GWS SPECIALISTS IN EMPIRICAL ECONOMIC RESEARCH

GWS DISCUSSION PAPER 2016 / 04

Measuring the conditions for participation in Germany for the next few years

An application of the TBI

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Impressum

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TITLE

Measuring the conditions for participation in Germany for the next few years – An application of the TBI.

PUBLICATION DATE

DISCLAIMER

Opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the GWS mbH.

FUNDING (OPTIONAL)

The results at hand have been prepared in the course of the research project soeb 3 for the Ministry of Education and Research.

PUBLISHER OF THE GWS DISCUSSION PAPER SERIES

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Heinrichstr. 30

49080 Osnabrück (Germany)

ISSN 1867-7290

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1 INTRODUCTION

Within the research project “socioeconomic reporting” (Sozioökonomische Berichterstattung, soeb 3) the socioeconomic modelling (soem) (Drosdowski et al. 2014) provides data based evidence on socioeconomic interrelations and developments. The focus lies on the macro and meso level. In order to assess the socioeconomic changes, a reference value has to be chosen as a baseline. One possible reference point is participation – a measure that represents individual welfare in the research network. However, participation is perceived in the life of individuals and is individually experienced. Analyses should hence be conducted on a micro level. But the individual welfare positions cannot only be explained by an exclusive focus on the individual level. Reasons and explanations for accomplished or changing individual participation can rather be found on the meso and macro level because at this more aggregated level social resources for participation are generated and distributed (Mayer-Ahuja / Bartelheimer / Kädtler 2012:15). In other words, while on the micro level the realisation and changes of (individual) participation can be shown, the macro and meso level offers the opportunity to describe the development of participation conditions. Participation conditions are not the same as participation itself as they represent only possible existing capacities for participation. Depending on how the conditions are used and transformed by the society, the (realised) participation of different population groups can change. The aim of this paper is to offer an indicator, that measures the existing and changing conditions of participation.

Indicator systems and composite indicators are suitable for illustrating complex multidimensional problems (OECD 2008: 13). In order to achieve high credibility and acceptance of the indicator system or the composite indicator, it is important to make the design and combination of the individual indicators transparent (ibid.: 19). The high degree of freedom in the construction of such composite indicators require a detailed documentation of the individual steps and decisions taken: from the selection of indicators, over the interpretation, to the point of the aggregation of the single indicators to an indicator system. A huge variety of indicator systems for many different aspects already exists. In particular, sustainability is often measured by indicator systems.[1] While most of the existing sustainability indicators focus on the economy and/ or the environment, the proposed composite indicator emphasizes the socioeconomic side and tries to contribute to the measurement of social sustainability. It takes into account the postulation of the Stiglitz-Sen-Fitoussi-Commission to construct more group-specific indicators and to use projections for the assessment of sustainability (Stiglitz / Sen / Fitoussi 2009).

The remaining paper is structured as follows. In the next section the steps that led to the composite indicator on participation conditions are described. In section 3 the composite indicator is applied to German data. Also, past and projected results are given. Section 4 gives a conclusion.

[1] See e.g. the sustainability indicators calculated by the Federal Statistical Office on behalf of the Federal Government, by Eurostat or by the OECD.

2 THE INDICATOR TBI

Indicator systems and composite indicators are suitable for illustrating complex multidimensional problems, but their acceptance depend on the transparency and traceability of the design (OECD 2008). The crucial basis for the credibility is the choice of the data set. The underlying data has to be reliable, regularly updated and representative. Moreover, the data should be projected by means of economic modelling in order to get an impression of the development of the composite indicator. Hence, the proposed indicator TBI that measures participation conditions consists of different indicators resulting from socio-economic modelling (some) using official data from the Federal Statistical office. In this section the most important features and modelling details of the TBI are given.

2.1 MODELLING BACKGROUND (SOEM)

The composite indicator TBI consists of a set of single indicators that are calculated and projected using socioeconomic modelling (soem) (Drosdowski et al. 2014). The data set of soem rests upon official macro- and meso-economic data as well as accounting systems (System of National Accounts and Balancing Items, SNAB) mainly provided by the Federal Statistical Office. The structure of the data set offers the opportunity to understand and analyse macro-economic and structural changes. On the meso level it encompasses different socioeconomic household types, various economic sectors, 41 consumption purposes etc. Overall, soem can be assigned to the macro-meso modelling level (Voßkamp/Schmidt-Ehmcke 2006: 34). As a result, it cannot show the realisation of participation that happens on an individual level. Rather, it displays and forecasts the conditions under which participation can be realised. The main contributions are:

1. Indicators of participation conditions for the past relying on official data from the Federal Statistical Office.
2. Projections of the indicators by means of econometric modelling.
3. The explanation of changes and the assessment of policy measures by means of impact and scenario analysis.

The construction of the TBI comprises several steps shown in Figure 1. Starting with many single indicators, they are sorted and merged to sets of indicators for eight major topics. These topics then are weighed and aggregated to the composite indicator for participation conditions called TBI.

Figure 1:Steps from single indicators to the TBI

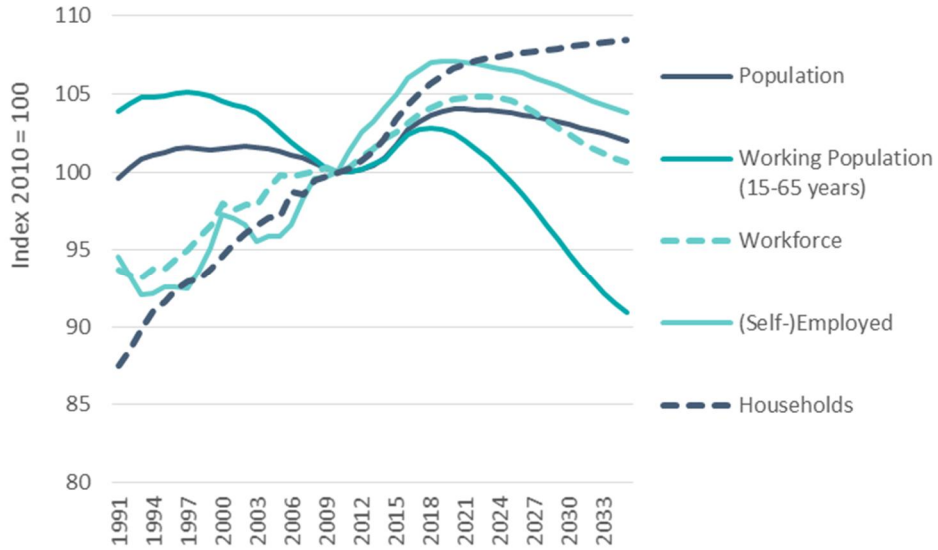
Source: GWS own figure

2.2 CHOICE OF INDICATORS AND AGGREGATION PROCEDURE

Indicators can either be single quantities (such as GDP), or they result from the interdependent relation between two values. Examples for relation-based indicators are value added of the production sector in relation to GDP, salaries in relation to other income components or GDP per capita. In the context of participation changes of quantities relative to households, population groups or single persons are concerned. Other fields of interest are structural changes in the composition of production facilities, consumption or income that can explain observed changes in individual participation. Thus, the single indicators that lead to the composite indicator TBI mostly represent interdependent relations using different reference parameters.

The units that serve as socioeconomic reference are persons (population), working population (persons aged 15 – 65 years), workforce (number of persons from the working population that are willing to work), (self-)employed persons (workforce minus unemployment) and households. The references differ depending on the time horizon (see Figure 2). While the number of households continue to increase during the whole time period taken into account (1991 – 2035), the other parameters show a split behaviour by first growing and then declining. More importantly, the opposite behaviour of the reference parameters only shows in the projection period emphasising the importance of forecasting the indicators. Because if the estimation of future participation conditions were based on the status quo, it would lead to completely different results. Moreover, the changing development of the reference parameters in Figure 2differ in speed and magnitude. The choice of reference for each indicator therefore influence its results, its interpretation and should hence be carefully chosen.

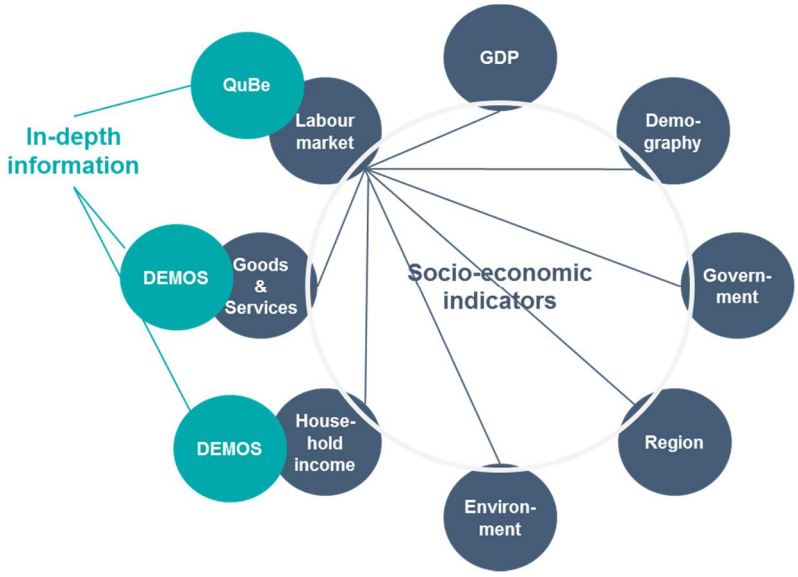
Figure 2: Development of socioeconomic reference values 1991 - 2035



Source: Federal Statistical Office, INFORGE, own calculation and figures.

The major 8 topics that build the set of indicators are shown in Figure 3. The selection was based on the areas of existing sets of indicators (German Council for Sustainable Development, EUROSTAT, OECD et al.), the economic areas that are influenced by demographic change and the research areas within the soeb 3 network. The aim was to consider all different kinds of aspects to include various perspectives regarding participation conditions.

Figure 3: Major topics – set of indicators



Source: own figure.

More than 250 single indicators have been assigned to the eight major topics. In detail, the distribution criteria were:

1. Labour market: indicators referring to the dimensions wages and salaries, em-

ployed persons, labour time and industrial sectors[2].

2. GDP: indicators for the use side of the SNAB (consumption, investment and foreign trade) and the origin /output side of the SNAB (value added by economic activities).
3. Demography: indicators related to the composition of the population (size, structure), households (age structure and size), working population (age structure) and (self-) employed persons (age structure).
4. Government: indicators representing public revenues (taxes) and public spending (e.g. health care).
5. Region: indicators for each of the 16 German Federal Länder showing the number and structure of the (self-) employed, GDP per capita, economy and private households. The data set is compatible with the SNAB on the national level. The aim of these indicators is to indicate regional disparities and structural differences.
6. Environment: indicators related to consumer and imported goods with high resource input and indicators for land use.
7. Private household income: indicators for income components (e.g. wealth, disposable income) and different household types (e.g. self-employed, employees, pensioners).
8. Goods and services: indicators for private household consumption and consumer durables (dwellings and cars).

In a joint coordinated process the research network soeb 3 has reduced over 250 single indicators to the essential ones.

It is possible to assess changes in participation conditions by looking at each single indicator separately. However, it is only a restricted assessment as it is implicitly assumed that each indicator changes independently of others (ceteris paribus condition). Yet, the change of an indicator may have consequences for other single indicators (in its own as well as in other thematic fields). A large living room e.g. can (ceteris paribus) improve the conditions for participation in the topic “goods and services”. Simultaneously, the indicator land use in the topic “environment” will be negatively affected since the bigger space of living may in turn reduce participation opportunities. The selected single indicators should hence allow for interrelated/ interdependent effects and a reference system. The selected single indicators were therefore transformed to make their dynamics and changes comparable with each other: upper and lower bounds were applied to the growth rates of each single indicator. Based on the bounds, the growth rates were converted into a measurement system ranging between -50 and +50 points. Afterwards, the single indicators within one major topic were aggregated to one field indicator representing the respective topic. Together, all field indicators form the indicator set on which the composite indicator TBI is based on.

[2] The definition and classification of the industrial sectors correspond to the Statistical Classification of Economic Activities in the European Community (NACE Rev. 2 2008).

In detail, the aggregation procedure works as follows: An unweighted unconditional aggregation of single indicators to one field indicator is only possible if all single indicators always show in the same direction. As soon as the single indicators give opposite signs, i.e. some have positive and others negative growth rates, a straight assessment of the total development in one major topic is not possible any longer. In this case, a weighing scheme has to be applied. To keep the procedure simple, an equal weighing of all single indicators was assumed as a standard method. Exceptions were made for single indicators that are very similar but highlight different demographic dynamics.[3]The same applies to indicators representing shares in identical dependent variables. In both cases, those indicators share one weight in the field/ topic indicator.

The TBI finally results by aggregation of the field indicators. Every major topic has the same weight, i.e. equal weighting is assumed as well at this level.

3 APPLICATION AND FIRST RESULTS

In the beginning of the 1990ies, participation conditions were generally good due to the aftermath of the German reunification and its extra boom. From then onwards, conditions were slowly declining, reaching their lowest values in 2006 after the economic downturn and the bursting dotcom bubble (see Figure 4). Since then, participation conditions have shown a general upward tendency again benefiting from the persistently good economic situation. The projection results suggest that the improvement of participation conditions continues till the end of 2016. Afterwards, the TBI will gradually decline reaching the zero line in 2021, which is mainly caused by a slow-down of the initially very positive economic situation. However, participation conditions are not likely to decline to a level as low as in the mid- 2000s.

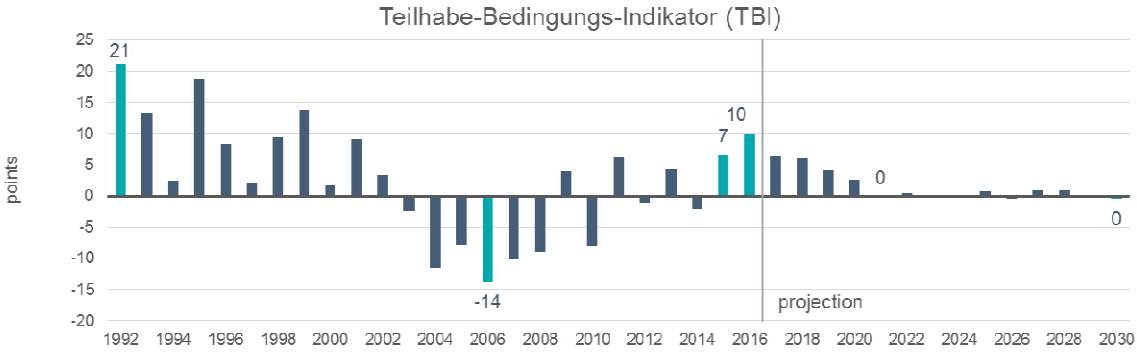
From the 1990s to 2005 the main positive driver for the TBI were the field indicators GDP and Goods and Services (see Table 1). The positive impact of GDP was mainly driven by an increasing importance of exports. The exported goods were predominantly produced by manufacturing industries resulting in a rising discrepancy between productivity growth and wage raises. Additionally, unemployment was increasing putting pressure on the public budget. Gradually, private household incomes lost their positive impact on the conditions of participation. The lower income growth compared with that of industry productivity also affected the private demand resulting in a delayed decline of the indicator “goods and services”. Overall, participation conditions were continually getting worse during that period.

In the following period from 2010 to 2015, the former drivers, “GDP” and “goods and services”, changed towards “income”, “labour market” and “government”. Wages and employment have improved again strengthening the first two indicators. More people can

[3] For example, the growth rates of private consumption per capita differ from those per household due to changes in household formation. However, the general development of private consumption expenditures is similar for both indicators.

realise their desire to be employed again and the wage difference between manufacturing industries and services are not growing in the same pace as in the previous 20 years. The household income is growing offering the opportunity for consumption and relieving the public budget by increasing tax returns. The insufficient supply with dwellings and high energy prices have a negative effect on private households and hence result in a negative impact of the indicator “goods and services”. The indicator “GDP” has no positive influence on participation conditions as the degree of openness and the related risks continue to increase.

Figure 4: Development of participation conditions (TBI) 1992 – 2035



Source: soem, own calculation and figure.

The indicator “demography” has almost always a negative effect due to the ageing population. Even the high net migration to Germany since 2010 has no long-lasting slow-down effect on demographic change. This is manifested in the declining population size and its ageing. The indicator Environment is opposed to the TBI: Favourable conditions for participation usually go along with a higher burden on the environment and vice versa.

Table 1: Impact of the field indicators on the TBI for selected years

	1995	2000	2005	2010	2015	2020	2025	2030
Demography	++	–	–––	–	–	–––	–––	–––
Income	+++	––	–––	–––	+++	+++	+++	+++
Goods and Services	+++	+++	+	–	–	–	–	–
Labour market	++	–	––	–	+++	++	++	++
Government	–	+	+	–––	++	++	++	+
GDP	++	++	++	+	–––	––	––	––
Region	+++	––	–––	–	+	–	–	–
Environment	–––	++	+++	+	–––	–	++	+

+++ values≥ 20, ++ values ≥10 and <20, + values ≥ 0 and <10

––– values ≤ -20, –– values > -20 and ≤ -10, – values > -10 and <0

Source: soem, own calculation and figure.

In the projection period from 2015 onwards the full impact of demographic change unfolds and leads to the overall reduction in possibilities for participation: the number of persons in

working age is declining putting pressure on the labour force. The desire for less working time cannot be longer fulfilled but rather the annual working hours has to be increased. This weakens the overall positive effect of the indicator “labour market”. The public budget is increasingly used for age-based spending such as pensions, health-care and long-time care. Thus the indicator “government” diminishes as well over the projection period. Additionally, speed and extent of the ageing process differ between the German regions. The regional disparities will therefore grow so that the positive conditions for participation more and more depends on the place people live.

4 CONCLUSION

The indicator TBI offers the opportunity to connect economic quantities such as growth rates with soft factors such as participation opportunities and thus combines economic projection methods with sociological concepts. The results give indications about future changes on participation conditions against the background of their historical development. The single field indicators also allow for the identification of the drivers for the progress and help to understand interactions and mutual dependencies between different fields.

One additional area of application for the indicator are scenario analyses. The TBI can be used to evaluate the simulation results in the context of changing participation opportunities. This can be helpful in the assessment of different policy measures or extrinsic changes e.g. in global trade.

Further work on this subject aims at linking the indicator results to the micro level. By bringing the different concepts of participation opportunities and realised participation closer together may help to find disturbed transformation mechanisms.

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