Socio-economic consumption modelling in an input-output model

Thomas Drosdowski

Britta Stöver

Marc Ingo Wolter

Gesellschaft für Wirtschaftliche Strukturforschung mbH

Heinrichstr. 30

D - 49080Osnabrück

Corresponding author:

BrittaStöver (stoever@gws-os.com)

Tel.: +49 (541) 40933-250

Fax: +49 (541) 40933-110

Internet: www.gws-os.com

Address of the authors

Thomas Drosdowski

Gesellschaft für Wirtschaftliche Strukturforschung (GWS) mbH, Heinrichstr. 30, 49080 Osnabrück, drosdowski@gws-os.com

Britta Stöver

Gesellschaft für Wirtschaftliche Strukturforschung (GWS) mbH, Heinrichstr. 30, 49080 Osnabrück, stoever@gws-os.com

Marc Ingo Wolter

Gesellschaft für Wirtschaftliche Strukturforschung (GWS) mbH, Heinrichstr. 30, 49080 Osnabrück, wolter@gws-os.com

Title

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ABSTRACT

Private household demand is one of the main economic sectors. The underlying household structure determines income components and consumer behaviour. Changes in the population composition by demographic change or in the income structure by redistributional policy measures for example affect the amount and the structure of consumer goods and services. Socioeconomic information should hence be considered when modelling demand. The contribution likes to present a modelling approach that provides a possibility to integrate more advanced socio-economic structures in a macroeconomic model environment. The socioeconomic consumption module includes detailed information on consumption purposes and income components from the German Household Budget Survey (Einkommens- und Verbrauchsstichprobe (EVS)). The social dimensions are social status linked with household size. The module interacts with the macro-econometric input-output model INFORGE so that the inter-related macroeconomic effects of social characteristics can be shown.

TABLE OF CONTENTS

1   SOCIO-ECONOMIC ANALYSIS FROM AN ECONOMIC PERSPECTIVE

Socio-economic analysis can be understood and described from both economic and social perspective, i.e. different methodical tools and concepts can be applied to the very same aspects. Objects that can be addressed encompass on the one hand people or social groups living in households and making decisions regarding their lifestyles, consumption or children (fertility) under given institutional circumstances. On the other hand, people or social groups are part of production activities generating income. Usually, this takes place by labour markets. Both areas are characterised by distributional inequalities and different participation opportunities.

The focus in this contribution lies on economic modelling opportunities concerning household consumer behaviour. The social perspective is indirectly taken into account: The proposed method will be employed within the research project soeb 3 funded by the Federal Ministry of Education and Research (BMBF) that aims at analysing the social development in Germany (Sozioökonomische Berichterstattung, Reporting on socioeconomic development, http://www.soeb.de/en/). soeb 3 is the third report of this kind, scheduled for completion in 2016. Socio-economic modelling has been previously used in different forms for projections in soeb 2 (2006-2012, see Drosdowski & Wolter 2008, 2012).

Private households can be considered as one of the central institutional sectors of the economy. Their consumption behaviour, expectations towards government (provision of social service, infrastructure, education etc. or redistribution of income) and labour market behaviour affect the other economic sectors. The heterogeneity of consumption across private households, driven by income inequality as well as other socio-economic characteristics such as age, status or household size has significant macroeconomic consequences. Examples include housing, health products or purchase and use of vehicles. Households do not only affect other economic sectors but they have to adapt and react to economic changes as well. Shifts in production structures affect private households by alterations in the labour market and changing prices. The government redistributes household incomes by transfers, taxes and levies on social benefits, in order to avoid considerable income differences between household groups that can be a source of discontentment and social tensions.

To reveal social imbalances, the consequences of demographic change or the effect of policy measures for example, economic models considering socioeconomic characteristics should be preferred over aggregate models. The presented method at hand offers the opportunity to track socio-economic changes in Germany until 2030 from a macroeconomic perspective. We concentrate on income generation and private household consumption on a high level of detail differentiated by a variety of household groups. The resulting socio-economic consumption module interacts with the macro-econometric input-output model INFORGE so that the inter-related macroeconomic effects of social characteristics can be shown.

The text is structured as follows. Section 2 gives the motivation for the integration of socio-economic information in economic models and offers a possible methodology to do so: Subsection 2.1 states the importance of household consumption for the economy.

Moreover, it shows why it is worth looking at consumption and income structures differentiated by socio-economic characteristics. Subsection 2.2 describes a way to integrate disaggregated household data into a macroeconomic model. Section 3 concludes.

2   SOCIO-ECONOMICMODELLING OF PRIVATE CONSUMPTION

Household-specific consumption behaviour is of interest for understanding various social and economic issues. The "Report on Poverty and Wealth" of the German Federal Government (for the latest edition see Federal Ministry of Labour and Social Affairs 2013) for example uses the information on incomes and consumption expenditures by different household types in the context of social participation. Other important subjects related to private consumption include sustainability, redistribution or implications of demographic change. Many of these topics can be analysed by means of advanced socio-economic modelling, which will be presented in section 2.2. The following section discusses the importance and structure of private consumption in Germany.

2.1   PRIVATE CONSUMPTION IN GERMANY

2.1.1   IMPORTANCE AND STRUCTURE OF PRIVATE CONSUMPTION

The German consumers are sometimes criticised for their extensive saving behaviour with saving ratios of more than 10% of the GDP. The low propensity to consume is also often used to legitimate the importance of the German export sector and the high trade surplus[1]. Nevertheless, private consumption is still the main component of GDP in Germany: it has been contributing around 61% to domestic uses since the beginning of 2000 (Federal Statistical Office 2014). In 2013 final consumption expenditures of private households[2] summed up to 1.6 trillion Euros (ibid.)[3]More than half of the expenses that are spent by private households domestically are for groceries ("food, beverages and tobacco"), habitation ("housing, water, electricity, gas and other fuels") as well as "transport and communication" (see Figure 1). The importance of these three consumption purposes has persisted ever since 1991. However, the single weights of the different consumption purposes experienced a shift between 1991 and 2013: while habitation gained importance (+5.1%-points), the shares of groceries and "transport and communication" declined by

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[1] For a discussion of the trade surplus and the low consumption expenditures see for example van Treeck (2013), Schrooten, &Teichmann (2010), Stockhammer et al. (2011).

[2] Private households include non-profit institutions serving households (NPISHs). The latter have only a minor share of 3% (2013) of the total consumption expenditures.

[3] In comparison, exports reached 1.4 trillionEuro, the trade balance being a trade surplus with 174 billion Euros (Federal Statistical Office 2014).

2.5%-points and 0.7%-points respectively. Other consumption purposes that were reduced in the average consumption bundle are "clothing and footwear", "furnishings, household equipment" as well as "recreation and culture". In comparison, proportional expenditure increases were observed for "hotels and restaurant services" as well as "other services". The changes in the consumption structures can be partly explained by changes in income (necessary versus luxury goods). In addition, socio-economic characteristics of the household such as size, social position, age etc. play an important role in changing consumer behaviour. The next subsection gives an overview of differences in income and consumption expenses across different household groups, defined by these characteristics.

Figure 1:   **Composition of private consumption expenditures for 1991 and 2013**
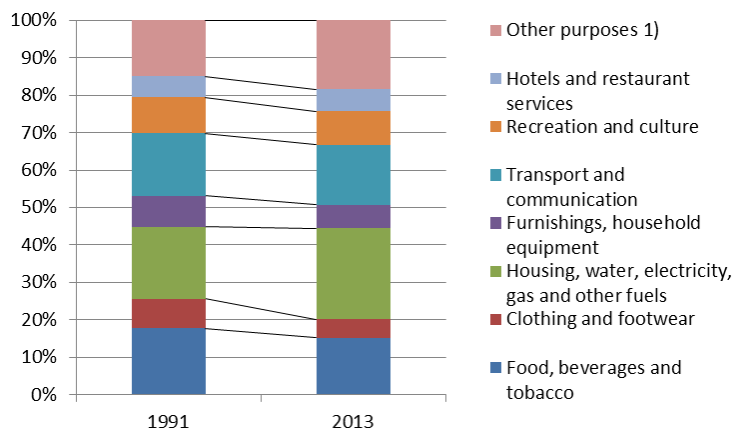
1) *Other purposes include health, education, personal care, personal effects, social protection,*
   insurance and financial services, other services

Source: Federal Statistical Office (2014), own calculation.

2.1.2   CONSUMPTION AND INCOME ACROSS HOUSEHOLD GROUPS

The consumption behaviour of households varies with their income, preferences and needs. This variation can be shown by data that differentiates between households, based on socio-economic characteristics of their main income earner. In some cases, different characteristics coincide with similar behaviour because the same households are addressed. Families for example are often big households with three or more members and can be found in middle age groups. Bigger households are mostly in higher net income groups as there are most probably two income earners. Pensioners can typically be found in small households and in the age groups of 65 years and older. Employees are often in the higher income groups etc. To keep matters simple, only some aspects – household size, social status and household income – are selected to show the differences in consumption expenditures and income composition.

The bigger a household is the more it spends on consumption (see Figure 2). However, the increase in consumption expenditures is not linear in household size and the bigger households can benefit from economies of scale. A 2-personhousehold consumes only 1.8 times more (in Euros) than a single household. The gap per capita increases with the household size resulting in only 2.6 times more consumption for a 5+-person household compared to a single household. The economies of scale become particularly apparent for the share of habitation expenditures in total consumption. Living alone implies that, on

average, 38% of total consumption has to be devoted to housing, water and energy. This share reduces to 32% for a 2-personhousehold and 30% for even bigger households. The opposite case can be observed for groceries, clothing, transport and education. The consumption shares of these purposes increase with growing household size. All other consumption purposes hold similar shares regardless of the size of the household.[4]

**Figure 2:** **Consumption expenditures by household size**
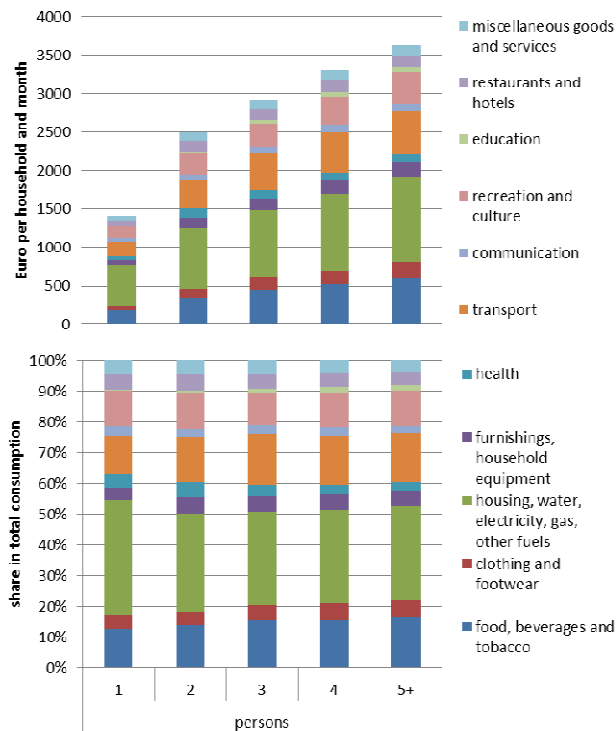
Source: Statistisches Bundesamt (2010a), own calculation

The differences in the consumption structure are more explicit when looking at the expenditures by social status (Figure 3) or household income (Figure 4). Both dimensions are interconnected, because a certain social status usually entails a certain level of income. Employees are more likely to have higher salaries than workers and should be found in the middle to high income groups. The highest-income groups should correspond to (retired) civil servants („Beamte") and the self-employed. The lowest-income groups can be assigned to households of the unemployed. An average pensioner (not former "Beamter") can be associated with a middle-income group. Consumption spending increases with income level -the more money is at one's disposal the more is consumed. Moreover, the shares of the single consumption purposes change as well: the consumption of higher-

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[4] The reason for this result lies in the nature of the consumption purposes. In many cases the underlying consumption items have to be purchased by individual persons (tickets for theater, meals in restaurants for example), which eliminates the economies of scale.

quality goods and services increases more than proportionally with rising income (Engel 1895). Thus, expenses for necessities such as "food, beverages and tobacco" decrease with growing income, so that (retired) civil servants and self-employed persons use less of their income for food products, while the unemployed and pensioners have comparably high shares. The same is true for "housing, water, electricity, gas and other fuels". Consumption purposes that can be classified as being more of luxuries are "transport", "recreation and culture", "furnishings and household equipment" as well as "restaurants and hotels". With higher income their weight in the consumption bundle increases. The consumption purpose "health" is less connected to income but depends more on the age of the consumer. Hence, the consumption shares spent for health products and services are highest for pensioner households. Civil servants spend a high share of their consumption expenditures on health as well, which is due to their special legal status and their specific health security system.[5]

Figure 3:   **Consumption expenditures by social status of the main income earner**
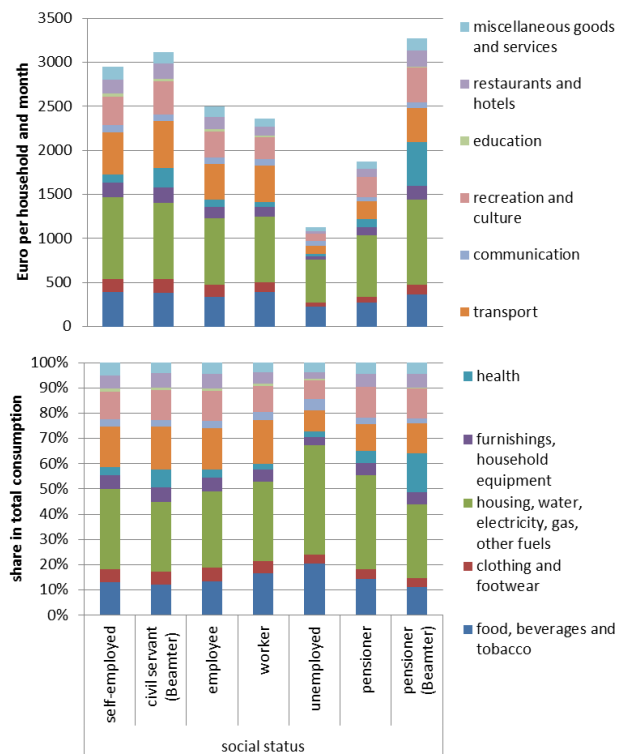

Civil servants („Beamte") are subject to a special legal status.[6]

Source: Statistisches Bundesamt (2010b), own calculations

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[5]50% of the health care expenses are paid by the "Beihilfe", i.e. a special form of public health security system. The remaining 50% are covered by the civil servants themselves mainly by a private health insurance. The latter is part of the consumption purpose "health". For more information see Otto (2007).

[6]The particular legal status includes a special remuneration and social security system. For more information see again Otto (2007).

Figure 4:   **Consumption expenditures by household income (net)**
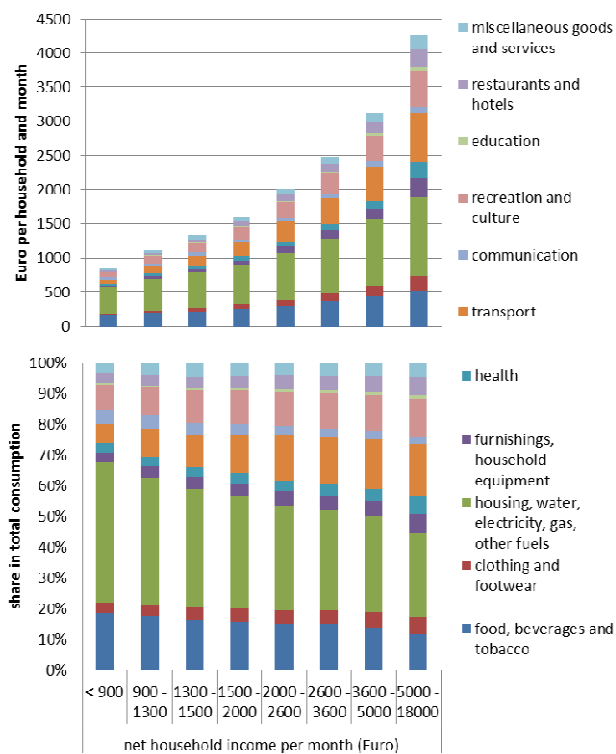
Source: Statistisches Bundesamt (2010c), own calculations

The analysis so far has shown that the overall consumption structure and expenditures depend on the household composition with regard to the population. For example, a growing number of pensioners' households due to demographic change would imply that the consumption expenditures for housing and health would gain importance relative to all other purposes. Their total consumption expenditures should decline given their considerably smaller consumption budget. The latter is influenced by the income structure that varies with socio-economic characteristics as well.

Income components which are subject to changes by redistributional policies (via income taxes, social welfare payments or transfers) or the labour market situation are main determinants of consumption. Policy measures, wage negotiations by labour unions and employers' associations as well as the labour demand affect households and their income differently, depending on the income structure. The differences in income should hence be considered for consumption analysis as well.

The disposable household income is composed of the sum of gross employee income, gross self-employment income, property income, transfer payments (received), non-public transfer payments (received), income from subletting as well as other income minus taxes and social security contributions.[7] Labour income plays a dominant role: it is the main

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[7] Gross employee income + gross self-employment income + property income + transfer payments (received) + non-public transfer payments (received) + income from subletting = gross household income. Gross

income component for households of working age and past labour income affects the level of present pensions contributing mainly to pensioner households.

The share of gross employee income is lowest in one- and two-person households and highest in households with three members (see Figure 5). With growing household size this share declines again, never reaching the low level of the small households though. Pensioners can be almost solely found in the category of small households (1-2 persons) which reduces the relative amount of labour income of the respective household group and leads to a relatively high level of received (non-)public transfer payments (pensions from social pension funds, firms' pension schemes or private insurance schemes). A household with three persons most probably consists of two income earners and one child. Higher household sizes imply more children that add to the weight of received public transfers payments (child benefits, maternity benefits, Elterngeld (parenting benefit)/child-raising allowance etc.).Property income has the highest relevance, that is the highest share on income, for households with 5+-members, followed by 2-personhouseholds and 4-personhouseholds. This income component consists by more than 60% of imputed rents.[8]The higher weight of property income for big households suggests that families are likely to live in self-owned dwellings. Over time, when the children move out, the parents live as 2-personhouseholds in their houses, which explains the relatively high importance of property income for them as well.

household income – taxes – social security contributions = net household income. Net household income + other income = disposable income. Property income includes among others income from rent and lease as well as imputed rents, i.e. the money that one saves on rent by living in one's own accommodation. Transfer payments consist mainly of pensions, unemployment benefits, short-time working allowance, child benefits, maternity benefits, housing benefits, social benefits, Elterngeld (parenting benefit)/child-raising allowance, education advancement grants (BAföG), Pflegegeld (allowance for nursing care). Taxes are composed of income tax, church tax and solidarity tax. Other income is defined as income from the sale of goods, lottery winnings, bottle deposit returns etc.

[8] The dwellings are fixed assets that their owners use to produce housing services for their own consumption. The rents may be imputed by the rents payable on the market for equivalent accommodation or by user costs. The imputed rents of these housing services should be valued at the estimated rent that a tenant pays for a dwelling of the same size and quality in a comparable location with similar neighbourhood amenities (OECD 2007).

Figure 5: **Income components by household size**

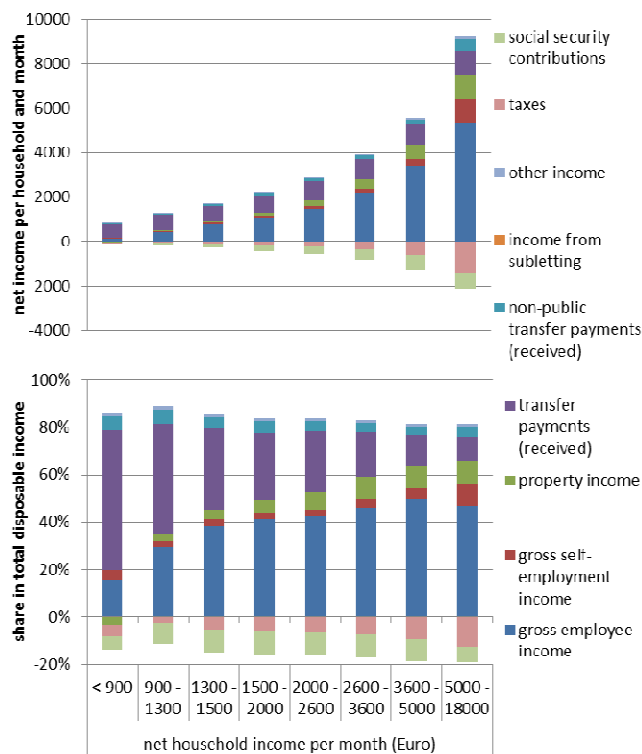*Source: Statistisches Bundesamt (2010a), own calculation*

The relative importance of the single income components changes slightly when looking at the social status in Figure 6. While employees, workers and the self-employed receive their main income from work, the unemployed and pensioners (regular and former "Beamte") rely on transfer payments. The nature of the transfer payments differs between pensioners and the unemployed consisting by about 90% of public pension payments for the first and by over 80% of unemployment benefits for the latter.[9] The proportion of property income is highest for regular pensioners, self-employed persons and former "Beamte". The highest amount of taxes is paid by the self-employed and employees due to their (often) higher income levels compared to workers. Civil servants ("Beamte") have an exceptional position by not paying social security contributions but they are obliged to pay taxes after retirement.

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[9] Public pension payments include pensions under the statutory pension insurance scheme, pensions for former "Beamte", pensions from the compulsory supplementary public-service pension scheme and pensions from the statutory accident insurance scheme. The unemployment benefits are distinguished into type I and II. The unemployment benefit I is paid at most for 24 months directly after the job loss. Type II represents a safety net afterwards to guarantee subsistence level.

Figure 6: **Income components by social status of the main income earner**
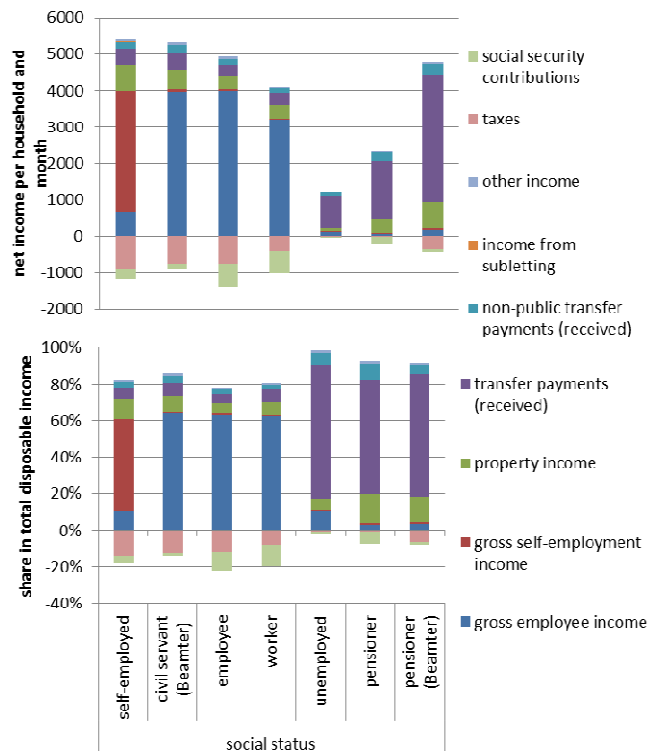
Source: Statistisches Bundesamt (2010b), own calculations

The dominant position of labour income also shows in the composition of households by household income in Figure 7: the higher the wage from (self-)employment the higher is the overall household income. This also holds true for the respective share on income. The same characteristic (absolute and relative) can also be found for property income but to a much lower extent. Transfer payments are the counterpart for these two income components when looking at the shares. Their portions are highest in the lowest income groups and decrease with increasing labour income. In absolute terms the level of transfer payments is growing with household income. The reason is that in the higher income groups transfer payments mostly consist of pensions and child benefits, whereas in the two lowest income groups they are unemployment benefits securing the means of subsistence. Taxes increase in relation to the household income and, hence, they are highest in the highest income group. The absolute amount of social security contributions increases with income as well, which is also valid for the shares except for the highest income group. This group most probably includes a large number of the self-employed and civil servants ("Beamte"). By their differing legal status they are privately insured, which is a part of their consumption expenditures and thus not considered as a part of income.

Figure 7: **Income components by household income (net)**

Source: Statistisches Bundesamt (2010c), own calculations

Summarising, consumption and income vary considerably in structure and magnitude depending on household characteristics. Changes that affect the household composition, such as demographic change or household-formation behaviour, influence household income and the amount and type of goods and services consumed. Policy instruments aiming at redistribution for example have an impact on the consumption structure via income. The changes in demand eventually translate to adjustments in production: the production structure and its supply need to adapt to the new consumption structure. Participation possibilities of households are altered as well. Consequently, the variables considering household characteristics should be integrated in economic models, in order to increase the plausibility of their results.

In the next section a modelling and integration concept is presented.

2.2 MODELLING METHOD

To quantify the consequences of changes in the household composition with respect to socio-economic characteristics an economic model has to include suitable socio-economic information. Here, the macro-econometric input-output model INFORGE is enhanced by a household-specific consumption module integrated into the model environment. The next sections describe the existing economic model, the available data basis as well as the methodology, structure and functioning of the consumption module containing data disaggregated by socio-economic characteristics.

2.2.1 THE ECONOMIC MODEL INFORGE

INFORGE (INterindustryFORecastingGErmany) is a macro-econometric input-output model for Germany developed by GWS (Figure 8). The model has been used for economic forecasts, projections and scenario analysis in many projects and studies (e.g. an der Heiden et al 2012, Helmrich 2013, Stöver 2013). It is established among European input-output models (EUROSTAT 2008, pp. 527) and is well-documented (Ahlert et al. 2009).

The model belongs to the INFORUM family of modelling (Almon 1991) and follows the ideas of bottom up and full integration. Each industrial sector is modelled individually and macroeconomic variables are calculated through explicit aggregation. By this each individual sector is embedded within the economic context and industrial interdependencies are explicitly incorporated and used to explain economic interaction. The model bases on the system of national accounts and balancing items (SNAB) including input output tables as economic core. Thus, interindustry relations are incorporated on a high level of detail. Demand as well as the supply side is equally considered taking the interacting relationship between production sectors and private household demand as well as price effects into account. Irrationality and imperfect markets are allowed. It is annually updated and often combined with modules for specific questions and objectives (e.g. Maier et al. 2013, Ulrich et al. 2012, Drosdowski and Wolter 2012). The model projects until the year 2030.

Some variables have to be set exogenously by adequate assumptions. This is the case for fiscal policy instruments like taxes, interest rates of the European central bank, exchange rates and commodity prices. The global economic development is given by the GDP forecasts of the International Monetary Fund(World Economic Outlook), the European Commission (AMECO) and the International Energy Agency (World Energy Outlook). The international economic performance determines the worldwide trade volume (imports). The German exports can hence be derived using bilateral trade matrices.

Figure 8:   **The macro-econometric model INFORGE**
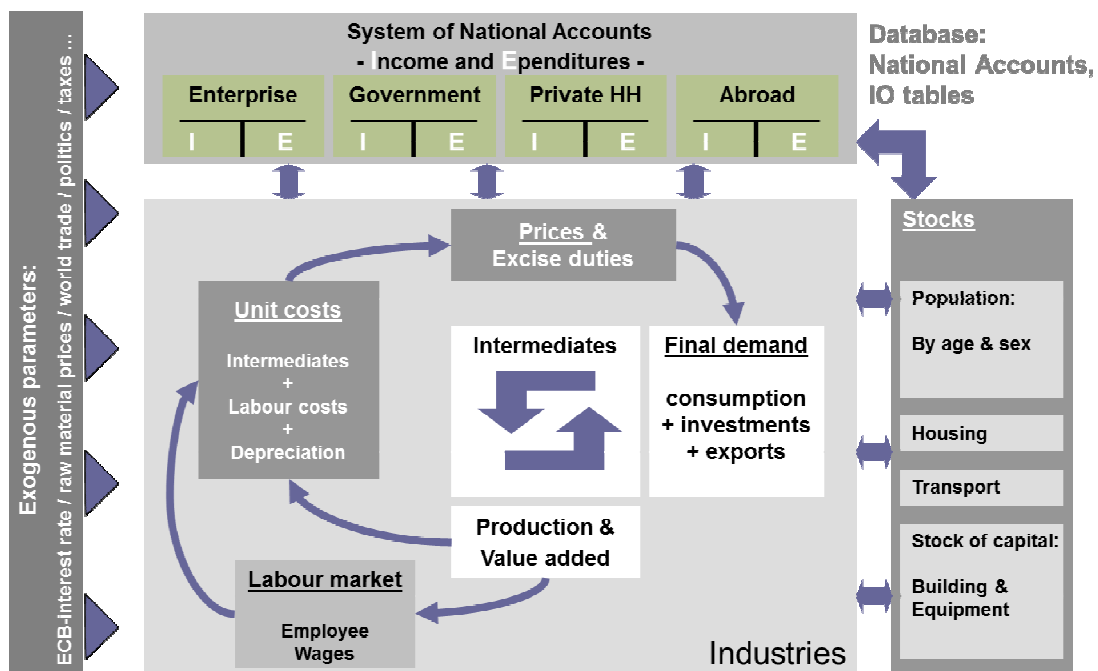
Source: GWS

INFORGE is a powerful tool to analyse a wide variety of socio-economic issues on the aggregate level and to generate numerous socio-economic indicators related to private and public consumption or wage and capital income, as can be seen in the example given by Figure 9. The figure shows the development of consumption expenditures by institutional sectors.

Figure 9: **Example of socio-economic indicators generated with INFORGE: household consumption until 2030**
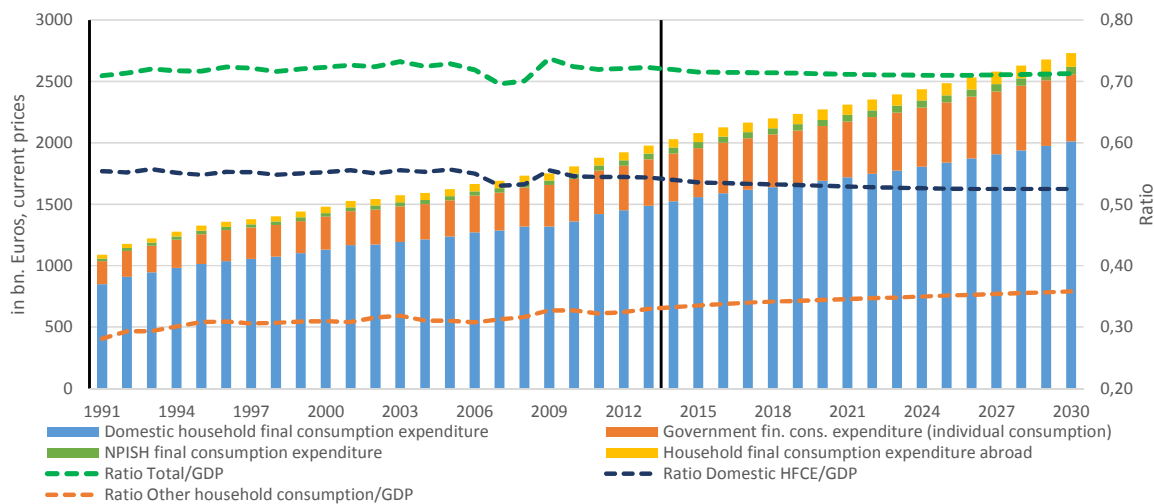
Source: Statistisches Bundesamt 2014, INFORGE

Although its basic version is not designed to trace developments on the household level, the INFORGE model offers the opportunity for a variety of extensions: energy and environment, labour market disaggregated by occupation and qualification, world trade or regional aspects to name a few. One of the extensions, DEMOS, focuses on private consumption differentiated by household groups, using more disaggregated data. The former version of the module was already successfully used within the soeb 2 project, as well as in studies related to distributional effects of environmental policies (Blobel et al. 2011, EEA 2011). The former version of DEMOS contained labour market modelling focused on qualifications. These issues, however, are currently examined using the model extension QINFORGE, within the ongoing QuBe project (see for example Helmrich et al. 2013).

2.2.2 DATA REQUIREMENTS AND AVAILABILITY

The relevant data set containing disaggregated socio-economic information on private households with regard to income and consumption in Germany is the Household Budget Survey (HBS) published by the German Federal Statistical Office (Statistisches Bundesamt). It provides data in Euros on income and expenditures per household and month differentiated by household size, age group, social status, household type, income group

and cross combinations of these characteristics.[10] The level of detail is very high and provides an opportunity for extensive research on structure, behaviour and participation opportunities of households. Nevertheless, there are some deficiencies: the survey is only conducted every fifth year and the research procedure and classification structure were regularly subject to revisions making an intertemporal comparison of the rare data points difficult. The currently available data stem from the latest HSB wave for the year 2008, new data for 2013 are not expected to become available before 2015.

Within the five year cycle of data provision smaller surveys ("Laufende Wirtschafts-rechnung") supplement the data but are less reliable and cannot be directly compared with the HBS results. Thus, the data basis may not be sufficient for econometric analysis relying on time series. A direct integration into the economic model INFORGE, which uses time series to estimate behavioural relationships between income, prices and consumption, is hence difficult. Nevertheless, an indirect link is still a valid option: the economic model can create an adequate stimulus for the socio-economic data set and the changes can be fed back to the economic model.

An additional source of data required in order to analyse the evolution of household structures due to demographic change is the microcensus - an official representative statistics of the population and the labour market in Germany (the largest annual household survey in Europe) with a general sampling fraction of 1% of the population for all vari-ables.[11]

A detailed description of the functional relationship between model and socio-economic data set (consumption module) is given in the following section.

2.2.3 METHODOLOGY OF THE HOUSEHOLD MODULE DEMOS

Average private consumption of a given household group, defined by the characteristics of its main income earner basically depends on its disposable income and the prices of consumption purposes, as expressed by the following equation:

$$c_i = f\,(d,\, p_i,\, a_i),$$

with c being a vector of consumption expenditures by purpose i, d meaning the aggre-gate disposable income, p standing for price development and a representing additional controls such as age, population or the number of households.

The information regarding the determinants of private consumption is provided by IN-FORGE in order to project future realisations on a disaggregated level. For consistency reasons pertaining to aggregates additional information on the number of households for

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[10] The characteristics are classified by the main income earner.

[11] For basic information on the microcensus see https://www.destatis.de/EN/Meta/abisz/Mikrozensus_e.html.

each group is required. The consumption module therefore receives input from two sides (Figure 10): aggregate input from the model INFORGE addressing disposable income, consumer prices, population size and number of households; disaggregated input from the microcensus regarding household structure by number, size and age of households. The microcensus household information also feeds into the economic model's household projection.

Figure 10:   Inputs in the household module DEMOS
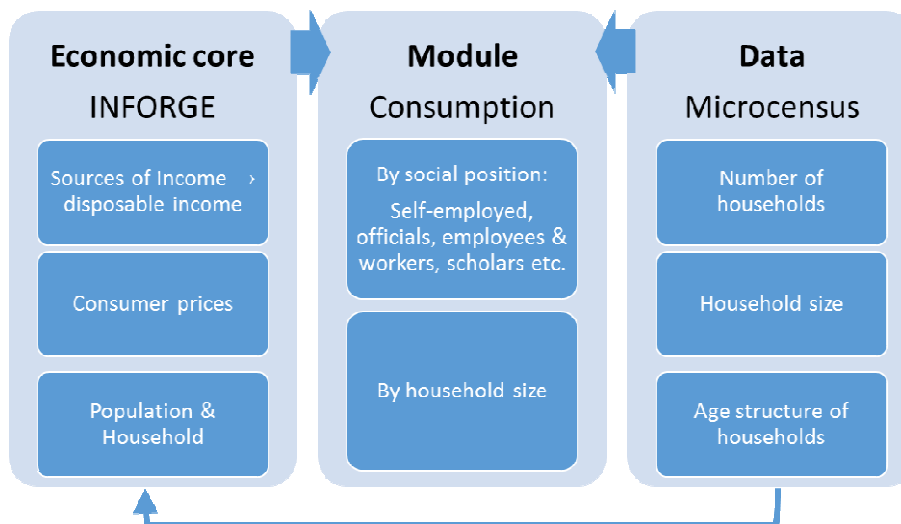
Source: GWS

In INFORGE the components of disposable income are calculated and projected until 2030.[12] These projection results translate in step (1) into growth rates for the income components of the socio-economic household groups in DEMOS. The income components of DEMOS are the same as in INFORGE but they are differentiated by household size and social status.[13] As shown in section 2.1.2 the composition and level of income varies considerably between household groups. Different growth rates for different sources of income result in different household income developments depending on socio-economic characteristics. The same procedure applies to the consumption structure of households, given by disposable income shares of single consumption expenditures. These shares are also obtained by using the growth rates from INFORGE. Thus, the development of shares follows the aggregate changes but the heterogeneity across household groups is maintained. Each household group then reacts individually by (2) changing its consumption

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[12]The single sources of disposable income are compensation of employees, income from property, social benefits, other transfers received, taxes paid, levies on social benefits, other transfers paid.

[13] The social characteristics household size and social position are linked with each other resulting in a 5x12 matrix. Household size has a dimension of 5 (1,…, 4 and 5+ person households), social status of 12 being self-employed farmer, self-employed (except farmer), "Beamter", employee, worker, unemployed, pensioner, pensioner (former "Beamter"), scholar, student (university), other non-working population.

expenses according to the new income situation, as the consumption shares are multiplied with disposable incomes. As a result the overall consumption structure is changed. The newly calculated household consumption by purposes can be reintegrated by step (3) in the economic model INFORGE, taking into account initial differences between aggregate consumption in the SNA and the HSB (Figure 11). The resulting consumption expenditures are now different from the previously displayed equation, mainly because they include the structural information h from the household module concerning status and household size:

$$c_i = f(d, p_i, a_i, h_i).$$

Figure 11: **Consumption expenditures by purpose in SNA and HBS (2008)**
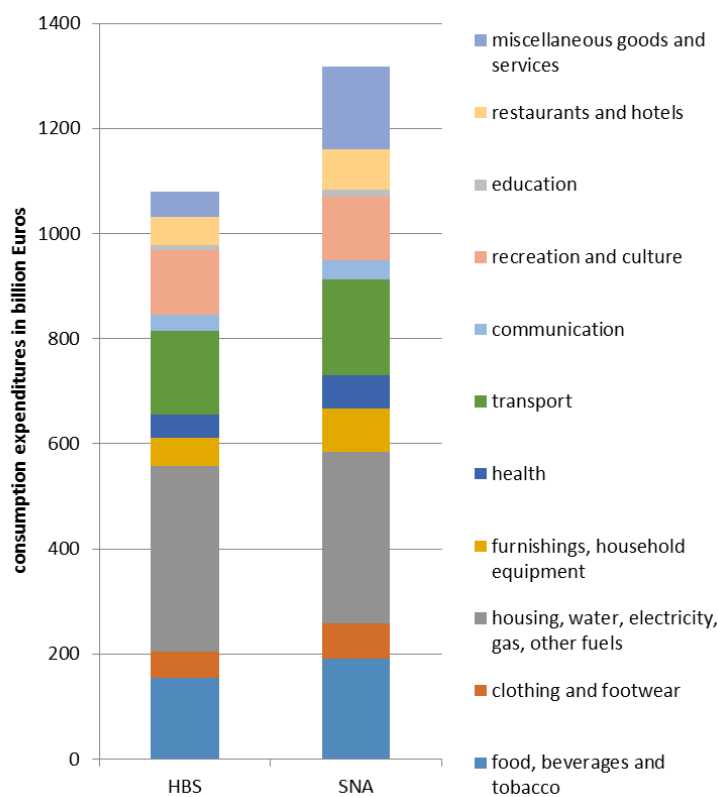
Source: Statistisches Bundesamt (2013, 2010b), own calculations

The connection between macro-economic model and socio-economic information offers various opportunities for scenario analyses. Policy measures that address the redistribution of income by taxes or levies on social benefits for example can be analysed considering the direct impact on socio-economic households, their income and consumption structure. Indirect effects on production, prices as well as on the labour market induced by the changes in consumption can be shown as well.

Figure 12 gives a simplified overview of the functional relationship between INFORGE and the socio-economic module DEMOS.

Figure 12: Interaction between INFORGE and DEMOS
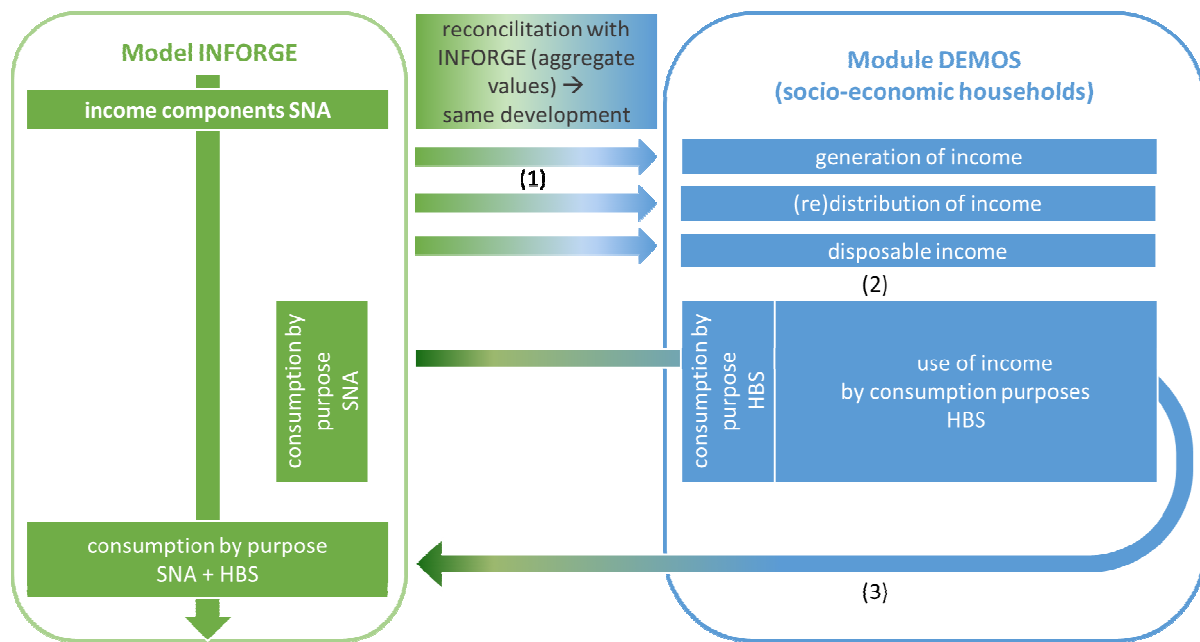
Source: GWS

3 CONCLUSIONS

The discussion of private consumption in Germany has shown that it is important for the economy, despite the export orientation and rather conservative savings behaviour of the households. Since 1991 structural shifts in consumption have occurred. Across various household groups there is a considerable heterogeneity in consumption patterns, which is also apparent with regard to incomes.

The subsequently presented modelling approach provides a possibility to integrate more advanced socio-economic structures in a macroeconomic model environment and hence to facilitate a combination of micro-based and macro data. To track social imbalances, resulting for example from demographic change or as an effect of policy measures, economic models taking into account "deeper" socio-economic characteristics appear to be more adequate than purely aggregate models. The macroeconomic effects of socio-economic characteristics on the household level can be shown more explicitly and provide an extension to the original model output.

Using the forecasting capabilities of the underlying macro-econometric input-output model INFORGE, scenarios addressing demographic change, social transformation and/or changes in income can be generated and calculated. In collaboration with other institutions involved in soeb 3, simulations relating to consumption poverty (see for example Pfeiffer, Ritter & Hirseland 2011) and sustainable consumption (see for example Leßmann & Rauschmayer 2013) are planned. Moreover, the socio-economic modelling will be used for the calculation of a variety of socio-economic indicators.

REFERENCES

Ahlert, G., Distelkamp, M., Lutz, C., Meyer, B., Mönnig, A. & Wolter, M.I. (2009): Das IAB/INFORGE-Modell. In: Schnur, P. &Zika, G. [eds.]: Das IAB/INFORGE-Modell. Ein sektorales makroökonometrisches Projektions- und Simulationsmodell zur Vorausschätzung des längerfristigen Arbeitskräftebedarfs. IAB-Bibliothek 318, Nürnberg, pp. 15-175.

Almon, C. (1991). The Inforum approach to interindustry modeling.Economic Systems Research 3(1), 1–8.

An der Heiden, I., Meyrahn, F., Schweitzer, M., Großmann, A., Stöver, B., Ulrich, P. & Wolter, M. I. (2012): Demografischer Wandel – Auswirkungen auf die Bauwirtschaft durch steigenden Bedarf an stationären und ambulanten Altenpflegeplätzen. Abschlussbericht (Langfassung) im Auftrag des Bundesministeriums für Wirtschaft und Technologie (BMWi), Mainz.

Blobel, D., Gerdes, H., Pollitt, H., Barton, J., Drosdowski, T., Lutz, C., Wolter, M.I., Ekins, P. (2011): Implications of ETR in Europe for Household Distribution, Ekins, P., Speck, S. (Hrsg.): Environmental Tax Reform (ETR). A Policyfor Green Growth, Oxford University Press, Chapter 10.

Drosdowski, T., Wolter, M. I. (2008): Sozioökonomische Modellierung: Integration der Sozioökonomischen Gesamtrechnung (SGR) des Statistischen Bundesamtes in DEMOS II, GWS Discussion Paper Nr. 2008/8, Osnabrück.

Drosdowski, T., Wolter, M. I. (2012): Projektion der Sozioökonomischen Entwicklung bis 2020. In: Forschungsverbund Sozioökonomische Berichterstattung (Hrsg.): Berichterstattung zur sozioökonomischen Entwicklung in Deutschland – Teilhabe im Umbruch. ZweiterBericht, Wiesbaden.

EEA (2011): Environmental tax reform in Europe: implications for income distribution, EEA Technical report 16/2011, Kopenhagen.

Engel, Ernst (1895). Die Lebenskosten belgischer Arbeiter-Familien früher und jetzt. Heinrich, C.. Dresden.

EUROSTAT (2008) Eurostat Manual of Supply, Use and Input-Output Tables, 2008 Edition.

Federal Ministry of Labour and Social Affairs (2013): Life Situations in Germany. The German Federal Government's 4th Report on Poverty and Wealth.

Federal Statistical Office (2014): National Accounts – Domestic Product. Quarterly results. 4 th Quarter 2013, Fachserie 18 Series 1.2, Wiesbaden.

Helmrich, R., Wolter, M.I., Zika, G. & Maier, T. (2013): Future Skilled-Labour Markets in Germany: from Model-Based Calculations to Scenarios. Statistika, Statistics and Economy Journal, 93(3).

Leßmann, O. &Rauschmayer, F. (2013): Re-conceptualising Sustainable Development on the basis of the Capability Approach: a model and its difficulties. In: Journal of Human Development and Capabilities 14 (1), pp. 95–114.

Maier, T., Mönnig, A. &Zika, G. (2013): Trade and qualification - linking qualification needs to Germany's export flows. IAB-Discussion Paper 7/2013, Nürnberg.

OECD (2007): Owner Occupied Housing. Glossary of Statistical Terms, last updated on July 12, 2007, https://stats.oecd.org/glossary/detail.asp?ID=5752.

Otto, K.-A. (2007): Civil Service Salary System in Germany And Recent Reform Trends. Contribution to the Conference on Civil Service Salary Systems in Europe, Bucharest, 25 April 2007.

Pfeiffer, S., Ritter, T., Hirseland, A. (2011): Hunger and nutritional poverty in Germany: quantitative and qualitative empirical insights. In: Critical Public Health, Heft 21 (4), pp. 417-428.

Schrooten, M. &Teichmann, I. (2010): German Exports on the Rise: Domestic Demand Should Follow. Weekly Report, DIW Berlin, German Institute for Economic Research, vol. 6(31), pages 231-236.

Statistisches Bundesamt (2014): Volkswirtschaftliche Gesamtrechnungen – Inlandsproduktsberechnung. Detaillierte Jahresergebnisse 2012. Fachserie 18 Reihe 1.4, Wiesbaden.

Statistisches Bundesamt (2010a): Einkommens- und Verbrauchsstichprobe: 2.1.1 Einkommen und Einnahmen sowie Ausgaben privater Haushalte 2008 nach Haushaltsgröße. Tabelle Glied.Nr.: D1 2.1.1 01 V, Stand: 30.11.2010.

Statistisches Bundesamt (2010b): Wirtschaftsrechnungen – Einkommens- und Verbrauchsstichprobe. Einnahmen und Ausgaben privater Haushalte 2008. Fachserie 15 Heft 4, Wiesbaden.

Statistisches Bundesamt (2010c): Einkommens- und Verbrauchsstichprobe: 2.3.1 Einkommen und Einnahmen sowie Ausgaben privater Haushalte nach monatlichem Haushaltsnettoeinkommen. TabelleGlied.Nr.: D1 2.3.1 01 V, Stand: 30.11.2010.

Stockhammer, E., Hein, E. &Grafl, L. (2011): Globalization and the effects of changes in functional income distribution on aggregate demand in Germany. International Review of Applied Economics, Taylor & Francis Journals, vol. 25(1), pages 1-23.

Stöver, B. (2013): The power of elderly consumers – How demographic change affects the economy through private household demand in Germany. In: Radvanský, M. & Lichner, I. [eds.]: Impacts of Ageing on Public Finances and Labour Markets in EU Regions - Theoretical Models and Empirical Analyses. Peer-Reviewed International Conference Proceedings Smolenice, Slovakia, 28th-30th October 2013, Bratislava, S.141-149.

Ulrich P., Distelkamp M. & Lehr U. (2012): Employment Effects of Renewable Energy Expansion on a Regional Level - First Results of a Model-Based Approach for Germany. Sustainability, 4(2), pp. 227-243.

van Treeck, T. (2013): Globale Ungleichgewichte im Außenhandel und der deutsche Exportüberschuss. Bundeszentrale für politische Bildung, Timestamp: 24.03.2014 16:50, http://www.bpb.de/apuz/175492/globale-ungleichgewichte-im-aussenhandel-und-der-deutsche-exportueberschuss?p=all.