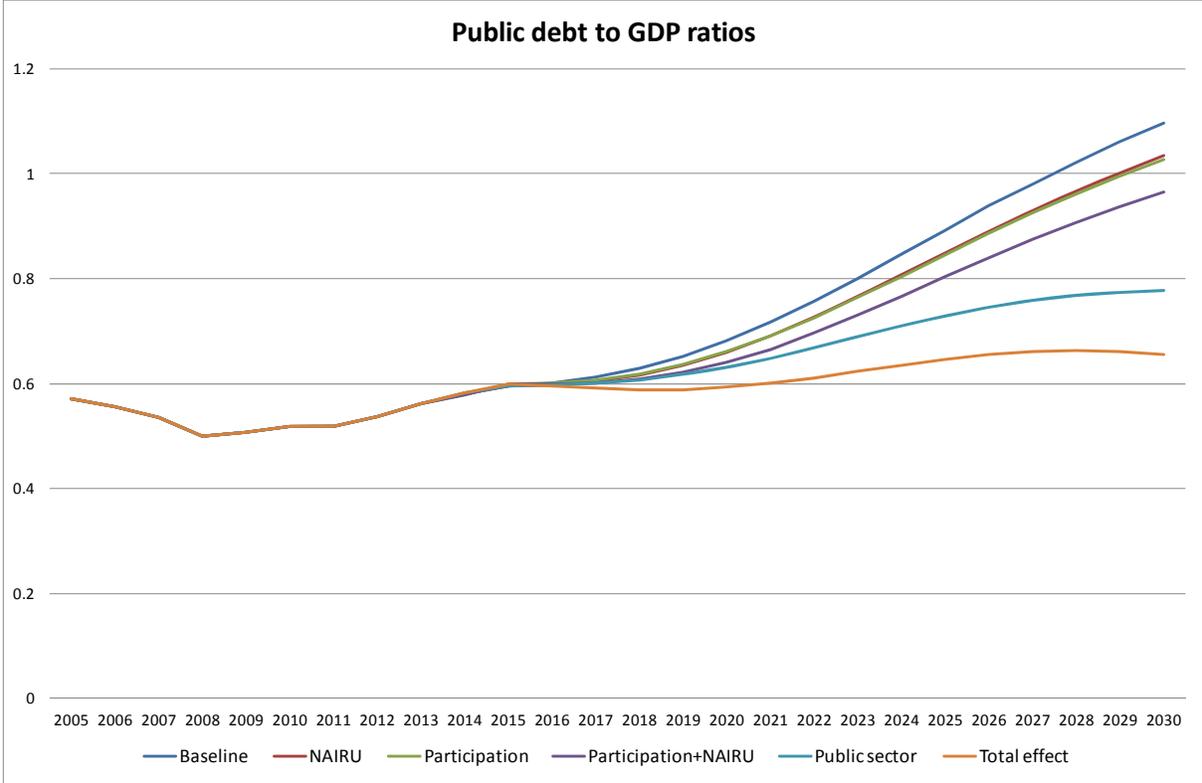


Figure 8



Finally, figure 8 shows the effect on fiscal sustainability, measured here with the ratio of overall public sector to GDP. In the baseline, the debt ratio becomes an issue almost immediately in 2014, as it would be likely to breach the EMU-mandated 60 per cent threshold by 2015 at the latest, and continue to rise without further measures into the future. The labour market measures help to lower the ratio especially in the short run, since they raise the level of GDP and also cut the growth of public transfers to the households; in the long run, however, the productivity measures in the public sector as well as the thrift in expenditures are more effective.

The central finding from the present study is, then, that it is not enough to concentrate on labour markets only, since while they may bridge the productivity gap, they scarcely affect the rate of growth in the long run.

## 5. Conclusions

We have studied the effects of the Finnish fiscal thrift and structural reform measures with the aim understanding their impact on long-run growth and fiscal sustainability. As a methodological point, we have incorporated the potential GDP framework in a multi-sector AGE model.

We find support for the view that structural change and the decline of manufacturing sectors' relative share may result in lower GDP growth for some years to come; with the age-related growth of the service sectors, it is unlikely that past levels of overall productivity growth can be maintained in the near future. This may necessitate more drastic fiscal measures.

The proposed reform policies aim at increasing labour supply on the one hand, and at curbing public sector growth whilst increasing its productivity. It is clear that the labour market measures, if successful, will increase the level of potential GDP but this will not suffice in the longer run, whereas the increased productivity growth of the public sector will contribute to overall productivity growth, as well as release resources for the use of other sectors.

The central finding from the present study is, then, that to tackle sustainability, it may not be enough to concentrate on labour markets only, since while they may bridge the productivity gap, they scarcely affect the rate of growth in the long run.

There is a caveat: the structural reforms will need to specify specific incentives and measures, and the public sector cuts will also have to be specified. For the moment, the reforms are not fully specified in these respects, and hence the evaluation of their welfare costs and societal efficiency will have to wait for more data.

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