Evaluating the welfare effects of public health care provision

- An integrated, regional AGE model for Finland

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Abstract

This paper uses register data on the prevalence and costs of health and social care services in the Finnish population to calibrate demand for health care services as an outcome of welfare maximization and public and private health and social care provision in a regional, dynamic CGE model of Finland. The approach can be easily incorporated in any CGE model that allows for some modularity particularly in the treatment of household demands. Our approach integrates register data on the age-, gender- and region-specific prevalences of social and health care measures to a dynamic, regional CGE model. The approach produces several new insights into the implications of an aging population on the care sectors and public finances.

1. Introduction

The aging of the population affects most European economies and challenges the sustainability of public funding in many of them. The problem is most visible in countries, where these services are publicly provided, such as the Nordic countries. The aging of the population constitutes a twin problem for the economy, when taking care of the growing elderly population ties up more labour in the care sectors while at the same time crowding out other service and manufacturing sectors. However, the provision of universally available health care is very much at the heart of the Nordic welfare state, but its sustainability has become an issue with the aging of the population, which is raising the old-age dependency ratio quite rapidly. Thus, while it may be generally accepted that the public social and health care systems need to be more efficient and in need of a reform, the reform is rather seen as a way to preserve the essence of the egalitarian welfare state. Our study concentrates on Finland, where a comprehensive reform of the public health and social care sectors has been in progress for more than a decade, with consecutive governments each having a go. The reform has been aiming at improving the efficiency of the sectors, and also at increasing the role of the private sector in the provision of social and health care. The methodological point of the paper, however, is not limited to Finnish institutions.

The struggle to accomplish a Finnish reform has introduced a huge research and policy evaluation agenda: while even in the future, the health care and social service sectors are to receive most of their funding from the public coffers, the allocation of the funding is to be based much more rigorously than previously on objective criteria, reflecting extensive register data on the costs, effectiveness and equitability of the provision of these services in different regions of the country. These data are also to form a basis for the estimation of future resource – personnel and funding – requirements, as well as the sustainability of the regional, public finances. In Finland, the National Institute of Health and Welfare is tasked with collecting most of these data and with monitoring the health care and social

service systems. The coverage of the data is unique, encompassing and linking data on individuals' health and financial records, as well as costs of service providers and administration, and also income transfers between the different agents. The tracking of the performance of the regional economies and the prediction of future public costs are to use regional simulation models in combination with register data. This paper uses the data to calibrate demand for health care services as an outcome of welfare maximization and public and private health and social care provision in a regional, dynamic CGE model of Finland. The approach can be easily incorporated in any CGE model that allows for some modularity particularly in the treatment of household demands.

Our approach integrates register data on the age-, gender- and region-specific prevalences of social and health care measures to a dynamic, regional CGE model. The approach produces several new insights into the implications of an aging population on the care sectors and public finances.

Projecting the demand for social and health care services on the basis of population forecasts alone, we find that, by 2030, the Finnish population would need almost a third more care services than it does at the moment. Aging alone explains more than 20 percentage of the growth in care demand, while population growth only accounts for a small share of the growth. The central innovation of the study is to incorporate this projection in a CGE model with endogenous decisions made by regional households on the demand for care services. This is accomplished by calibrating public service provision in households' utility functions. This calibration is made possible by our register data and opens up several research questions. First, we can interpret the effects of aging in terms of utility: Aging constitutes a deterioration in the utility of the households that necessitates a compensating increase in the demand of care services to maintain the current level of utility. Second, our methodology provides a way of measuring the evolution of regional equality. Finally, we can easily estimate the marginal cost of funds for public service provision in different regions with the help of the extended utility functions, allowing us to focus on efficiency issues. The integrated model also shows the resource costs of service provision in terms of potential growth.

The rest of the paper is organised as follows: The second section describes the models used in the study. We show how the provision of public health and social care are introduced in a regional CGE model as, first, consumer's choice of demand for care and, second, a choice between privately and publicly provided care. The extension allows us to offer an economic interpretation to the effects of aging and to analyse the reform in terms of efficiency and welfare.

The third section uses the extended REFINAGE model, a regional AGE model of the Finnish economy, to analyse the current reform. We consider two policy scenarios for the government to allocate the provision of public services based on criteria of efficiency and equity, and the alternatives for encouraging the role of the private sector by pricing public services.

The final section concludes and offers some suggestions for further research.

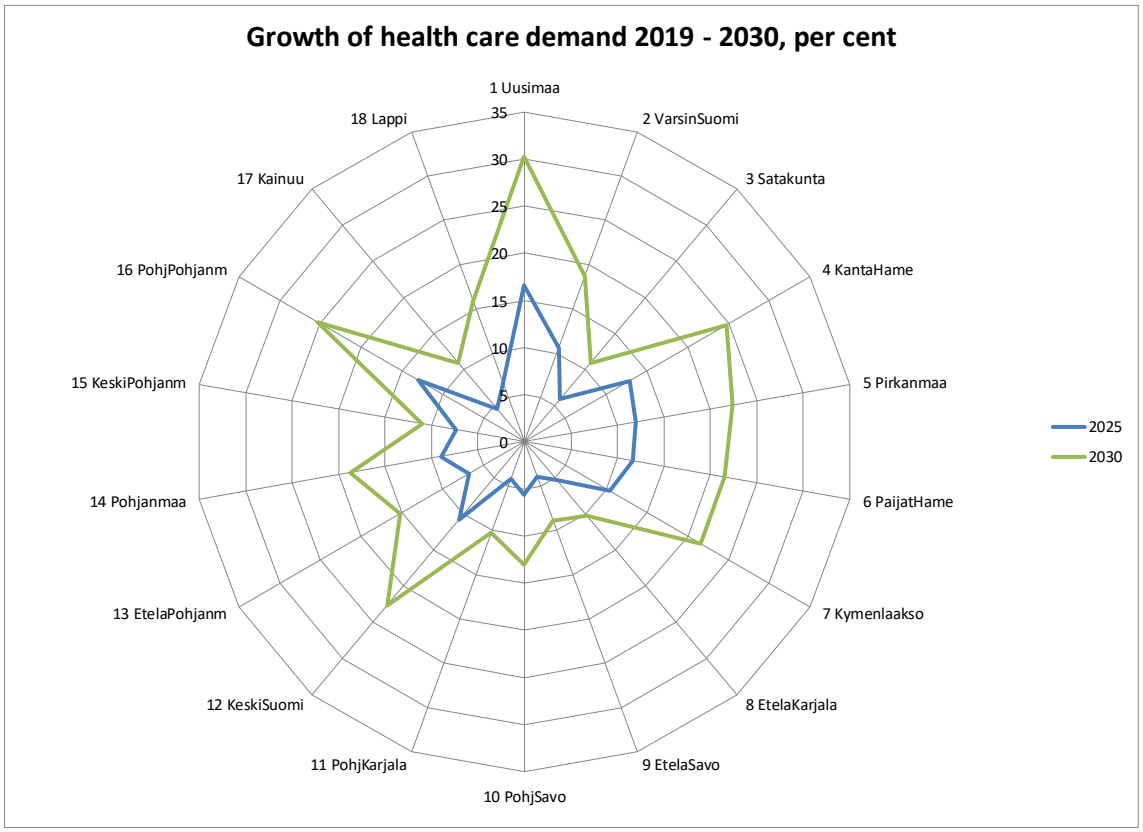
2. The REFINAGE and CHESS models

The main tools in our study are the regional REFINAGE model of the Finnish economy and the CHESS model of the Finnish health and social care provision.

REFINAGE is a development of the VERM model (Honkatukia 2013) which in turn is a derivative of the Monash and TERM models which essentially combines the rich MONASH dynamics to the regional CGE core of TERM-like models. The model and its precursors have been used to evaluate the effects regional policy reforms and to evaluate regional labour demand and education policies. In this study, we extend the model by including the provision of public health and social care in the regional households' utility function, following Honkatukia, Dixon and Rimmer (2011). A new approach here is treating the government-provided, free services as imperfect substitutes for market-provided services.

The CHESS model (Centre of Health Economics and Social Sciences within the NIHW) is an off-spring of the EU aging working group projections and is used for determining the baseline growth of social and health care volumes in connection with the assessment of fiscal sustainability. It has recently been extended to cover the health and social care sectors not only at the national level, but also at the regional level. The model is utilizing the detailed, region, age and gender-specific data on the prevalence of treatments and care over the entire Finnish population. While the model does not optimize the provision of health services, it does give a good first guess on how the aging of the population will change public expenditure on health care and social services. The model can also shed light on the possible effects of reforms via productivity gains in different parts of the country. In this study, we use the model's prediction as the baseline for care demand by the households. Figure 1 below shows this basic demand projection for the next decade.

Fig 1 demand for health services



As for the regional economies, the study uses the results from and extensive study of the long term development of the economy as its starting point (Honkatukia et al. 2018), using the industry level national forecasts to drive the regional forecasts in building a regional baseline, a device used in several earlier studies. Under this approach, the growth of the regional economies is determined in part by the exogenous demand for public services, the commodity level national forecast for export demand and world prices, the historical regional production capacity and the long-term availability of labour in different parts of the country. Population growth also plays a large part in the determination of the public-sector expenditures, since these are very closely connected with population growth.

Figure 2 below shows the population forecast for the baseline. It is clear that the population is concentrating in certain regions, such as Uusimaa, Pirkanmaa, Pohjanmaa, and also to Keski-Suomi, Varsinais-Suomi and Pohjois-Pohjanmaa. Uusimaa, the capital region, is home to a third of the Finnish population, and a further three of the six counties listed above also lie in the southern part of the country, which contains more than two thirds of the total population. Pohjanmaa and Pohjois-Pohjanmaa are much smaller in terms of total population but they are characterized by thriving medium to large businesses which serve to make them nodes of economic growth. The baseline then depicts a picture of regional concentration with growing demand for health care and social services, but also with strengthening public finances, whereas the most of the country is characterized by a shrinking working-age population and growing old-age population, accompanied with rising public service costs and deteriorating public finances. It is these problems that the on-going regional reform is geared to alleviate. Figure 3 shows the baseline forecast for regional GDP growth between 2015 and 2030. It is clear that GDP growth is closely mirroring population growth. Growth is mostly driven by technological change but the aging of the population entails a decline in working-age population which coincides with increasing demand for health and social care sector labour force, limiting the access to labour of sectors with higher growth potential.

Figure 1

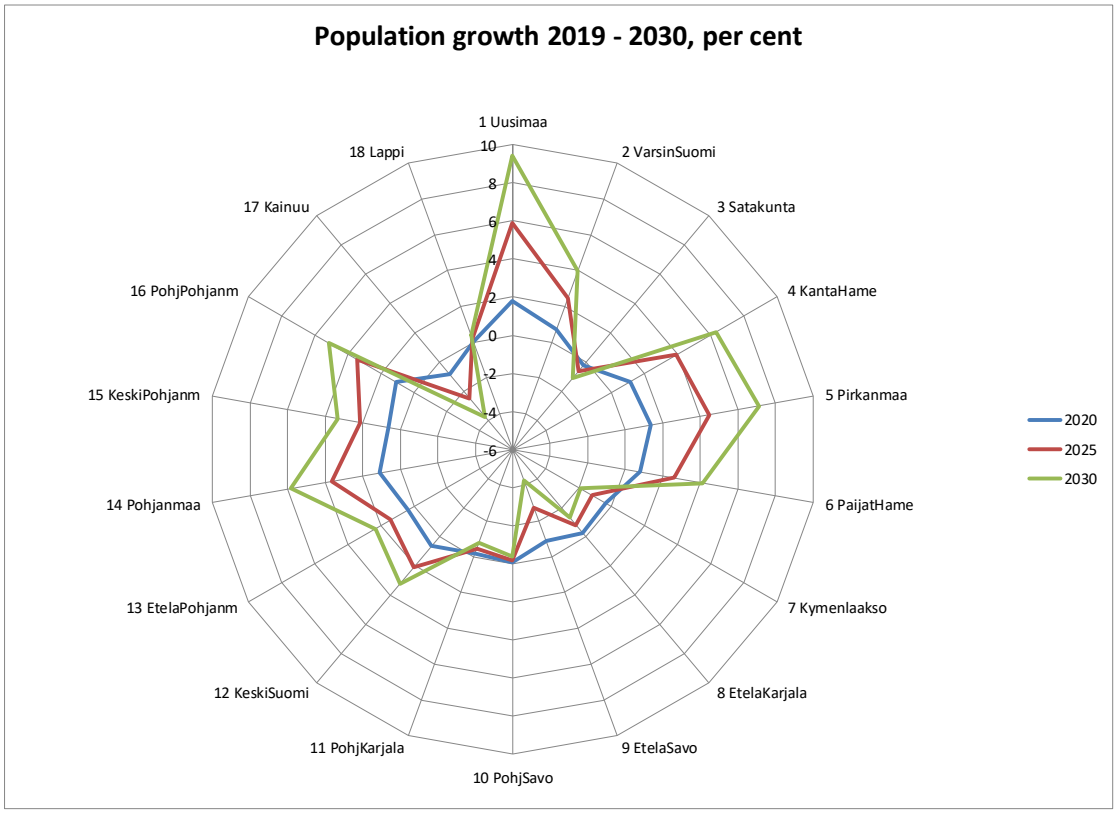
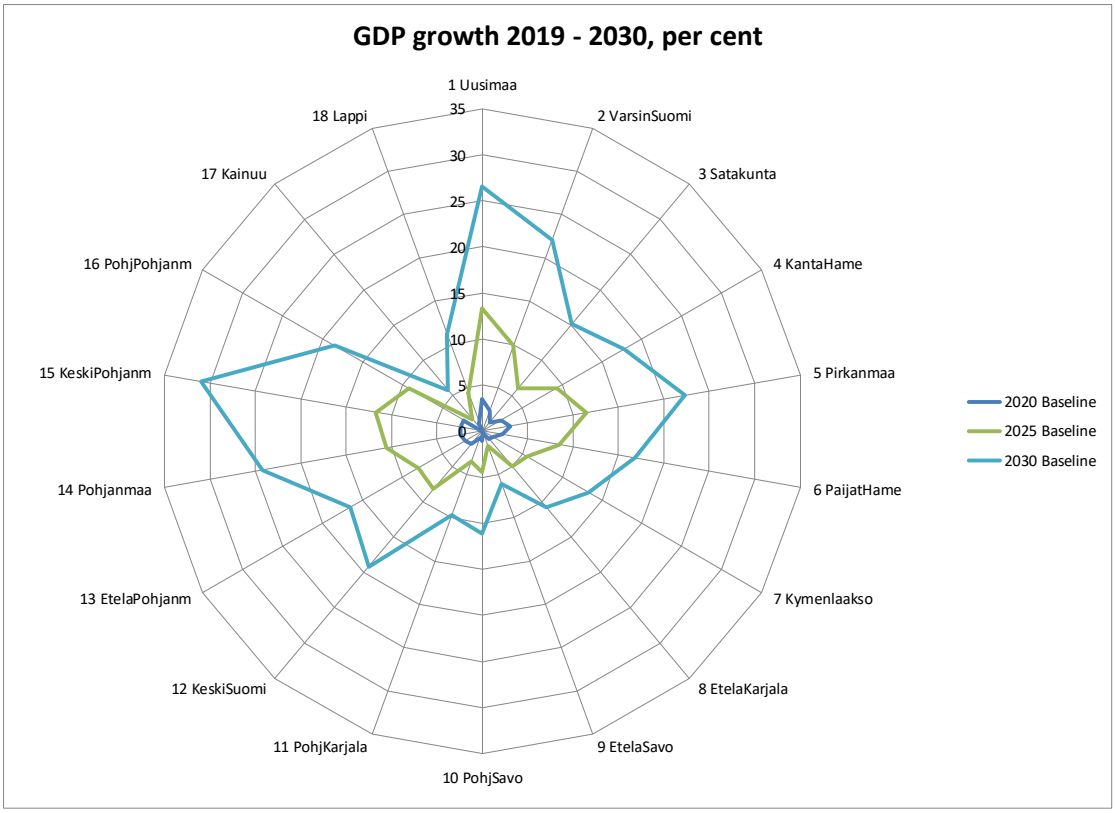


Figure 3



3. Policy scenarios

The study focusses on the effects of two likely outcomes from the health and social care reforms: the toning down of the provision of public care services (compared to the projected growth) firstly by adjusting the supply of the services; and second, by introducing pricing of the services. Neither of these changes are firmly cemented for the moment, but our scenarios do reflect realistic possibilities and it seems certain that both of these paths might be followed when the reform (re)gains momentum. The target for the reforms implies roughly a one per cent reduction in the rate of growth of care service provision, which would save about 1 – 2 billion euros by 2030.

We assume that both the municipal and central government financial stances are unaffected by the changes in care service provision. The difference between the scenarios rises from the presence of additional service charges in Policy 2, but not in Policy 1. Any savings generated by the reform are recycled to the regional households, but Policy 2 also generates extra revenues. In both scenarios, the households will want to compensate for the loss of free public services by demanding more of these services from the markets, but only in Policy 2, recycling the revenue will affect consumption demands. Figure 4 below shows the changes in regional care provision by 2030. In the Policy 1– scenario, the target is met with cuts in public demand for care services, whereas in Policy 2, it is the free provision of services that is being cut. Figure 5 shows the effects on household demand for care services. They increase, as the households compensate for the loss of publicly provided services. Here, there are marked differences between regions, reflecting their very different demographics. By and large, the Uusimaa region along with Varsinais-Suomi, Pirkanmaa and Pohjanmaa display population growth whereas in many other regions population actually shrinks. In all regions, the population share of the elderly is increasing, and since our policies assume uniform cuts in public share provision, the regions with more rapid growth of elderly population (and, consequently, the care thereof), display faster growth in demand.

Figure 4

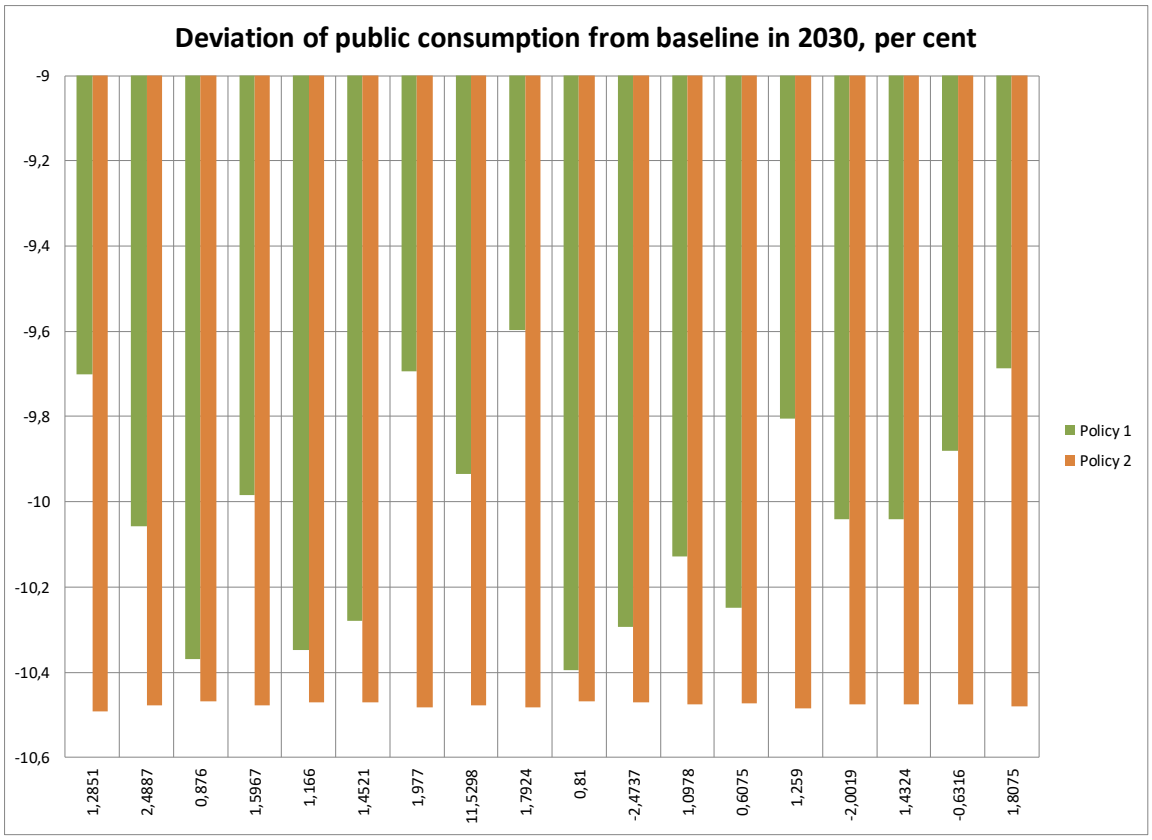


Figure 5

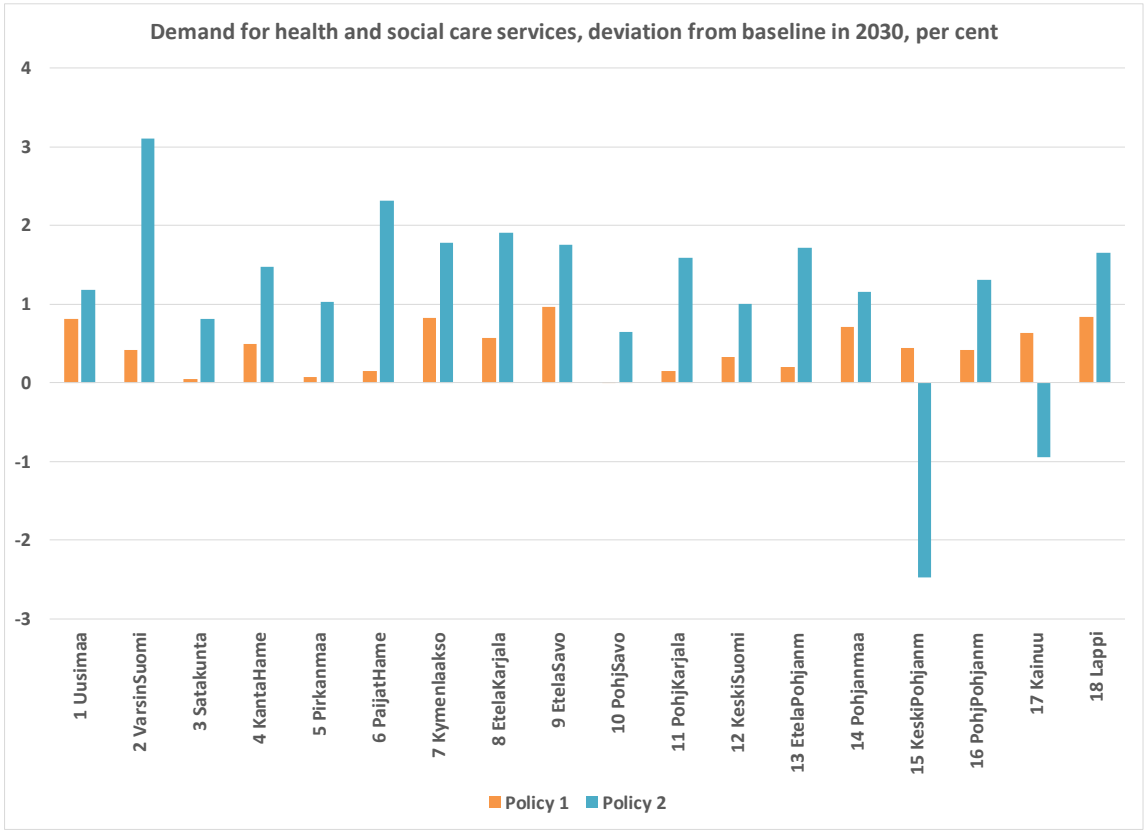


Figure 6 shows the effects on regional GDP in the two scenarios. In both scenarios, the cut in public service provision reduces crowding out and thus boosts the economy. In Policy 2, the recycling of the revenues boosts consumption additionally, and this provides a stimulus for the regional economy.

Figure 6

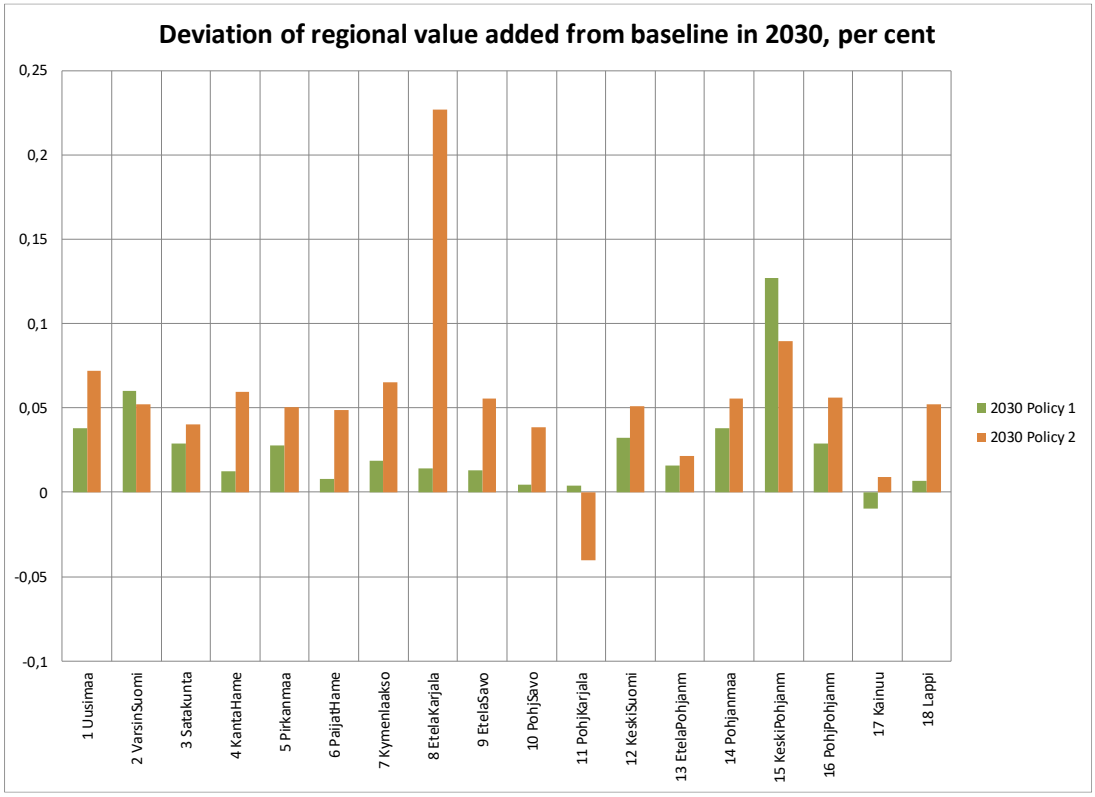
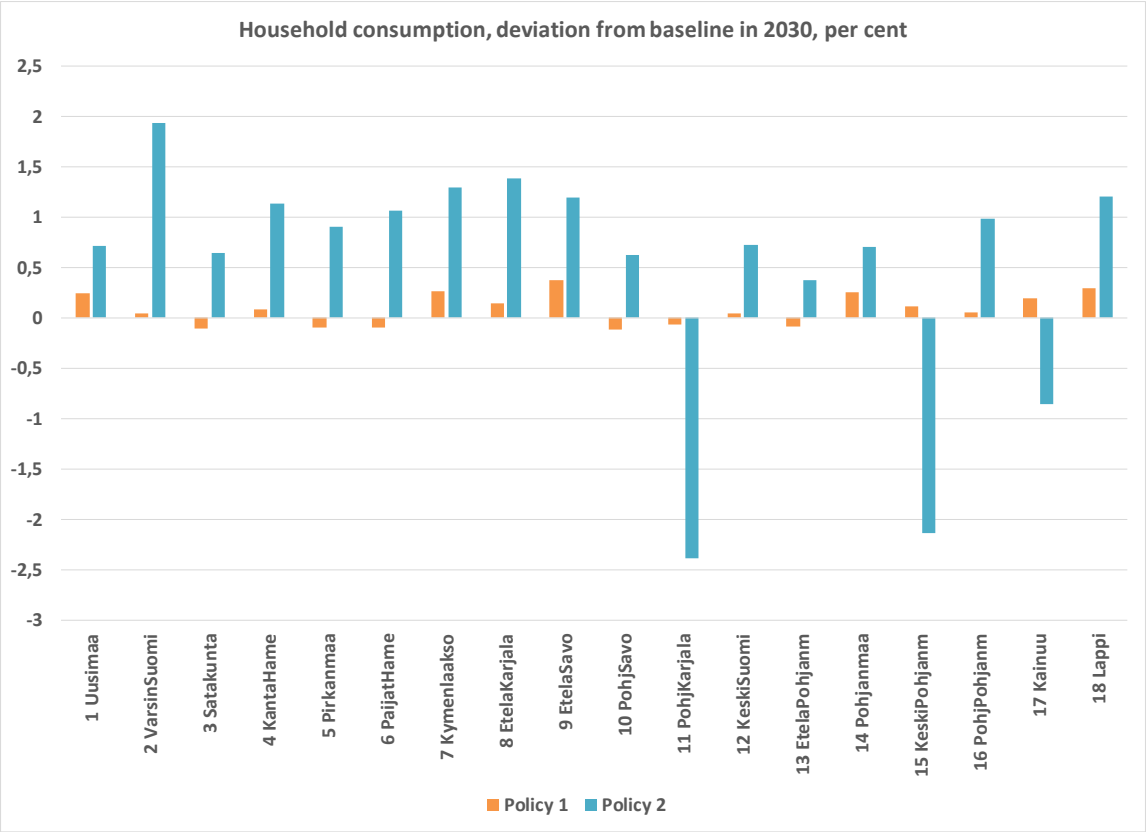


Figure 7 shows the overall effect on household consumption. Remarkably, because of the inclusion of the public services in the utility function, the change in household consumption here has the interpretation that it actually reflects changes in household utility inclusive of the public services. Figure 7 then shows that, in utility terms, the uniform cut in public services studied here would increase regional differences in Finland. Three counties would be losing in terms of household utility. These three counties are among those with the smallest and oldest populations, and their old-age dependency ratios are the highest in the country.

Figure 7



4. **Conclusions**

Finland is attempting to secure the essence of the model by studying an extensive reform of health care and social service sectors. The full extent of the reform is yet to be defined – with the government falling trying - but it seems clear that it will result in a geographically more concentrated, if also more de-regulated, provision of many welfare services. It also seems very likely that a reform will attempt to curb the rate of growth of service provision. In this paper, we have studied two different ways of achieving this. We find that introducing an element of choice may generate revenue that could be used to smoothen the cost of adjustment. It may, however, aggravate regional differences unless these differences are taken into account in the planning of the reform.

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