

What Gives? Household Consumption Patterns and the ‘Big Trade Off’ with Public Consumption

Francesca Bastagli and John Hills

Contents

1. Introduction	1
2. Methods	2
3. Aggregate Spending	5
4. Composition of Spending	12
5. Conclusions	21
References	23
Data sources	23
Appendix Tables	25

CASE/170
March 2013

Centre for Analysis of Social Exclusion
London School of Economics
Houghton Street
London WC2A 2AE
CASE enquiries – tel: 020 7955 6679

Centre for Analysis of Social Exclusion

The Centre for the Analysis of Social Exclusion (CASE) is a multi-disciplinary research centre based at the London School of Economics and Political Science (LSE), within the Suntory and Toyota International Centres for Economics and Related Disciplines (STICERD). Our focus is on exploration of different dimensions of social disadvantage, particularly from longitudinal and neighbourhood perspectives, and examination of the impact of public policy.

In addition to our discussion paper series (CASEpapers), we produce occasional summaries of our research in CASEbriefs, and reports from various conferences and activities in CASEreports. All these publications are available to download free from our website. Limited printed copies are available on request.

For further information on the work of the Centre, please contact the Centre Manager, Jane Dickson, on:

Telephone: UK+20 7955 6679
Fax: UK+20 7955 6951
Email: j.dickson@lse.ac.uk
Web site: <http://sticerd.lse.ac.uk/case>

© Francesca Bastagli
John Hills

All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Editorial note

John Hills is Director and, at the time of writing, Francesca Bastagli was a Research Fellow of the Centre for Analysis of Social Exclusion at the London School of Economics. Bastagli is now Research Fellow at the Overseas Development Institute, London. The authors are grateful for funding of the research reported here to the Nuffield Foundation. The Nuffield Foundation is an endowed charitable trust that aims to improve social well-being in the widest sense. It funds research and innovation in education and social policy and also works to build capacity in education, science and social science research. The Nuffield Foundation has funded this project, but the views expressed are those of the authors and not necessarily those of the Foundation. More information is available at www.nuffieldfoundation.org. The authors are also grateful to Eleni Karagiannaki, Abigail McKnight, and Tiffany Tsang for help and advice in preparing this paper.

Abstract

At the centre of politics in Britain and other countries is what is sometimes called ‘the big trade-off’ – where to strike the balance between private consumption and collective goods and social spending – and hence the sacrifices that would be entailed by the higher taxation required to fund otherwise desirable forms of social provision. In this paper we use aggregate national accounts data to compare the composition of household consumption between otherwise similar countries with higher and lower levels of public consumption. We concentrate in particular on spending patterns in ten countries where ‘total potential consumption’ (the sum of public and household consumption and household saving) is similar to that in the UK, using data from 2005. While the strengths of the inferences that can be drawn from a small number of countries are limited, overall these results suggest that there is a hierarchy in the forms of consumption that citizens of different countries sacrifice when they have greater government consumption (and so higher taxes). The trade-off at the margin is not with all kinds of consumption equally, but particularly with consumption of particular kinds – such as spending on restaurants and hotels, vehicle purchase, household furnishings, or clothing and footwear. But there are also items, such as education, where government spending may act as a substitute for what private households would have to spend. Such findings could colour our views of what the ‘big trade-off’ between public and private consumption really entails.

Key words: Household consumption, Government spending, Government consumption, international comparisons

JEL number: D12, H331, H50

Corresponding author: John Hills (j.hills@lse.ac.uk)

1. Introduction

At the centre of politics in Britain and other countries is what is sometimes called ‘the big trade-off’ – where to strike the balance between private consumption and collective goods and social spending – and hence the sacrifices that would be entailed by the higher taxation required to fund otherwise desirable forms of social provision. Abstracting from public borrowing, higher spending on, for instance, publicly funded health care or education requires higher taxes to pay for it, and hence lower private consumption of some kind. Lower taxes, enabled by lower levels of public spending, allow higher private consumption for any given pre-tax income.

An extensive literature looks at the consequences of higher and lower levels of social spending between countries in terms of the kind of welfare services they provide, or the distributional consequences of different patterns of taxes and transfers.¹ Another extensive literature looks at the economic consequences, especially for growth and labour supply, of different tax levels and structures.² But there appears to be little discussion of the other side of the trade-off: what is it that citizens in countries with lower taxation levels spend their extra take-home income on? What is it that people in the UK are able to spend more on than, say, citizens of France or Denmark, as a result of our collective decision to have less extensive social provision? To look at it the other way, what are the citizens in other countries apparently sacrificing to enable their higher public spending? The answers to this are unclear. Possibilities in principle include:

- In lower tax countries with reduced social provision, citizens may simply substitute private spending to cover the same things – for instance private retirement saving in the UK compared with Continental countries with more generous state systems (or, similarly, private health insurance in the USA, compared with European countries).
- Alternatively, citizens in lower tax countries may have higher levels of private consumption of other forms – food, consumer durables, leisure activities, housing consumption, foreign holidays, charitable donations, etc.

As an initial attempt to investigate this, in this paper we compare aggregate private household spending patterns in a range of OECD/EU countries. We look at the overall balance between public and private consumption in 20 countries, and then in more detail at the broad structure of household consumption in 10 countries with similar incomes to the UK. We examine the composition of household consumption spending to see how household consumption of specific kinds varies depending on how much of the country’s potential consumption is taken up by government consumption, reducing private net incomes and the scope for private consumption. Which kinds of consumption appear to be more readily sacrificed when the state plays a larger role

¹ See Esping-Andersen (1990), Goodin, *et al.* (1999), Leibfried and Mau (2008), and many others.

² On the former, see, for instance, Atkinson (1999). On the latter, see for instance, Ohanian, Raffo and Rogerson (2008) or Ngai and Pissarides (2009).

and are so in the front-line of the ‘big trade-off’? We use data from the OECD National Accounts and other OECD data sources that provide comparable figures. Section 3 provides additional detail on the data sources and variable definitions used. We use data for 2005, in the period before the peak of the boom and the subsequent economic and fiscal crises.

2. Methods

In broad outline what we want to examine is the impact of the ‘wedge’ that comes between what households could have received as income for private consumption and what they actually receive after the intervention of the state. That wedge takes a variety of forms. At a household level, Figure 1 illustrates the various factors that come between what employers could have paid to their employees and what they end up with as consumption in different forms. Even before reaching the pay packet, employers in most countries will have had to pay payroll taxes or employer social security or insurance contributions (National Insurance Contributions in the UK). They may also make contributions to pension schemes for their employees. Going down the diagram, households pay direct taxes (income tax and employee NICs), but also receive transfers from government, leaving them with household net income. They then use this for either net saving (including their own pension contributions) or gross consumption. But the value of this includes indirect taxes, which have to be deducted to give the pattern of net – or ‘tax exclusive’ – consumption of different kinds.

At a micro-level the data to examine the sizes of the different flows in Figure 1 can be established or estimated, which we shall do in later work. But published aggregate national data do not contain enough detail to allow us to do this, for instance in identifying employer payroll taxes. Instead, we take an indirect approach, looking at the items that are available and are shaded in Figure 2, which includes the government side of the flows involved. Here we reformulate the problem as being to look at the way in which total potential household consumption is split in three ways – between net household saving, net household (tax exclusive) consumption and government consumption. The latter is divided in the national accounts statistics between ‘government individual consumption’ (such as health care or education spending that can be attributed to households) and ‘government collective consumption’ (such as spending on defence or justice). Together these make up government final consumption expenditure. Note that to avoid double-counting this excludes transfers from government to households. In the analysis below we look at the relationships between patterns of private consumption and total government consumption. We also tested whether total household consumption and its composition varies by government individual consumption alone. As the latter contains the main items that are most likely to be purchased privately, if not available publicly, one might expect the variation in the consumption share of specific items such as health and education to be more strongly correlated with the individual government consumption measure.

Figure 1: Household income and consumption flows

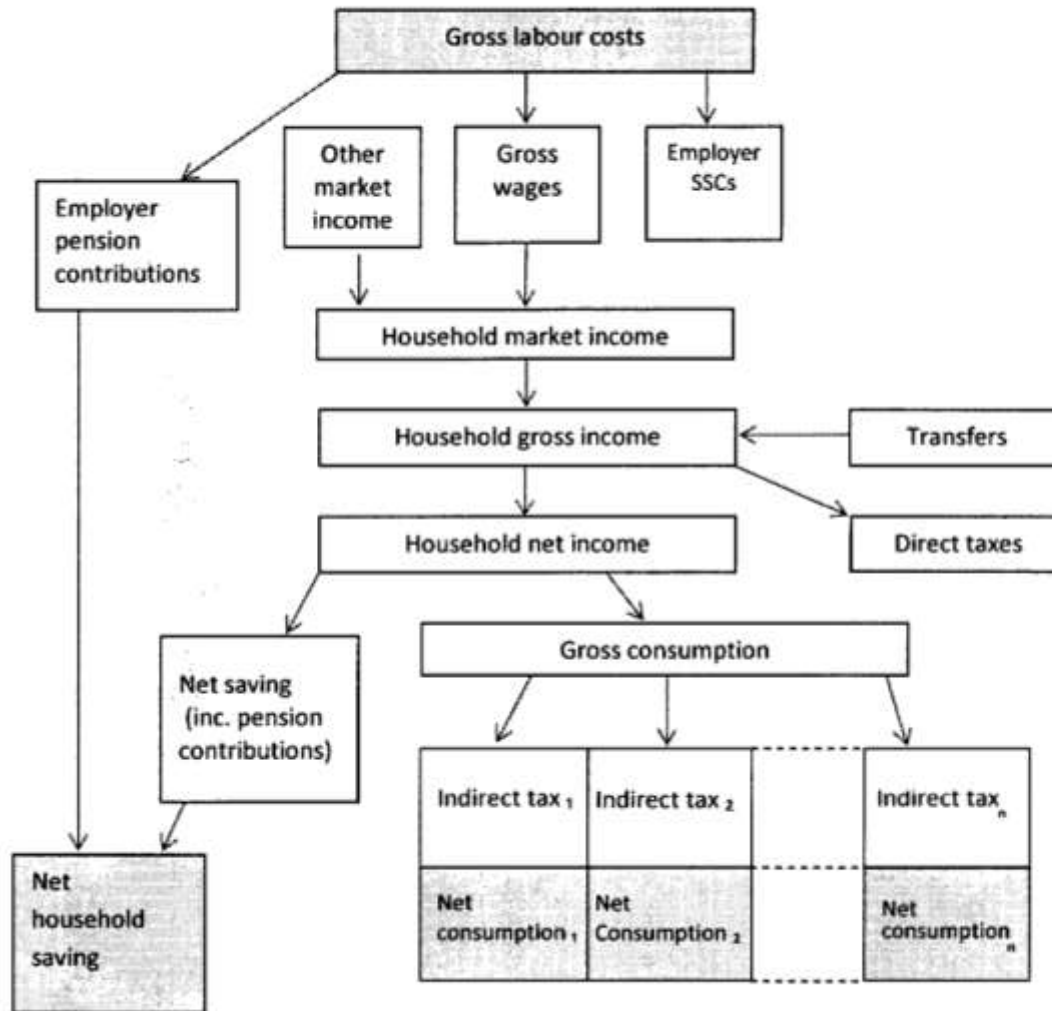
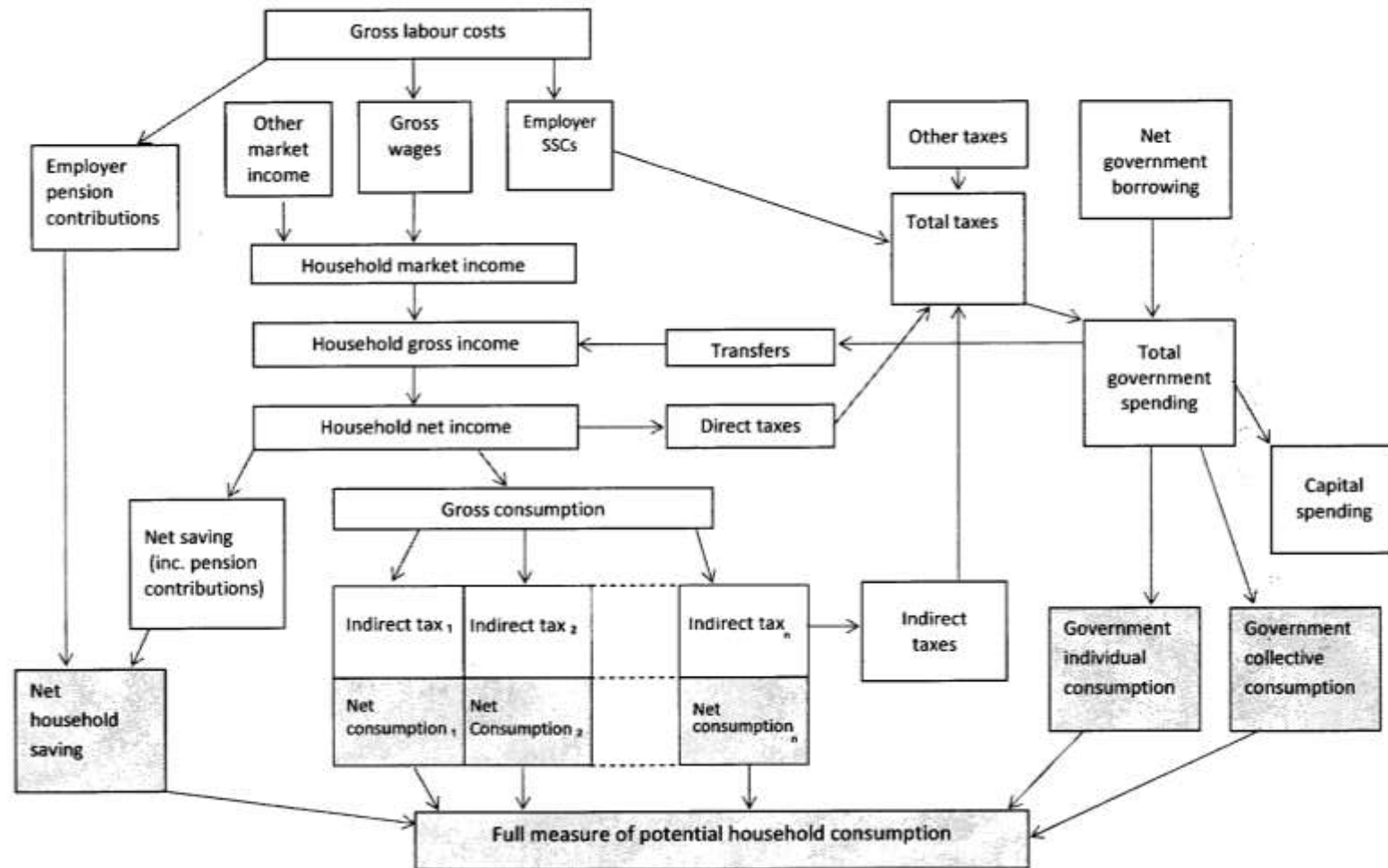


Figure 2: Household income and consumption flows



Note that this approach looks at the trade-off between different forms of consumption, not between current consumption of different kinds and items on government's capital account, government capital spending and net borrowing. The analysis here implicitly assumes that the total of (public and private) current consumption and private saving could have been available for consumption, without investigating whether that would be sustainable for any particular country in the long-run. That is also of interest, but raises much more complex issues.

3. Aggregate Spending

The study involved the compilation of a cross-country database with data on macroeconomic country variables, and government and household consumption variables. For the aggregate variables (e.g. GDP, government final consumption expenditure and household final consumption expenditure) we draw information from the OECD National Accounts records structured around the 'expenditure approach' of the GDP accounting framework. Consumption tax data are obtained from OECD (2010), while household saving figures are compiled from the OECD National Accounts Country Reports (vol. II).

Tables A1 and A2 in the Appendix report the main variables used by the study. To ensure comparability across estimates, all figures are reported per capita and in US dollars, converted using 2005 purchasing power parities (PPPs), using the OECD's estimates of these for GDP as a whole (shown in the first column of Table A1 as the value of US\$1 in units of national currency) to convert the source figures expressed in national currency.

We examined data for 22 countries. For some of these, however, specific figures were not reported and where these were central to the analysis, the countries were dropped from the study. Specifically, Luxembourg and New Zealand records for 2005 do not report household saving data and so could not be included in estimates of full potential consumption. Furthermore, the detailed household consumption expenditure breakdowns for Australia, Japan and Switzerland had a number of categories for which values are missing, so they could not be included in the analysis of household consumption by item. In sum, we analysed totals for household consumption expenditure for 20 countries and household consumption composition for 10 countries with similar consumption possibilities to the UK.

In investigating total potential consumption it would involve double-counting if we simply added government consumption to (tax-inclusive) private consumption and saving, as part of government consumption is financed by indirect taxes. We therefore estimate tax-exclusive private consumption. We do this using estimated consumption taxes per capita amounts based on total consumption taxes as a percentage of GDP reported in OECD (2010). Deducting this gives tax-exclusive household consumption (the third column of Table A2).

The first results of this exercise are shown in Table 1. Thus, for instance, in the USA, in 2005, government consumption (i.e. government ‘individual’ and ‘collective’ consumption expenditure) was \$6,703 and household consumption was \$29,064 per capita. But \$935 of the latter reflected consumption taxes, so tax exclusive household consumption was only \$28,129. Adding in private saving, \$449 per capita, gives our ‘full’ measure of potential consumption of \$35,280 per capita. Government consumption was 19 per cent of this total. In Table 1 the countries are shown ranked by the ‘full measure’. The country with the second highest potential consumption was Norway, with a total equivalent to US\$27,300 per capita. But of this more than a third, 34.4 per cent, was taken up by government consumption. At the bottom of the table, Portugal’s total potential consumption was only the equivalent of US\$16,400 per capita, of which 27.5 per cent was government consumption.

The last column of the table shows the conventional tax ratio for each country (from the OECD on-line tax database). In general, countries with high levels of government consumption also have high tax ratios, but variations in other parts of the government accounts (such as borrowing levels) means that they do not move precisely in proportion.

Table 2 shows how total potential consumption relates to GDP for the 13 countries with similar full potential consumption to the UK (within +/- 15 per cent of its total of US\$25,367 at 2005 PPPs). For most of these countries, potential consumption is around 70-75 per cent of GDP, although it is only 57 per cent in Norway, and reaches nearly 80 per cent in France and Italy. It also shows that there is no clear link between government shares of total potential consumption and levels of GDP per capita within this group. It is also notable that while the UK is in the middle of the group ranked by GDP per capita, it is the third highest by total potential consumption (as a result of the high share of this in GDP).

Figure 3 shows how tax-exclusive household consumption relates to the full measure of potential consumption. Clearly, the more affluent a country is overall, the higher its household consumption is likely to be. But countries with similar potential consumption levels can have very different levels of private consumption. Those with potential consumption within 15 per cent of that in the UK measure are shown as squares and are labelled. For instance, tax exclusive household final consumption is \$14,400 in France, compared to \$15,900 in Germany, despite their potential consumption being the same. It is this kind of difference – and how it relates to their different levels of government consumption – that we want to investigate, rather than those reflecting differences in affluence.

Figure 4 shows the way in which the shares of household consumption and of household saving are related to that of government consumption across all 20 countries. As one would expect, the higher the government consumption share the lower household consumption. However, the relationship is not completely linear as a result of variations in household savings levels.

Table 1: Countries ranked by the “full measure” of government and household consumption expenditure per capita, US\$ PPPs, 000s, 2005

	Final government consumption expenditure	<i>Plus</i> Household final consumption	<i>Less</i> Consumption taxes	<i>Plus</i> Household saving	<i>Equals</i> Full measure of potential consumption	<i>Government consumption as % total</i>	<i>Total tax revenue as % of GDP</i>
United States	6.7	29.1	0.9	0.4	35.3	19.0	27.1
Norway	9.4	19.4	3.8	2.2	27.3	34.4	43.5
Switzerland	4.2	20.7	1.4	2.4	25.9	16.1	29.2
United Kingdom	7.1	20.8	2.2	-0.3	25.4	28.0	35.7
Australia	6.1	20.0	1.5	0.1	24.7	24.5	29.8
Canada	6.6	18.9	1.8	0.4	24.2	27.4	33.4
France	7.2	16.7	2.3	2.2	23.9	30.2	44.1
Germany	5.8	17.8	1.9	2.2	23.9	24.4	35.9
Netherlands	8.3	16.8	2.6	1.1	23.7	35.2	38.4
Austria	6.2	18.0	2.7	2.0	23.5	26.3	42.1
Belgium	7.3	16.2	2.3	1.8	23.1	31.8	44.6
Italy	5.7	16.6	1.7	1.8	22.4	25.4	40.8
Japan	5.6	17.2	0.8	0.0	22.0	25.4	27.4
Sweden	8.6	15.2	3.0	1.1	21.9	39.1	48.9
Ireland	6.2	17.2	2.9	1.0	21.5	28.9	30.3
Denmark	8.7	15.8	3.3	-0.6	20.4	42.3	50.8
Spain	4.9	15.6	1.7	0.8	19.6	25.1	35.7
Finland	6.9	15.1	2.7	0.1	19.5	35.4	43.9
Greece	4.4	16.7	1.7	-1.9	17.5	25.2	31.9
Portugal	4.5	13.4	1.9	0.3	16.4	27.5	31.2

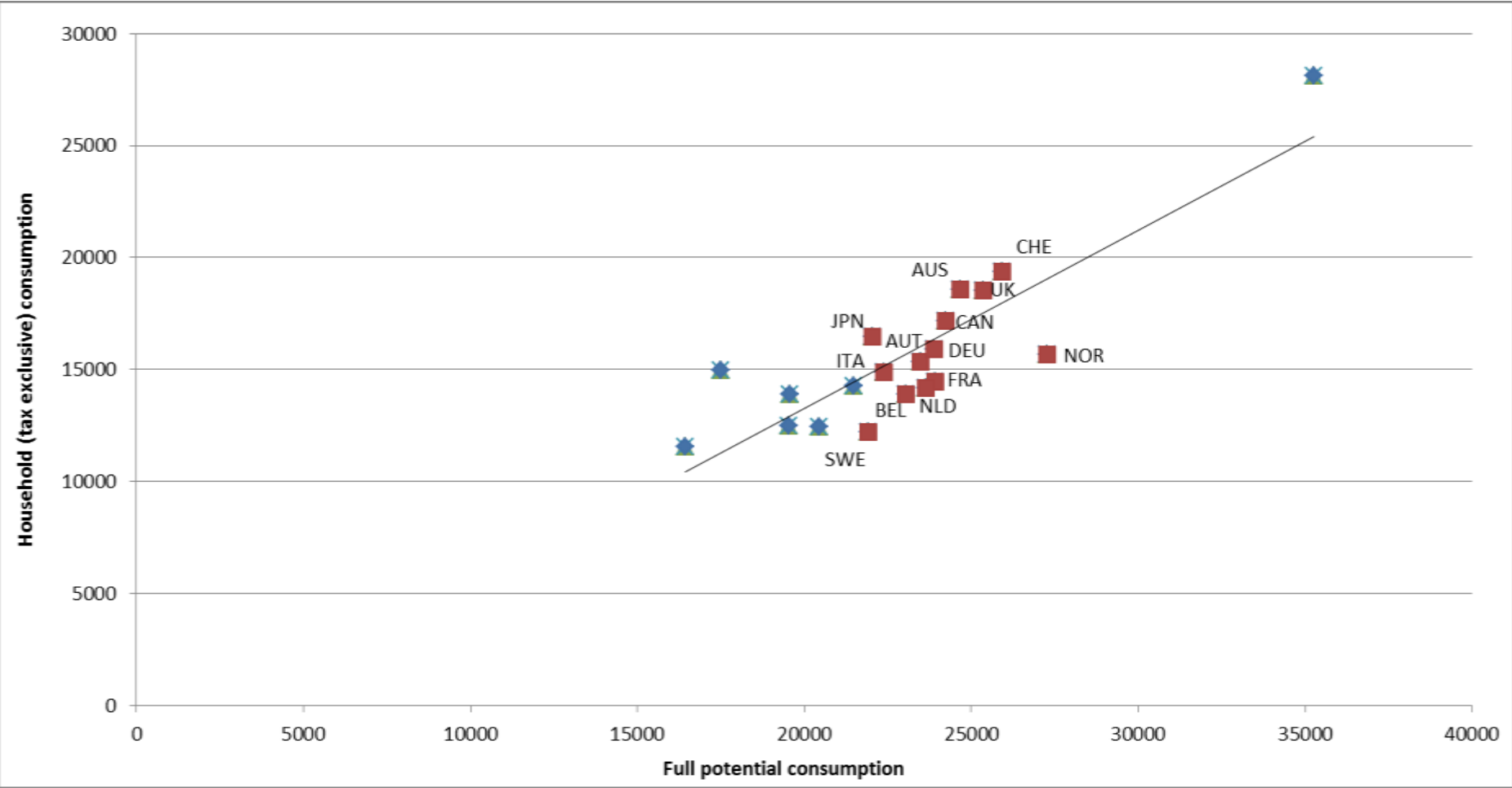
Source: Tables A1 and A2 in Appendix.

Table 2: GDP and potential consumption, countries ranked by GDP per capita, US\$ PPPs, 000s, 2005

	GDP per capita	Full potential consumption per capita	Full potential consumption as % of GDP	Final government consumption as % of full potential consumption
Norway	47,630	27,270	57.3	34.4
Switzerland	35,780	25,940	72.5	16.1
Australia	35,370	24,680	69.8	24.5
Canada	35,110	24,240	69.1	27.4
Netherlands	35,100	23,650	67.4	35.2
Austria	33,640	23,480	69.8	26.3
United Kingdom	33,190	25,370	76.4	28.0
Sweden	32,700	21,930	67.1	39.1
Belgium	32,180	23,060	71.6	31.8
Germany	31,110	23,900	76.8	24.4
Japan	30,440	22,030	72.4	25.4
France	30,410	23,920	78.7	30.2
Italy	28,280	22,400	79.2	25.4

Source: Table 1.

Figure 3: Household final consumption expenditure (exclusive of consumption tax) by a country’s full potential consumption, per capita, US\$ PPPs, 2005



Note: Countries marked as red squares are those with total consumption possibilities equivalent to those of the UK. “Equivalence” is defined as having a value of the “full” measure in the range of +/- 15% the UK value of 25,367US\$PPPs, 2005 (see Table 1).

Figure 4: Household consumption (exclusive of consumption tax) and saving as % full potential consumption (20 countries)

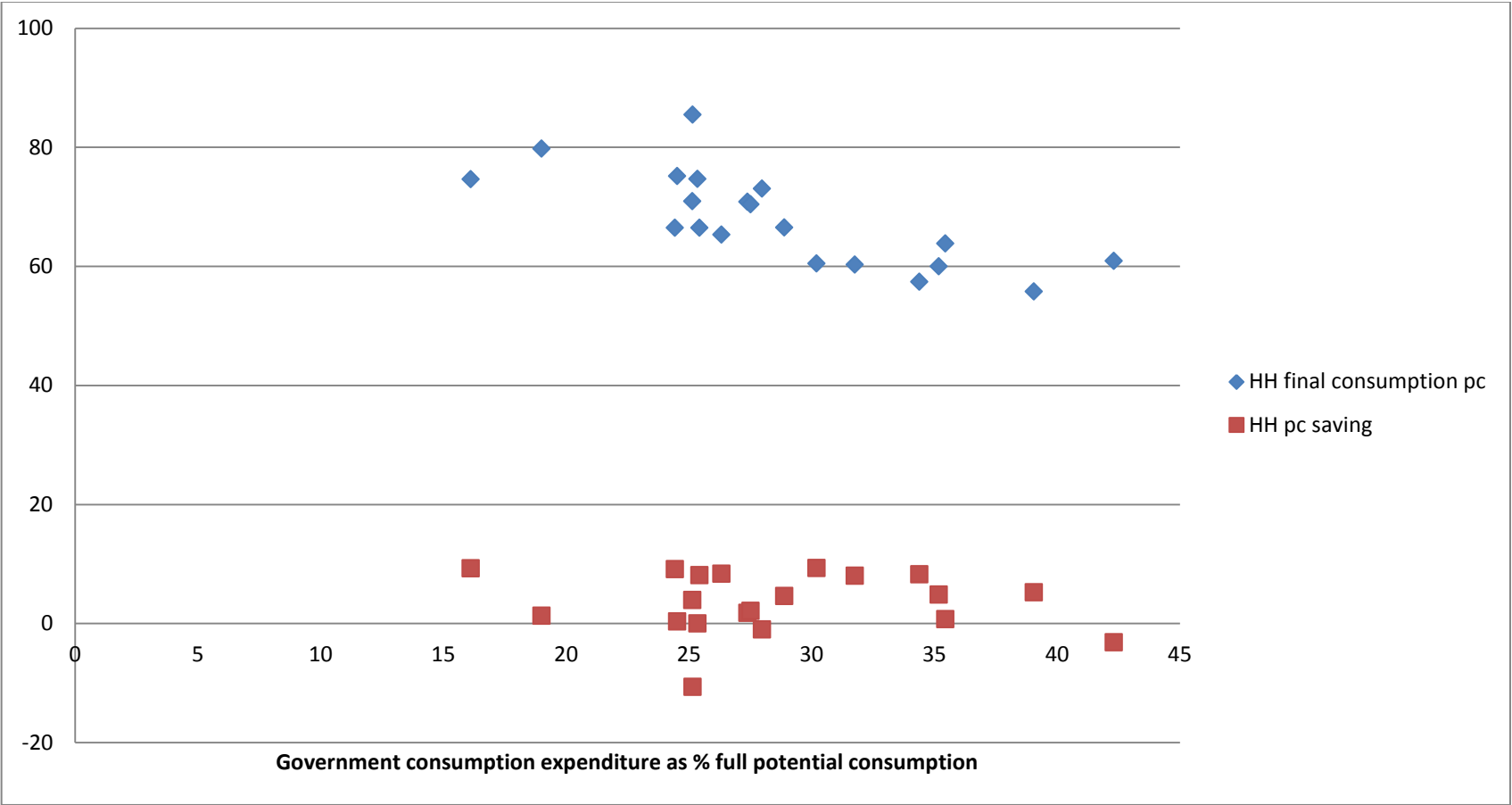


Figure 5: Household consumption (tax exclusive) and saving as % full potential consumption (13 countries)

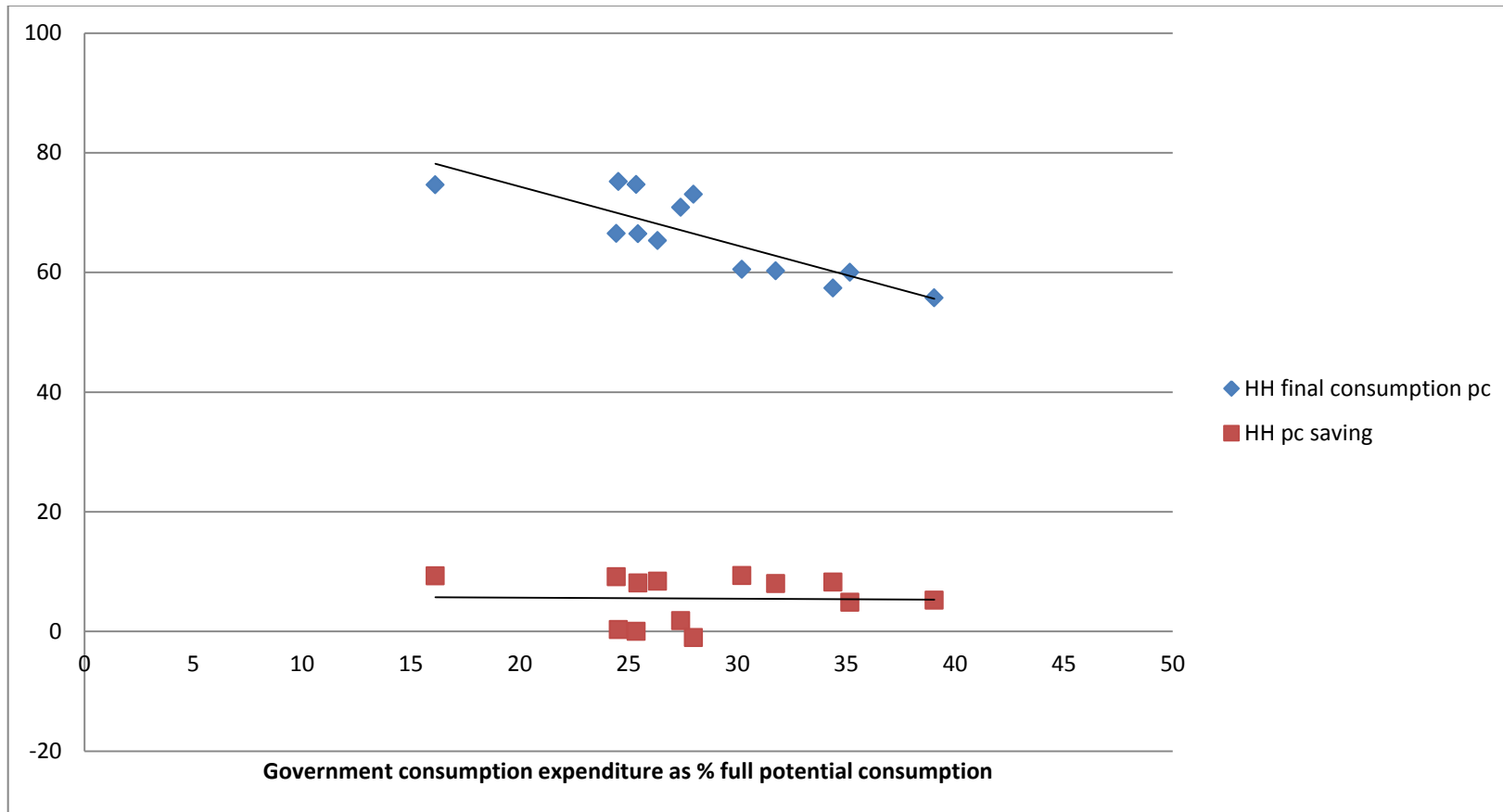


Figure 5 concentrates on the 13 countries which have total potential consumption within +/- 15 per cent of that in the UK. Within this group there is a very clear relationship between the government and household consumption shares. In Sweden government consumption is 39 per cent of the total and household consumption 55 per cent. By contrast, in Australia government consumption is only 25 per cent of the total, but private consumption 75 per cent.

4. Composition of Spending

We now turn to the composition of household spending and ask whether specific kinds of spending are more or less sensitive to variations in the public share. We are especially interested in spending categories where the private/public funding mix varies across countries.

We use detailed breakdowns of household consumption expenditure for the ten countries from OECD *Detailed National Accounts Country Reports* (vol. III). Overall we group spending within 17 categories, separating out specific headings within the normal broad aggregates for housing (actual housing spending on rentals and housing maintenance; imputed rents; and electricity, gas, other fuels and water supply); and transport (purchase of vehicles and operation of personal transport equipment; and transport services). We also separate out 'social protection' and 'insurance and financial services'. In total, we examine 17 categories of household consumption expenditure. Table A3 in the Appendix provides a detailed list of the goods and services included in each item and Table A4 shows the composition of household consumption (tax exclusive) between the 18 countries for which it is available (ordered by the full measure of potential consumption, as in Table 1).

Drawing on these data we examine the relationship between household spending by separate consumption categories and government consumption expenditure. The latter is measured as final government consumption expenditure (individual plus collective spending) as a share of a country's full potential consumption. We also examined the relationship between the composition of household consumption and government individual consumption expenditure, mainly made up of health and education spending.³ However, the analysis shows that the direction and magnitude of changes in household spending on specific items as public consumption varies are very similar,

³ 'General government individual consumption' gives a proxy for government effort targeted directly on households. This spending mainly covers public education and public health care; spending on aid for social housing, the operating expenses of museums and other government services to households. It contrasts with 'collective consumption expenditure', which consists of expenditure related to the activities of general government that are not attributable uniquely to households but might also benefit enterprises. The latter includes spending on parliaments, national assemblies, ministries of social affairs, safety and order, defence, and home affairs. When added together, government individual consumption and collective consumption yield 'final government consumption', the main variable used to capture the public share of a country's full potential consumption here.

whether final government consumption or individual government consumption are considered. Below we therefore report results for the final government consumption measure since it captures a more complete definition of government consumption. Some results in relation to the individual government consumption measure are reported in the Appendix (Figures A1-A3).

We examine whether the consumption of specific items as a share of total household consumption varies with government consumption expenditure. Figures 6 (a)-(e) show the relationships between households' spending on categories as a share of total household consumption and final government consumption as a share of full potential consumption. Figures A1 (a)-(e) in the Appendix plot the same shares of household consumption items against *individual* government consumption expenditure as a share of full potential consumption. All figures also show simple bivariate linear regression lines for each of the 17 consumption categories.

In principle one might expect to see five different kinds of pattern:

- (a) For 'luxury' goods, one would expect their share of total consumption to fall, as higher government consumption meant higher taxes, and reduced net incomes (comparing countries with similar income levels), with luxuries being those most likely to be sacrificed.
- (b) For 'necessities', the share of total consumption would rise, as households protected these items within a falling overall total.
- (c) For other goods that were neither of these, shares in total consumption could remain constant, with consumption falling in proportion to the overall total.
- (d) Some goods may be substitutes for government consumption, and so their share would fall as that of government rose, and it became less necessary for households to purchase them privately.
- (e) In principle there might also be items that were complementary to government consumption and whose share would rise with it – for instance, perhaps, spending on rents for public housing (as opposed to private rents or owner-occupation).

Figure 6 (a) shows that the shares of household consumption on restaurants and hotels and on furnishings and household equipment are those that have the fastest drop between countries with low and higher shares of government consumption within full potential consumption. These are followed in Figure 6(b) by lower consumption shares on clothing and footwear, insurance and financial services, and education in countries with lower public consumption.

Restaurants and hotels, clothing, and furnishings are plausible luxuries and appear to be the items most rapidly sacrificed in countries with high government consumption. Reductions in spending on insurance and financial services could be because they act as both substitutes and luxuries – for instance more private insurance being needed in countries with weak social protection, but also with financial services being a form of luxury good. At this level of aggregation it is hard to make inferences that choose between these drivers. Education is more complex, possibly acting as a substitute but

possibly also as a luxury (although the relationship with individual government consumption shown in Figure A1(b) in the Appendix is no stronger).

Household consumption shares for the following items remain roughly constant across countries with different final government consumption shares: health, alcoholic beverages, fuel, transport services and personal transport (and ‘other goods and services’). It seems as if consumption on them falls roughly in proportion to total household consumption, leaving their shares in it little affected.

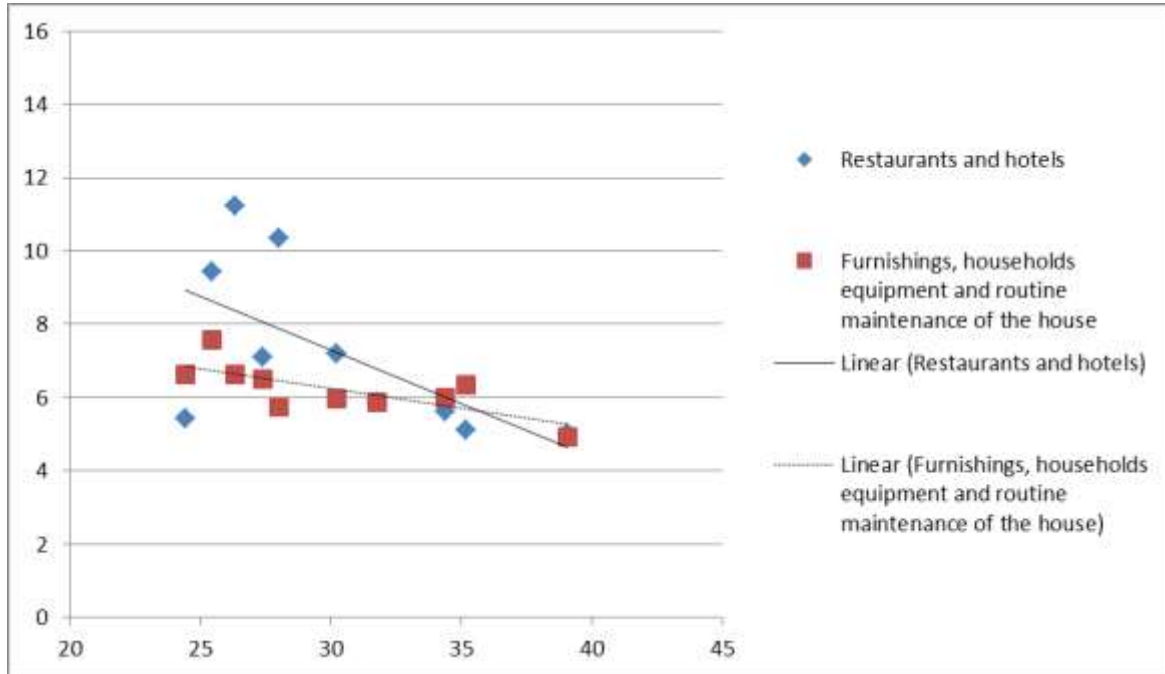
Items whose share of household consumption increases as public consumption increases are: communications, social protection, imputed rentals for housing, and food and non-alcoholic beverages. The shares in household consumption of recreation and culture and of housing rentals and maintenance increase even more markedly with higher public consumption (Figure 6(e)). The shares of ‘recreation and culture’ spending vary greatly between the countries, so the differences may not be strongly related to government spending. For food and housing costs, their role as ‘necessities’ is a clear explanation. It is maybe more surprising that this is the case for ‘communications’ spending and for ‘social protection’. One might have expected the latter to appear as more of a substitute for government consumption, but the ‘necessity’ character of elements within it, such as payments for care homes for the elderly or for childcare (see Table A3), appear to be dominant.

The regression results reported in Table 3 confirm these results. This reports the coefficients of OLS regressions of the separate household items expressed as shares of total household consumption on final government consumption (as a share of a country’s full potential consumption). The columns are arranged in order of the coefficients shown, largely corresponding to the divisions between items shown in Figure 6. What the table emphasises, however, are the limitations to the conclusions that can be drawn from data for just ten countries at this level of aggregation. The only items where the relationship is statistically significant are:

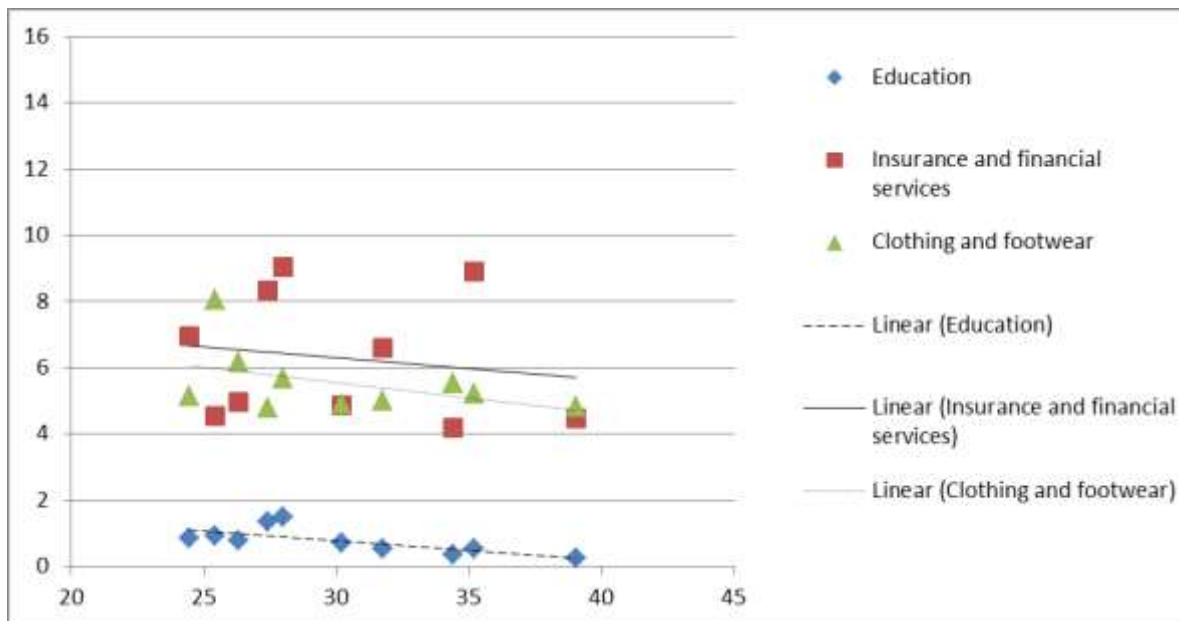
- Restaurants and hotels, furnishings and household equipment, and education – all with falling shares corresponding to being luxuries (or possibly substitutes in the case of education).
- Social protection and communications – with rising shares, as if they were necessities or complementary to government consumption in some way.

Figure 6 Composition of household consumption (%) by final government consumption expenditure (individual+collective) as % of full potential consumption

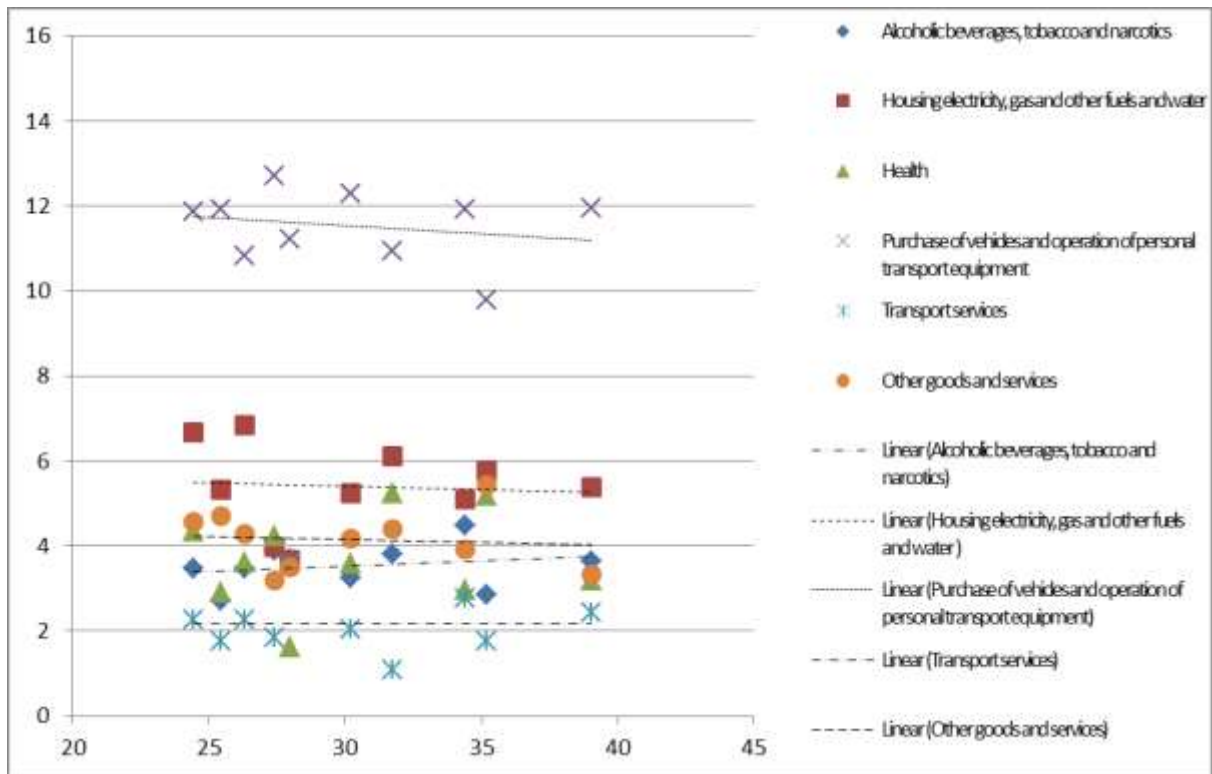
(a) Consumption share falls rapidly



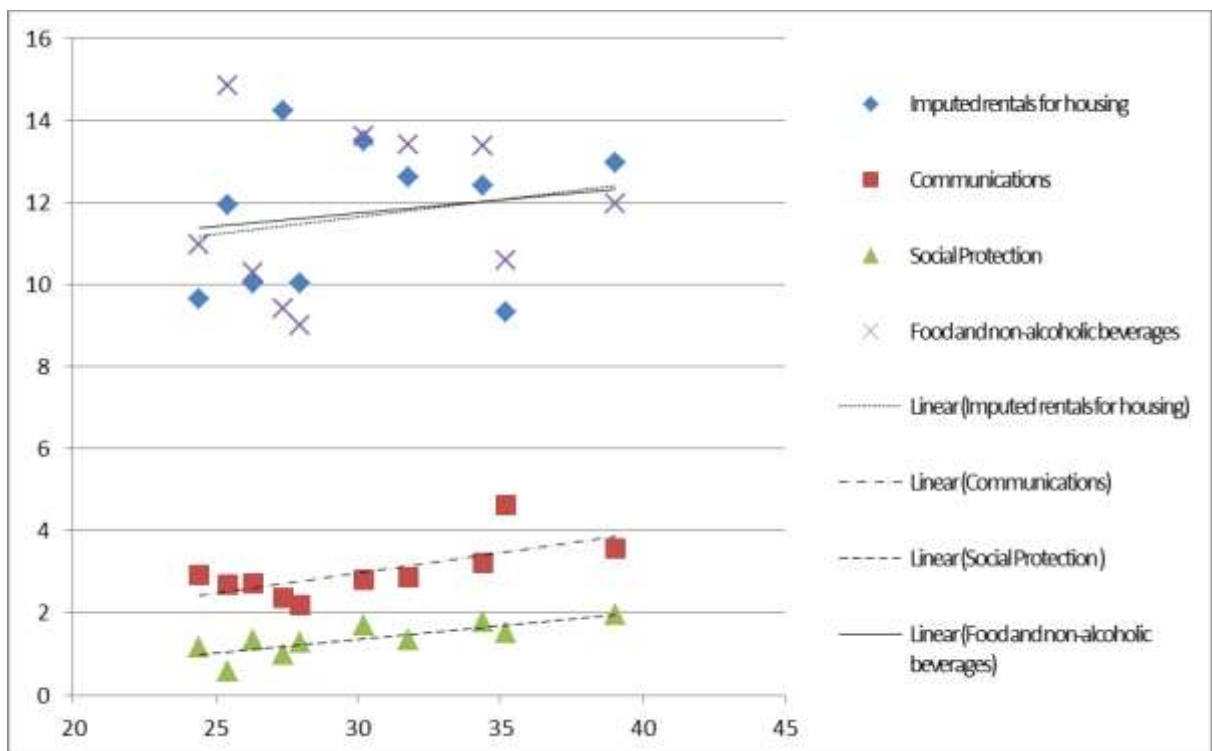
(b) Consumption share falls



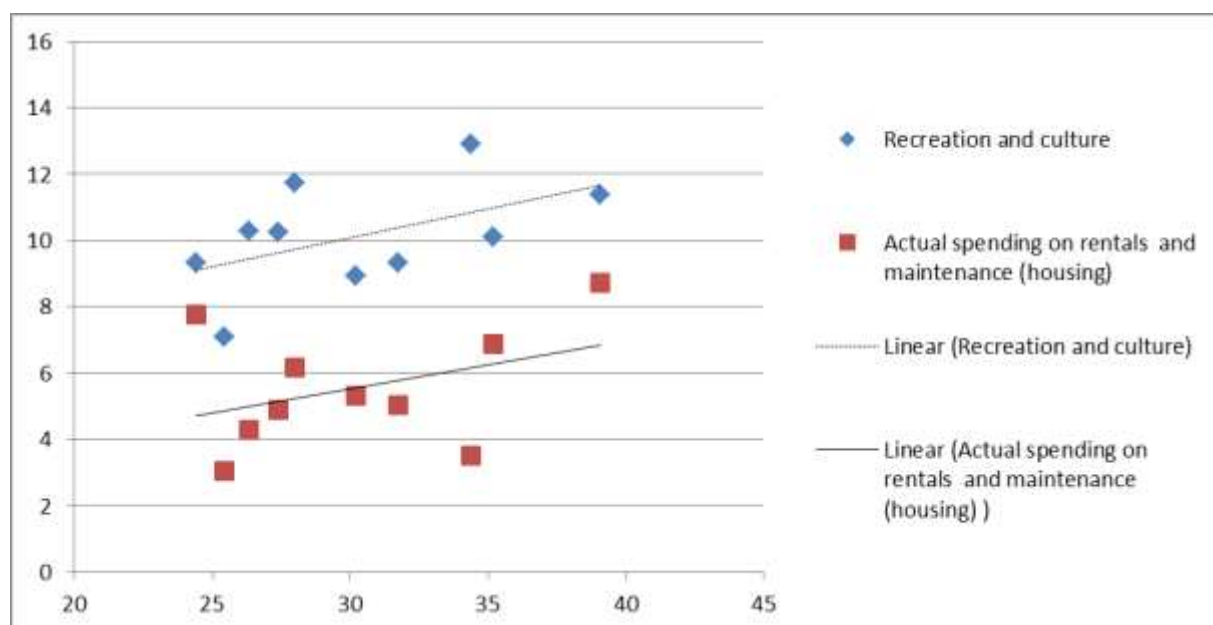
(c) Consumption shares constant



(d) Consumption shares rise



(e) Consumption share rises rapidly



While the signs on the other items are generally in a plausible direction, the relationship is very weak, partly because we have such few observations. For the items with a significant coefficient the regression coefficients (R^2) are quite high, but not for the others.⁴

This kind of analysis does not answer directly the question of how much of each kind of item appears to be being sacrificed as government consumption rises – how much is it that gives when there is less household consumption possible? This is addressed by Table 4. In this case, it shows the logarithm of the level of household consumption (in US\$ at purchasing power parities) regressed on final government consumption spending as a share of full potential consumption. The coefficients thus represent approximate percentage changes in the level of consumption of each kind as government consumption rises amongst these ten countries.⁵

⁴ With the exception of ‘recreation and culture’, but here the substantial variation between countries means that the coefficient is statistically insignificant.

⁵ There will, of course, be many other factors, economic and institutional, that affect consumption patterns as well, including in particular that some countries are a little more or less affluent than the others (although Table 1 shows no strong link between the overall level of full potential consumption and the share represented by government consumption). However, for these purposes and at this level of aggregation it does not seem worthwhile to develop a more complex model allowing for additional factors.

Table 3: Coefficients from regressions of shares of items within household consumption on government share¹

	Restaurants and hotels	Furnishings, HHs equipment and routine maintenance of the house	Clothing and footwear	Insurance and financial services	Education	Purchase of vehicles and operation of personal transport equipment	Electricity, gas, other fuels and water (housing)	Other goods and services
Final government consumption expenditure as % of full potential consumption	-0.295	-0.108	-0.091	-0.065	-0.059	-0.038	-0.016	-0.014
	(2.20)*	(3.13)**	(1.4)	(0.46)	(2.90)**	(0.62)	(0.21)	(0.28)
Constant	16.139	9.461	8.273	8.243	2.555	12.694	5.881	4.577
	(3.94)***	(9.00)***	(4.18)***	(1.91)*	(4.12)***	(6.79)***	(2.55)**	(2.94)**
R ²	0.38	0.55	0.2	0.03	0.51	0.05	0.01	0.01
N	10	10	10	10	10	10	10	10

	Transport services	Alcoholic beverages, tobacco and narcotics	Health	Food and non-alcoholic beverages	Social protection	Imputed rentals for housing	Communications	Rentals and maintenance (housing)	Recreation and culture
Final government consumption expenditure as % of full potential consumption	0	0.025	0.028	0.065	0.067	0.085	0.098	0.144	0.174
	(0.01)	(0.67)	(0.34)	(0.45)	(3.83)***	(0.67)	(2.61)**	(1.15)	(1.69)
Constant	2.192	2.782	2.846	9.787	-0.663	9.11	0.036	1.215	4.872
	(1.44)	(2.47)**	(1.15)	(2.22)*	(1.24)	(2.36)**	(0.03)	(0.32)	(1.55)
R ²	0	0.05	0.01	0.02	0.65	0.05	0.46	0.14	0.26
N	10	10	10	10	10	10	10	10	10

1. Coefficients from OLS regressions of separate items of household consumption (as shares of total household consumption) on final government consumption expenditure as a share of full potential consumption expenditure (* p<0.1; ** p<0.05; *** p<0.01).

Table 4: Coefficients from regressions of levels of spending on consumption items on government consumption share¹

	Total consumption	Education	Restaurants and hotels	Furnishings, HHs equipment and routine maintenance of the house	Clothing and footwear	Insurance and financial services	Other goods and services	Purchase of vehicles and operation of personal transport	Electricity, gas, other fuels and water (housing)
Final government consumption expenditure as % of full potential consumption	-0.016	-0.112	-0.058	-0.035	-0.032	-0.03	-0.022	-0.021	-0.018
	(2.45)**	(4.20)***	(2.87)**	(5.12)***	(2.87)**	(1.18)	(2.00)*	(2.78)**	(1.62)
Constant	10.101	8.014	8.697	7.896	7.68	7.711	7.082	8.088	7.224
	(51.38)***	(9.84)***	(14.11)***	(37.57)***	(22.46)***	(9.92)***	(21.18)***	(35.11)***	(21.40)***
R2	0.43	0.69	0.51	0.77	0.51	0.15	0.33	0.49	0.25
N	10	10	10	10	10	10	10	10	10

	Transport services	Alcoholic beverages, tobacco and narcotics	Food and non-alcoholic beverages	Imputed rentals for housing	Health	Recreation and culture	Rentals and maintenance (housing)	Communications	Social protection
Final government consumption expenditure as % of full potential consumption	-0.018	-0.011	-0.011	-0.01	-0.009	0	0.007	0.013	0.035
	(0.67)	(0.78)	(1.14)	(0.84)	(0.39)	(0.02)	(0.29)	(1.28)	(1.81)
Constant	6.298	6.587	7.786	7.758	6.536	7.305	6.466	5.697	4.222
	(7.61)***	(15.65)***	(27.25)***	(21.55)***	(9.43)***	(15.80)***	(8.90)***	(18.43)***	(7.12)***
R2	0.05	0.07	0.14	0.08	0.02	0	0.01	0.17	0.29
N	10	10	10	10	10	10	10	10	10

1. Coefficients of OLS regressions of total (log) household consumption and levels (log) of separate consumption items on final government consumption expenditure as a share of full potential consumption expenditure (* p<0.1; ** p<0.05; *** p<0.01).

The first column of Table 4 suggests that as the share of government in potential consumption rises, total household consumption is lower, falling by 1.6 per cent for each 1 percentage point by which the share of government in the total is higher. This roughly reflects the way that on average household consumption is about two-thirds of the potential total, so a one percentage point displacement out of the total, as suggested by Figure 5 above, is about 1.6 per cent of the starting level of household consumption.⁶

The columns of the table are again ordered by the coefficients shown. Lower private consumption in high government consumption countries means lower consumption of most spending items, but Table 4 shows that some items of household consumption have percentage reductions that are higher than the overall decrease (1.6 per cent). Household spending on education experiences the highest percentage reduction (-11.2%), most likely reflecting a substitution effect as households need to spend less on this item in countries with higher public provision. This is followed by spending on restaurants and hotels, on household furnishings and equipment, on clothing and footwear, and on insurance and financial services (although the fall here is not statistically significant). Consumption on all these items falls, suggesting that they mostly act as luxury goods (even though basic elements within, for instance, clothing, will be necessities). There is also a significant fall in spending on personal transport and on 'other goods and services'. As noted above, none of the other differences is statistically significant. Several decrease roughly in line with the percentage fall in total household consumption. Household consumption on fuels, transport services, food and non-alcoholic beverages and alcoholic beverages and narcotics record percentage reductions between 1 and 2 per cent. Health experiences a reduction (-0.9 per cent) which is lower than total household consumption.

Perhaps more surprisingly, the data show a percentage increase in household consumption on some items, specifically social protection and communications (although neither is significant).

From such a small group of countries, which differ in many other ways, we cannot draw very strong inferences, but they do give a preliminary indication of what tends to be sacrificed by countries with higher public consumption. For the ten countries on which this analysis is based, the unweighted average of (tax exclusive) total household consumption is \$15,222 (Table A2). The coefficient in Table 4 suggests that a 1 percentage point higher share of public consumption within potential consumption is, in this group, associated with a 1.6 per cent lower total household consumption. This would then be equivalent to \$235 less, if applied to tax exclusive consumption.⁷ Using

⁶ For example, in Germany full potential consumption is \$23,900, so a 1 percentage point change is \$239, which would be 1.5 per cent of tax exclusive household consumption (if displacement was exactly dollar for dollar).

⁷ In the absence of more detailed data, this calculation assumes that consumption taxes are applied equally across different forms of consumption. In reality, they will vary significantly

unweighted averages again (from Table A1), this implies that \$1,000 higher public consumption would be associated with \$1,018 lower tax exclusive household consumption.

The five significant coefficients for individual spending categories in Table 4 (excluding the residual ‘other’ category), if applied to the unweighted average composition of consumption in these countries (from Table A4) imply that the main items accounting for this difference in household consumption would be:

Restaurants and hotels:	\$267
Purchase of vehicles:	\$154
Furnishings, household equipment and routine maintenance:	\$138
Clothing and footwear:	\$112
Education:	\$ 56

Together these items account for more than 70 per cent of the difference in consumption, even though they only account for 31 per cent of the actual total. It does indeed appear that the larger part of the sacrifices that countries with high public consumption appear to be making at the margin are indeed on items that might to some extent be thought of as ‘luxuries’, with the addition of education, where there may be some form of substitution between public and private consumption.

5. Conclusions

Overall these results suggest that there is an apparent hierarchy in the forms of consumption that citizens of different countries sacrifice when they have greater government consumption (and so higher taxes). The trade-off at the margin is not with all kinds of consumption equally, but particularly with consumption of particular kinds – such as spending on restaurants and hotels, vehicle purchase, household furnishings, or clothing and footwear. But there are also items, such as education, where government spending may act as substitute for what private households would have to spend. Such findings could colour our views of what the ‘big trade-off’ between public and private consumption really entails.

The inferences that can be drawn from such national accounts data for just ten countries are, however, somewhat limited. There are many other institutional, historical, and economic differences between even the ten countries with similar consumption possibilities on which we have focussed than simply their levels of public consumption. In looking at aggregate data we are constrained to look at average consumption patterns, but those averages – weighted towards those with the greatest consumption – may conceal what is happening to more typical households. This relationship will vary depending on inequality levels in each country, itself affected by government tax and transfer structures (netted out here). In using the available

between groups, but at this level of aggregation we are not able to allocate them accurately between groups.

aggregate data, we cannot allow very well for variations in the impact of indirect taxes between different kinds of consumption.

In future work we will use micro-data from household budget surveys to make more detailed comparisons of the relationships between gross and net household incomes and their spending patterns in a smaller group of countries. The analysis presented here is designed both to inform that more detailed comparison and to provide a context for it.

References

- Atkinson, A. B. (1999), *The Economic Consequences of Rolling Back the Welfare State*, Cambridge, Mass. and London: MIT Press.
- Esping-Andersen, G. (1999), *The Three Worlds of Welfare Capitalism*, Cambridge: Polity Press.
- Goodin, R., Headey, B., Muffels, R. and Dirven, H.-J. (1999), *The Real Worlds of Welfare Capitalism*, Cambridge: Cambridge University Press.
- Leibfried, S. and Mau, S. (eds) (2008), *Welfare States: Construction, deconstruction, reconstruction, Volume III: Legitimation, achievement and integration*, Cheltenham: Edward Elgar.
- Lequiller, F. and Blades, D. (2006) *Understanding National Accounts*, OECD, Paris
- OECD (2011) *Consumption Tax Trends 2010, VAT/GST and Excise Rates: Trends and Administration Issues*, OECD, Paris
- Ohanian, L., Raffo, A. and Rogerson, R. (2006) *Long-Term Changes in Labor Supply and Taxes: Evidence from OECD Countries, 1956-2004*, NBER Working Paper No. 12786, December (and *Journal of Monetary Economics* 55 (2008), pp. 1353-62).
- Ngai, L.R. and Pissarides, C.A. (2009) “Welfare Policy and the Distribution of Hours of Work”, CEP Discussion Paper 0962, London: LSE.
- UNSTATS: Classification of Individual Consumption According to Purpose (COICOP) <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=5&prn=yes>

Data sources

For GDP, Final consumption expenditure of general government, Individual consumption expenditure of general government, and Actual individual consumption, use the GDP “macro” account (expenditure approach) in “national currency, current prices” and in “US\$, current prices, current PPPs”, downloaded from OECDStatExtracts: http://stats.oecd.org/Index.aspx?DataSetCode=SNA_TABLE1

For PPPs, download from OECDStatExtracts:

http://stats.oecd.org/Index.aspx?datasetcode=SNA_TABLE4

For detailed information on household consumption expenditure accounts, OECD Detailed National Accounts from OECDStatExtracts:

<http://stats.oecd.org/index.aspx?r=407977>

For consumption taxes: “Taxes on general consumption as a % of GDP” from OECD “Consumption tax trends – 2010”, Chapter 3 on “Value Added Taxes Yield and Structure”: http://www.oecd-ilibrary.org/taxation/consumption-tax-trends_19990979

For information on tax revenues, OECD on-line Tax Database:

http://www.oecd.org/tax/taxpolicyanalysis/oecdtaxdatabase.htm#A_RevenueStatistics

For household savings, OECD iLibrary Detailed Tables: http://www.oecd-ilibrary.org/economics/national-accounts-of-oecd-countries-volume-ii-detailed-tables_19961995

For details on final household consumption expenditure items UNSTATS:

<http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=5>

Appendix Tables

Table A1 Main “macro” government (consumption tax and spending) statistics per capita, US\$ PPPs, 2005

	PPPs for GDP	Population (million)	GDP per capita (US\$ PPPs)	Taxes on general consumption as % of GDP	Consumption tax per capita (US\$ PPPs)	Final government expenditure per capita (US\$ PPPs)	Individual consumption expenditure of government per capita (US\$ PPPs)
Australia	1.4	20.4	35367.2	4.1	1450.1	6053.1	3727.0
Austria	0.9	8.2	33638.0	8.0	2691.0	6181.6	3550.0
Belgium	0.9	10.5	32179.9	7.2	2317.0	7322.0	4532.4
Canada	1.2	32.2	35106.2	5.0	1755.3	6640.2	4050.4
Denmark	8.6	5.4	33214.3	10.0	3321.4	8651.7	6030.6
Finland	1.0	5.2	30708.5	8.7	2671.6	6924.3	4527.4
France	0.9	61.2	30412.5	7.5	2280.9	7224.9	4653.5
Germany	0.9	82.5	31114.7	6.2	1929.1	5837.2	3657.8
Greece	0.7	11.1	24348.3	7.0	1704.4	4406.4	1650.1
Ireland	1.0	4.1	39140.2	7.5	2935.5	6201.6	3877.8
Italy	0.9	58.6	28279.9	6.0	1696.8	5698.3	3338.5
Japan	129.6	127.8	30442.5	2.6	791.5	5586.3	3072.5
Luxembourg	1.0	0.5	68320.5	6.2	4235.9	11286.6	6826.1
Netherlands	0.9	16.3	35104.2	7.5	2632.8	8320.2	4695.1
New Zealand	1.5	4.1	25304.3	8.9	2252.1	4565.2	2765.9
Norway	8.9	4.6	47629.3	7.9	3762.7	9377.9	6232.9
Portugal	0.7	10.5	21369.8	8.7	1859.2	4518.3	2614.7
Spain	0.8	43.4	27392.1	6.2	1698.3	4921.1	2889.5
Sweden	9.4	9.0	32701.4	9.2	3008.5	8563.9	6228.1
Switzerland	1.7	7.4	35784.6	3.9	1395.6	4181.7	2349.9
United Kingdom	0.6	59.4	33191.1	6.7	2223.8	7099.1	4212.6
United States	1.0	295.6	42501.8	2.2	935.0	6702.6	2687.6

Source: Authors’ calculations using data from OECDStatExtracts, OECDiLibrary, and OECD (2011) *Consumption Tax Trends 2010, VAT/GST and Excise Rates: Trends and Administration Issues*, OECD, Paris.

Table A2 Main “macro” household statistics per capita, US\$ PPPs, 2005

	Household final consumption (tax inclusive)	Consumption tax	Household final consumption (tax exclusive)	Household saving
Australia	19997.4	1450.1	18547.3	77.4
Austria	18027.1	2691.0	15336.1	1965.0
Belgium	16208.2	2317.0	13891.2	1843.0
Canada	18925	1755.3	17169.7	431.3
Denmark	15768.9	3321.4	12447.5	-649.9
Finland	15140.3	2671.6	12468.7	140.6
France	16747.9	2280.9	14467.0	2228.4
Germany	17810.8	1929.1	15881.7	2176.5
Greece	16674.6	1704.4	14970.2	-1862.6
Ireland	17219.7	2935.5	14284.2	986.3
Italy	16584.3	1696.8	14887.5	1815.7
Japan	17238.7	791.5	16447.2	0.7
Netherlands	16820	2632.8	14187.2	1145.8
Norway	19407.9	3762.7	15645.2	2249.1
Portugal	13420.3	1859.2	11561.1	343.8
Spain	15577.6	1698.3	13879.3	774.7
Sweden	15231.6	3008.5	12223.1	1143.4
Switzerland	20748.7	1395.6	19353.1	2406.6
United Kingdom	20750.2	2223.8	18526.4	-259.0
United States	29063.8	935.0	28128.8	448.9

Source: Authors' calculations using data from OECDStatExtracts, OECDiLibrary, and OECD (2011) *Consumption Tax Trends 2010, VAT/GST and Excise Rates: Trends and Administration Issues*, OECD, Paris.

Table A.3 Household composition expenditure items as specified by the Classification of Individual Consumption According to Purpose (COICOP) used in national accounts (UNSTATS)

Item	Goods and services included in the item
Alcoholic beverages, narcotics and tobacco	The alcoholic beverages classified here are those purchased for consumption at home. This group covers all purchases of tobacco by households, including purchases of tobacco in restaurants, cafés, bars, service stations.
Clothing and footwear	Clothes and shoes and other footwear.
Communication	Postal services; telephone and telefax equipment (e.g. purchases of telephones) and services (e.g. installation and subscription costs of personal telephone equipment, telephone calls from a private or public line).
Education	Pre-primary and primary education; secondary education; post-secondary non-tertiary education; tertiary education; education not definable by level (educational programmes, generally for adults, which do not require any special prior instruction).
Electricity, gas, other fuels and water (housing)	Includes associated expenditure such as hire of meters, reading of meters, standing charges, etc. Water supply and miscellaneous services related to the dwelling includes: refuse and sewage collection and disposal; co-proprietor charges for caretaking, gardening, stairwell cleaning, heating and lighting, maintenance of lifts and refuse disposal chutes; security services; snow removal and chimney sweeping.
Food and non-alcoholic beverages	The food and non-alcoholic beverages products are those purchased for consumption at home. The group excludes: food products and beverages sold for immediate consumption away from the home by hotels, restaurants, cafés etc.
Furnishings, HH equipment and routine maintenance of the house	Furniture and furnishings; carpets and other floor coverings; repair of furniture, furnishings and floor coverings; household textiles; major household appliances whether electric or not; small electric household appliances; repair of household appliances; glassware, tableware and household utensils; tools and equipment for house and garden; domestic services and household services; cleaning and maintenance products such as soaps, washing powders.
Health	Medical products, appliances and equipment (pharmaceutical products, therapeutic appliances and equipment); outpatient services (consultations of physicians in general or specialist practice; services of dentists, oral hygienists and other dental auxiliaries; paramedical services e.g. services of freelance nurses and midwives); hospital services. Hospital day-care and home-based hospital treatment are included as are hospices for terminally ill persons. This group covers the services of general and specialist hospitals, the services of medical centres, maternity centres, nursing homes and convalescent homes which chiefly provide in-patient health care. Hospitals are defined as institutions which offer in-patient care under direct supervision of qualified medical doctors.
Imputed rentals for housing	Imputed rentals of owners occupying their main residence; imputed rentals for secondary residences; imputed rentals of households paying a reduced rental or housed free.
Insurance and other financial services	Life insurance, insurance connected with the dwelling, insurance connected with health (service charge for private sickness and accident insurance), with transport, other insurance. Service charges for insurance are classified by type of insurance and is defined as the difference between claims due and premiums earned and premium supplement. Financial intermediation services; other financial services such as actual charges for the financial services of banks, post offices, saving banks, money changers and similar financial institutions; fees and service charges of brokers, investment counsellors, tax consultants and the like; administrative charges of private pension funds and the like.

Item	Goods and services included in the item
Other goods and services	Personal care: Hairdressing, salons and personal grooming establishments; electric appliances and other articles and products for personal care. Other services: fees for legal services, employment agencies etc; charges for undertaking and funeral services; payment for services of estate agents, housing agents etc; fees for the issue of birth, marriage and death certificates.
Purchase of vehicles and operation of personal transport	Motor cars, passenger vans, station wagons, estate cars and the like with either two-wheel drive or four-wheel drive; motor cycles; bicycles; animal drawn vehicles. Spare parts and accessories for personal transport equipment; fuels and lubricants; maintenance and repair.
Recreation and culture	Audio-visual, photographic and information processing equipment (e.g. television sets, car radios, personal computers); other major durables for recreation and culture (e.g. boats, horses and ponies, canoes windsurf; musical instruments, ping-pong tables); other recreational items and equipment, gardens and pets (e.g. toys); recreational and sporting services; cultural services (e.g. cinema, theatre, museums); newspapers, books and stationary, package holidays.
Rentals and maintenance (housing)	Rentals paid by tenants or sub-tenants; normally include payment for the use of the land on which the property stands, the dwelling occupied, the fixtures and fittings for heating, plumbing, lighting, etc., and, in the case of a dwelling let furnished, the furniture. Maintenance and repair of dwellings: are activities that have to be undertaken regularly in order to maintain the dwelling in good working order; they do not change the dwelling's performance, capacity or expected service life.
Restaurants and hotels	Restaurants and cafés; canteens; accommodation services (hotels, holiday villages university accommodation).
Social protection	Covers assistance and support services provided to persons who are elderly, disabled, having occupational injuries and diseases, survivors, unemployed, destitute, homeless, low-income earners, indigenous people, immigrants, refugees, alcohol and substance abusers. It also covers assistance and support services to families and children. Such services include residential care, home help, day care and rehabilitation. <i>More specifically</i> , this class covers payments by households for: retirement homes for elderly persons, residences for disabled persons, rehabilitation centres providing long-term support, schools for disabled persons; help to maintain elderly and disabled persons at home (home-cleaning services, meal programmes, day-care centres, day-care services and holiday-care services); wet-nurses, crèches, play schools and other child-minding facilities; counselling, guidance, arbitration, fostering and adoption services for families.
Transport services	Transport of individuals and groups of persons and luggage by train, tram and underground, by bus, coach, taxi and hired car with driver; passenger transport by air; passenger transport by sea and inland waterway.

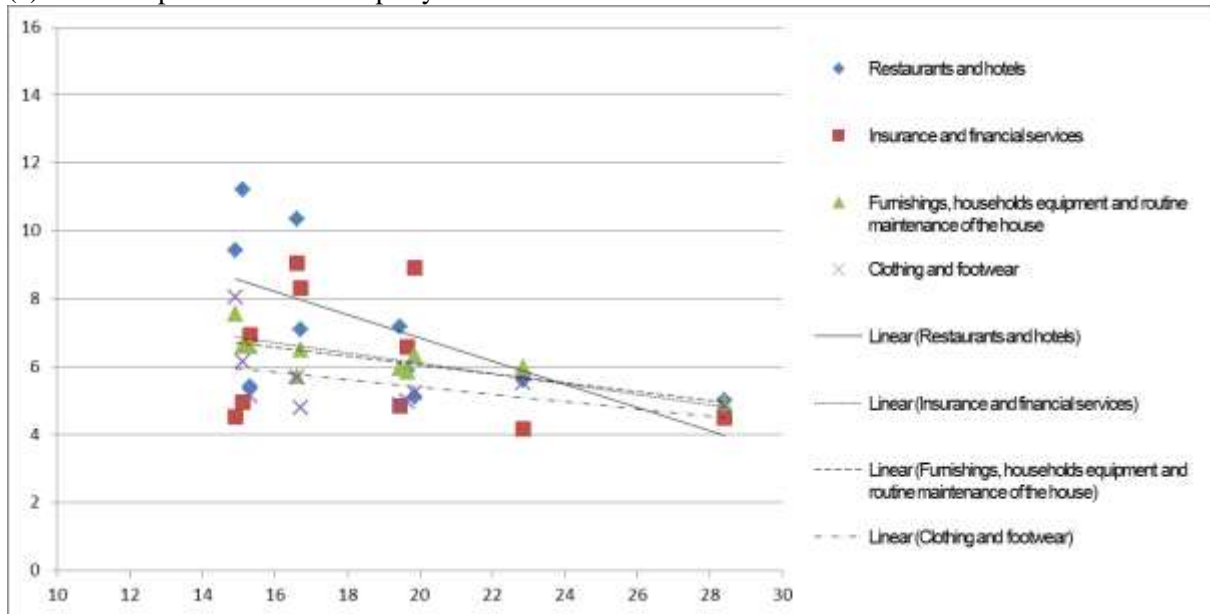
Table A.4 Households' final consumption expenditure as % of HH consumption – countries ranked by full measure of potential consumption

	USA	NOR	UK	AUS	CAN	FRA	GER	NL	OST	BEL	IT	SWE	IRE	DEN	SPA	FIN	GRE	POR
Food and non-alcoholic beverages	6.5	13.4	9.0	10.6	9.4	13.6	11.0	10.6	10.3	13.4	14.8	12.0	9.4	11.2	13.8	12.1	16.2	16.4
Alcoholic beverages, tobacco and narcotics	1.8	4.5	3.7	3.8	3.9	3.2	3.5	2.9	3.5	3.8	2.7	3.6	5.5	3.7	2.9	5.2	4.2	3.5
Clothing and footwear	3.8	5.5	5.7	3.6	4.8	4.9	5.1	5.2	6.2	5.0	8.0	4.8	5.0	4.7	5.7	4.8	5.5	6.1
Housing actual spending on rentals and maintenance	3.1	3.5	6.2	4.0	4.9	5.3	7.8	6.9	4.3	5.0	3.0	8.7	3.0	6.8	2.5	6.7	4.2	2.2
Imputed rentals for housing	12.4	12.4	10.0	12.3	14.2	13.5	9.7	9.3	10.0	12.6	11.9	13.0	13.3	12.2	10.3	15.7	10.4	7.6
Electricity, gas and other fuels and water	3.2	5.1	3.7	2.8	4.0	5.2	6.7	5.8	6.8	6.1	5.3	5.4	3.6	8.1	3.7	2.9	4.3	4.6
Furnishings, HHs equipment and routine maintenance of the house	4.9	6.0	5.7	5.2	6.5	6.0	6.6	6.3	6.6	5.9	7.6	4.9	6.5	5.7	5.3	5.3	5.0	6.5
Health	18.7	3.0	1.6	5.0	4.2	3.6	4.3	5.2	3.6	5.2	2.9	3.2	4.0	2.7	3.4	4.3	5.9	5.0
Purchase of vehicles and operation of personal transport equipment	10.5	11.9	11.2	9.2	12.7	12.3	11.9	9.8	10.8	10.9	11.9	12.0	9.6	12.0	10.2	10.5	9.3	12.9
Transport services	0.9	2.8	3.6	2.7	1.8	2.0	2.3	1.8	2.3	1.1	1.8	2.4	2.5	1.2	1.8	2.2	3.4	1.8
Communications	2.3	3.2	2.2	2.9	2.4	2.8	2.9	4.6	2.7	2.9	2.7	3.6	3.5	2.0	2.6	2.8	3.1	3.2
Recreation and culture	9.7	12.9	11.7	11.7	10.2	8.9	9.3	10.1	10.3	9.3	7.1	11.4	7.3	11.5	8.9	11.7	5.7	7.7
Education	2.0	0.4	1.5	3.3	1.3	0.7	0.9	0.5	0.8	0.5	0.9	0.3	1.2	0.7	1.5	0.4	2.2	1.1
Restaurants and hotels	6.2	5.6	10.4	7.1	7.1	7.2	5.4	5.1	11.2	5.9	9.4	5.0	13.6	4.9	18.4	6.8	13.2	11.0
Social Protection	1.4	1.8	1.3	0.0	1.0	1.7	1.2	1.5	1.3	1.4	0.6	2.0	0.2	2.0	0.6	1.4	0.1	0.8
Insurance and financial services	8.1	4.2	9.1	9.5	8.3	4.9	6.9	8.9	5.0	6.6	4.5	4.5	7.6	7.3	4.2	4.0	2.4	4.6
Other goods and services	4.6	3.9	3.5	6.3	3.2	4.2	4.6	5.4	4.3	4.4	4.7	3.3	4.3	3.4	4.1	3.3	5.0	4.9

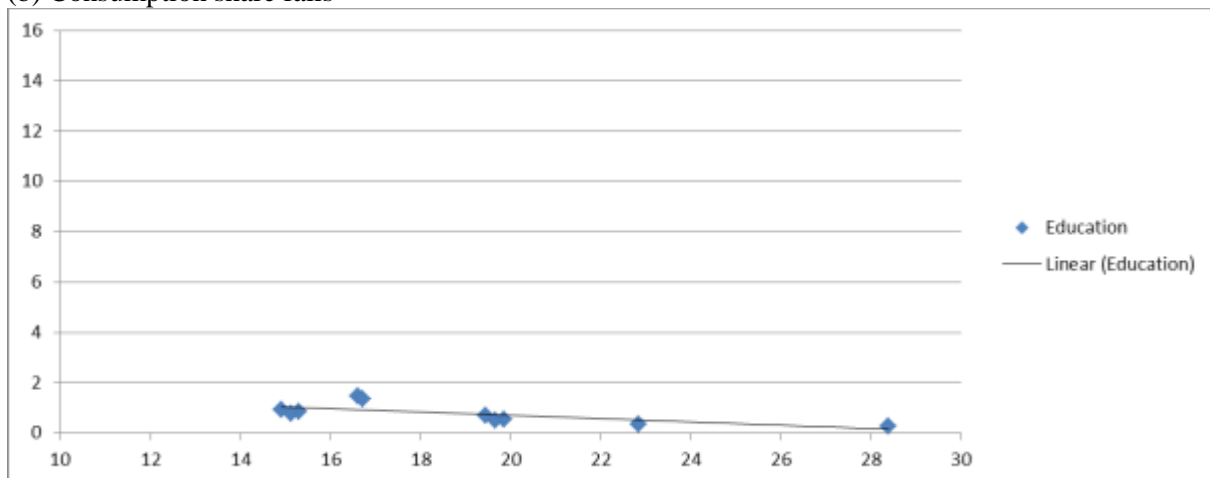
Source: Authors' calculations using data from OECDStatExtracts, OECDiLibrary, and OECD (2011) *Consumption Tax Trends 2010, VAT/GST and Excise Rates: Trends and Administration Issues, OECD, Paris.*

Appendix Figure A1: Composition of household consumption (%) by government individual consumption expenditure as % of full potential consumption

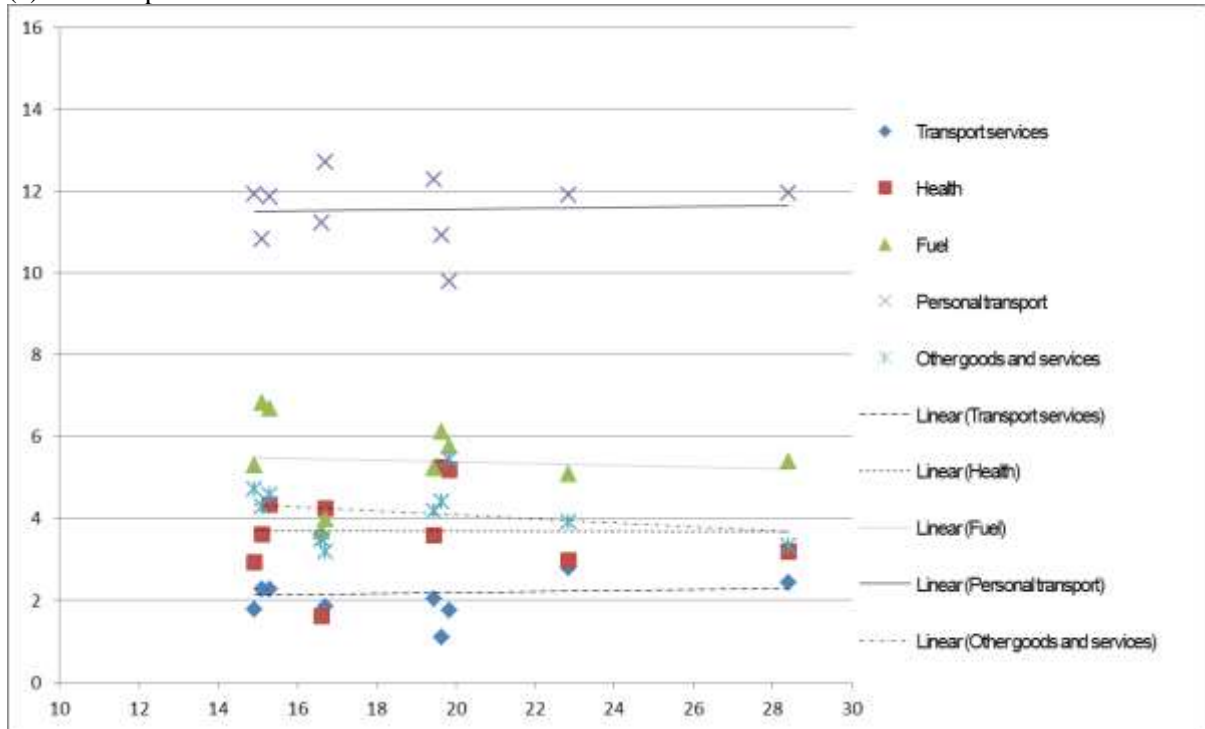
(a) Consumption share falls rapidly



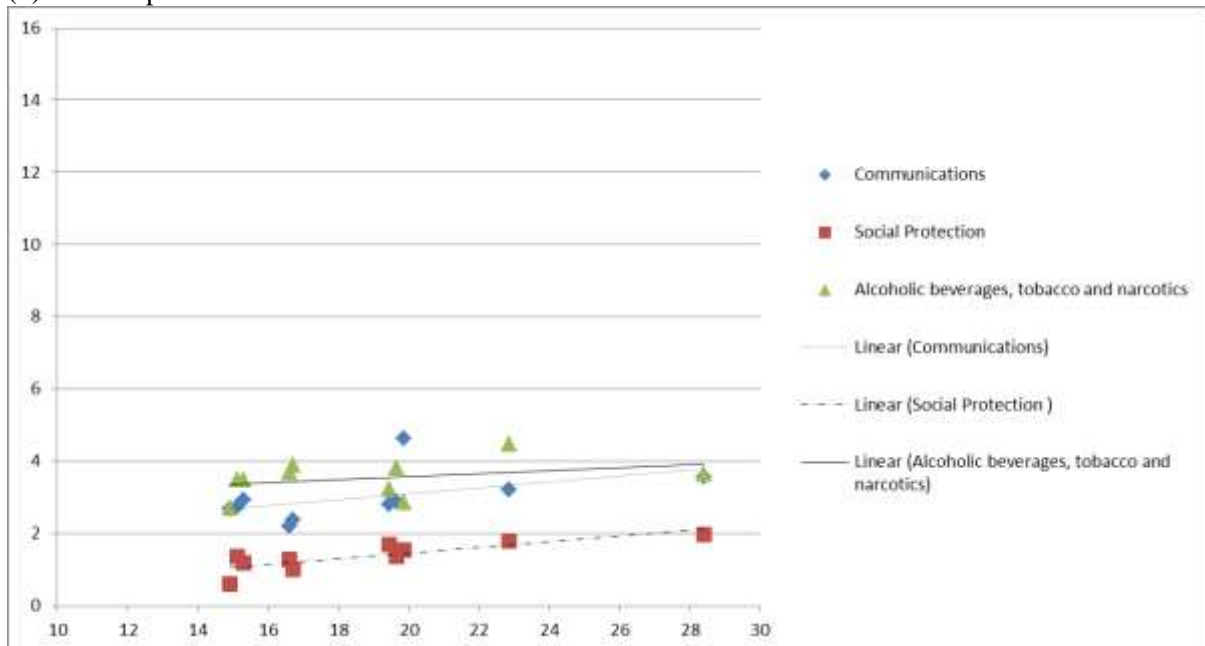
(b) Consumption share falls



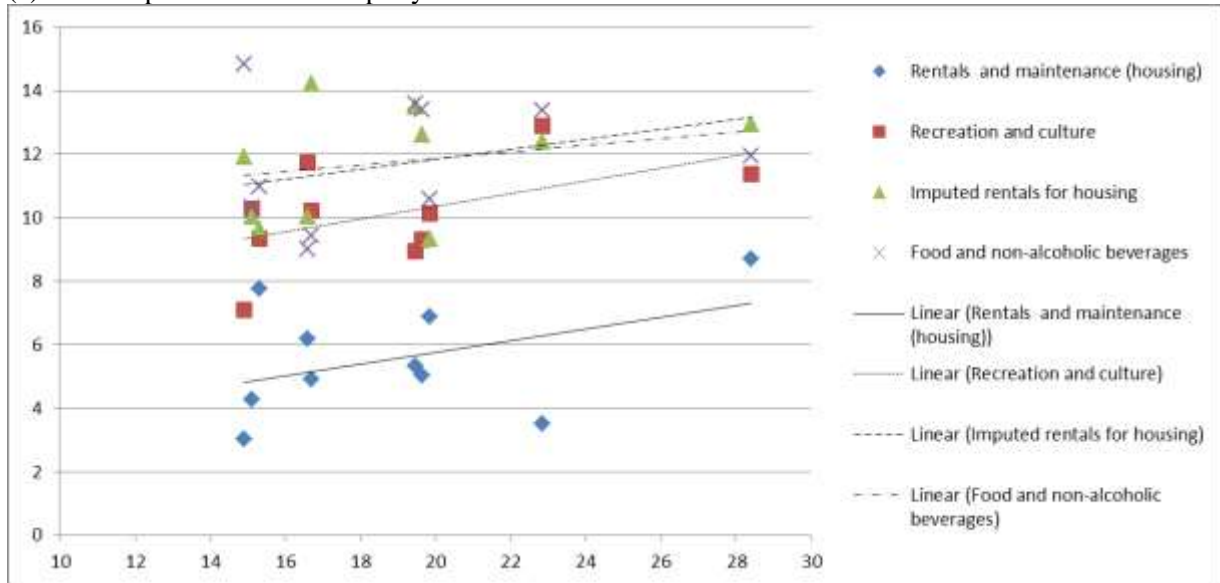
(c) Consumption share constant



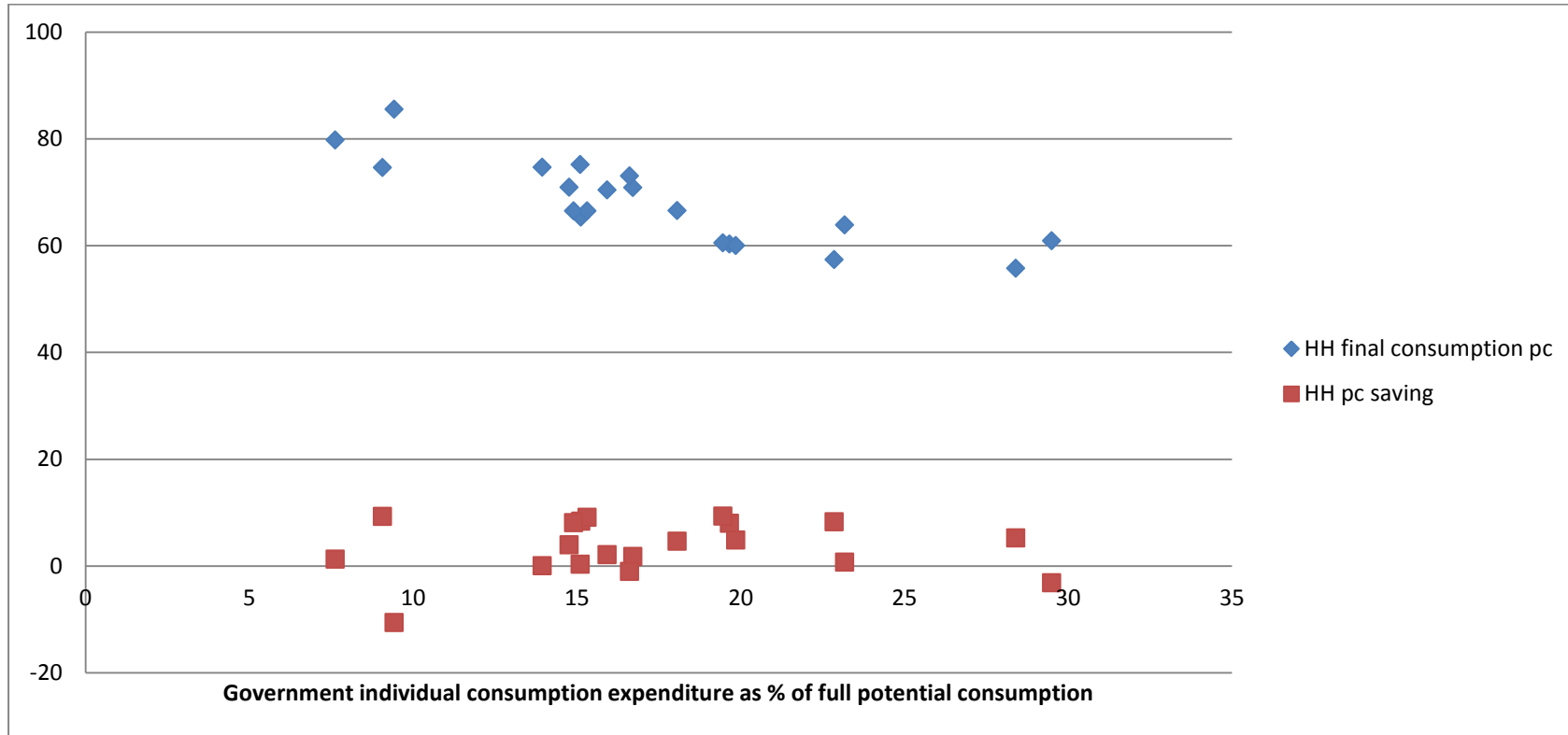
(d) Consumption share rises



(e) Consumption share rises rapidly



Appendix Figure A2: Household consumption (exclusive of consumption tax) and saving as % full potential consumption (20 countries) – plotted on government individual consumption expenditure as % of full consumption



Appendix Figure A3: Household consumption (exclusive of consumption tax) and saving as % full potential consumption (13 countries) – plotted on government individual consumption expenditure as % of full consumption

