

Households' capital available for renovation

Methodical note

Copenhagen Economics, 22 February 2017

The task at hand has been twofold: *firstly*, we were to calculate an estimate of households' average capital available for renovation across European countries, taking into account both financial and non-financial assets. *Secondly*, we were to show how many percent of the population (rounded to 10%) will be able to afford a particular renovation. As part of this step, we added a simple excel-tool that allows comparing the available capital to different levels of renovation costs. Our calculations are mainly based on data from several OECD databases.

We have conducted the estimation of available capital for renovation for all countries of the EU28 apart from six countries (namely Bulgaria, Cyprus, Croatia, Lithuania, Malta and Romania – for those countries, no OECD data has been collected) but including Norway and Switzerland.

Available financial assets

The financial assets available for renovation are calculated as the total financial assets minus those assets that are “locked”, i.e. that cannot be cashed in. We identified life insurance reserves and pension funds as such locked financial assets and considered all other financial assets (e.g. currencies and deposits, shares and other equity, etc.) as available. The available financial assets are consequently calculated as follows:¹

$$\text{Available } FA = FA_{total} - FA_{life-ins.} - FA_{pension}$$

With FA = financial assets.

Available non-financial capital

Next to financial assets, non-financial assets are a source of capital, since people can get a bank loan when using their house as a security. The sum of the bank loan is then available money that can be spent on a renovation of the house.

To estimate the available non-financial capital, we used households' net wealth as a starting point. Household net wealth is defined as the sum of financial assets and the

¹ The relevant source for this part of the calculation has been the OECD database HHFA (“household financial assets”).

value of dwellings, minus any outstanding liabilities. The households' gross housing value can be estimated by subtracting financial assets from the households' net wealth and adding liabilities:

$$\text{gross housing value} = \text{net wealth} - \text{financial assets}_{\text{total}} + \text{liabilities}$$

Using this calculation, we make the assumption that all liabilities are mortgages. According to the OECD, mortgages constitute most of the total liabilities. However, a small share of the liabilities will be unrelated to dwellings, which means that the calculation above is an approximation underestimating the value of available capital.

Typically, the amount of money that can be borrowed as a bank loan depends on the gross housing value. The loan-to-value (LTV) ratio describes how much a house owner can borrow from the bank. Existing liabilities lower that amount. As an example, a family owning a house worth 400.000 EUR and living in a country with a 80% LTV can take on a bank loan up to $80\% * 400.000 \text{ EUR} = 320.000 \text{ EUR}$. If this family is indebted with a mortgage of 200.000 EUR, they have capital summing up to $320.000 \text{ EUR} - 200.000 \text{ EUR} = 120.000 \text{ EUR}$ available for renovation. Expressed in a formula, the available capital from non-financial assets is:^{2 3}

$$\text{available non} - \text{FA} = \text{gross housing value} * \text{LTV} - \text{liabilites}$$

The total capital available for renovation is the sum of available financial and non-financial assets:

$$\text{total capital available} = \text{FA}_{\text{available}} + \text{non} - \text{FA}_{\text{available}}$$

Since the OECD's use measures and units, the initial unit of the total capital available has been USD per capita, in 2015 prices and adjusted to each countries purchasing power parity (PPP-adjusted). However, in the context of renovations, the available capital per household is more relevant. We converted the values into EUR per household, 2016 prices and in absolute terms (not PPP-adjusted).⁴

It is worth mentioning that the estimated total capital available is an average per household in each respective country. No differentiation has been made between

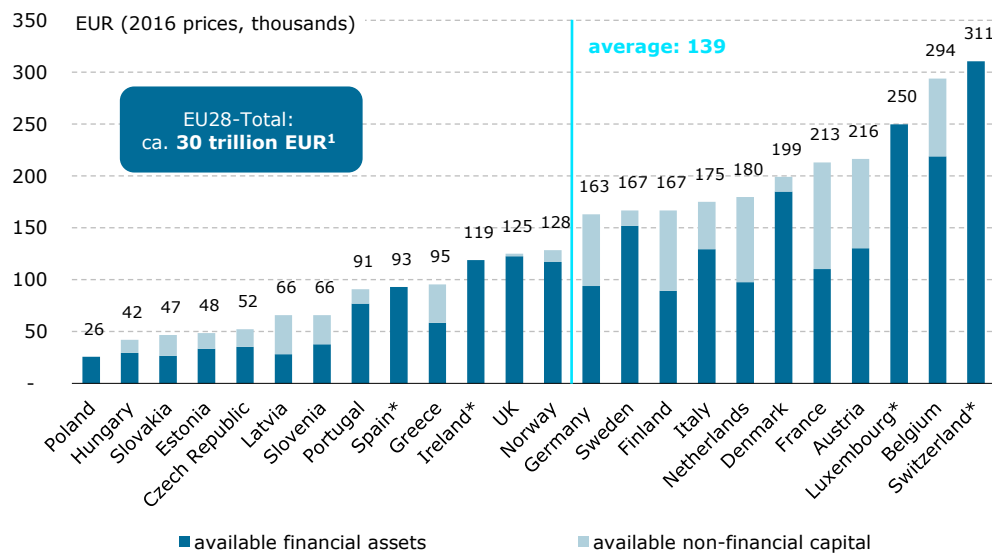
² The relevant sources for this part of the calculation have been the OECD databases HHWEALTH ("household net wealth") in combination with HHDI ("household disposable income"), HHFA ("household financial assets") and HHDEBT ("household debt").

³ As only 2014 data on household net wealth was available for 6 countries (Hungary, Estonia, Poland, Belgium, Greece, Portugal, Latvia and Norway), we extrapolated this data to 2015 for those countries by applying the average growth rate in household net wealth. LTVs were missing for 3 countries (Sweden, Switzerland and Norway) and have been extrapolated using the average of the other countries.

⁴ The relevant sources for this conversion have been Eurostat statistics on population ("Projected demographic balances and indicators [proj_13ndbims]") and household numbers ("Number of private households by household composition, number of children and age of youngest child (1 000) [lfst_hhnhtych]), as well as OECD databases on PPPs and exchange rates.

households owning and households renting their dwelling, or between different types of dwelling. As the total capital available from non-financial assets will, following the applied definition, naturally be zero for those households not owning a dwelling, the total capital available will be higher when looking at the subset of households that own their dwelling. The shown results can consequently be interpreted as conservative estimates.

Figure 1 Total capital available for renovation per household



Note: The numbers on top of each column show the total capital available for an average household. * for Spain, Ireland, Luxembourg and Switzerland, data on non-financial capital was not available. The total therefore shows the available financial assets only. The average takes into account all shown countries, including those with a "*".
¹ (= 29,9*10¹²) This number describes the total capital available for renovation, summed up over all households in all EU28-countries (with six exceptions, see above). When including Norway and Switzerland, this total increases by 1.7 trillion to 31.6 trillion EUR.

Source: Copenhagen Economics calculation based on OECD data

Accounting for the distribution of wealth

We account for the countries' distribution of wealth across the deciles of the population. This is important, as wealth is typically distributed unevenly across households, meaning that the richest 10-20 percent of the population own a much larger share of the total wealth. Looking at simple averages of households might therefore be misleading; it might be that the average across all households is a value sufficiently high to buy a particular renovation, but at the same time only the top 2-3 deciles of the population do actually have sufficient capital available to do so.

Table 1 The distribution of wealth across the population [% of total wealth per decile of population]

Decile	1	2	3	4	5	6	7	8	9	10
Austria	0.19	0.47	0.62	1	2.36	4.67	6.97	9.78	15.4	58.54
Belgium	0.25	0.35	2.16	4.75	5.9	7.33	9.53	12.02	16.53	41.18
Czech Republic*	0.41	1.14	2.39	3.65	5.55	7.35	9.51	13.07	17.91	39.03
Germany	0.12	0.52	0.81	1.18	2.69	4.79	7.11	10.93	16.77	55.08
Denmark*	0.18	1.32	2.92	4.67	6.12	8.11	9.7	14.4	17.6	34.97
Spain	1.01	1.7	3.59	4.46	5.8	7.36	8.62	11.05	15.75	40.66
Estonia*	1.01	1.7	3.59	4.46	5.8	7.36	8.62	11.05	15.75	40.66
Finland	0.41	1.14	2.39	3.65	5.55	7.35	9.51	13.07	17.91	39.03
France	0.18	0.31	0.62	2.08	4.83	6.94	9.07	11.77	16.89	47.32
UK*	1.01	1.7	3.59	4.46	5.8	7.36	8.62	11.05	15.75	40.66
Greece	0.39	0.77	2.66	4.65	6.23	7.91	10.17	12.76	17.54	36.91
Hungary*	0.18	0.31	0.62	2.08	4.83	6.94	9.07	11.77	16.89	47.32
Ireland*	0.18	0.31	0.62	2.08	4.83	6.94	9.07	11.77	16.89	47.32
Italy	0.2	0.45	1.64	3.66	5.56	7.21	9.1	11.75	16.57	43.86
Luxembourg	0.42	0.48	2.18	4.26	5.74	6.59	7.84	10.21	14.54	47.75
Latvia*	1.01	1.7	3.59	4.46	5.8	7.36	8.62	11.05	15.75	40.66
Netherlands	0.92	1.95	4.33	4.79	6.51	8.87	11.29	13.43	17.05	30.87
Poland*	0.18	0.31	0.62	2.08	4.83	6.94	9.07	11.77	16.89	47.32
Portugal	0.46	0.79	2.21	3.47	4.52	6.13	7.68	10.67	15.14	48.93
Slovakia	0.78	3.42	4.85	5.79	7.17	8.33	9.81	12.02	15.75	32.08
Slovenia	0.18	1.32	2.92	4.67	6.12	8.11	9.7	14.4	17.6	34.97
Sweden*	0.42	0.48	2.18	4.26	5.74	6.59	7.84	10.21	14.54	47.75
Switzerland*	0.18	0.31	0.62	2.08	4.83	6.94	9.07	11.77	16.89	47.32
Norway*	0.18	1.32	2.92	4.67	6.12	8.11	9.7	14.4	17.6	34.97

Note: The table shows the percentages of total wealth owned by each decile of the population from the poorest (1) to the richest decile (10). * For those countries, the data has been extrapolated from another country, namely that one which has the most similar Gini-coefficient, as detailed data on the distribution of wealth per decile was not available.

In its original version, the distribution is provided as the distribution of total (gross) wealth over the deciles of net wealth. As the Commissions' study shows, gross and net wealth are almost perfectly correlated across Europe (the Netherlands being a small exemption), meaning that it is not problematic to use this distribution data in either form.

Source: European Commission (2015) "Wealth distribution and taxation in the EU" for the distribution of wealth, OECD for the Gini-coefficients.

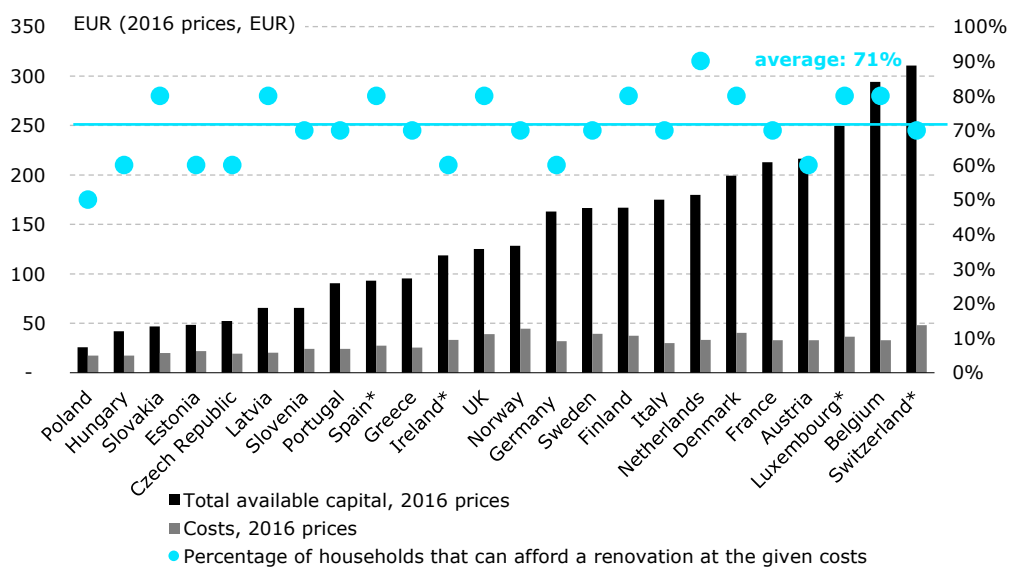
We take the distribution of wealth into account by calculating the total capital available for each decile of a country's population. For a given cost of renovation, we can then

calculate how many deciles (i.e. how many percent of the households, rounded to 10%) can afford that renovation.⁵

Comparing total capital available and renovation costs

As a last element, we built a simple excel tool that allows for a direct comparison of available capital and the costs of renovations. The tool uses prices in Denmark as a starting point, which is supposed to ease the application. The price to be entered in the tool is to be seen in a Danish context, i.e. Danish 2016 prices in local currency (DKK). The tool will then automatically calculate the respective costs in all other countries (in EUR), considering differences in the purchasing power parities (PPPs). The tool will also provide the share of households (rounded to 10%) that will be able to afford that type of renovation.

Figure 2 Total capital available for renovation and share of households that can afford a renovation costing DKK 300,000 in Denmark



Note: * for Spain, Ireland, Luxembourg and Switzerland, data on non-financial capital was not available. The total therefore shows the available financial assets only.

Source: Copenhagen Economics based on OECD data (financial and non-financial assets) as well the European Commission (2015) "Wealth distribution and taxation in the EU"

⁵ Our source for the distribution of wealth across deciles is the report by the EU Commission (2015) "Wealth distribution and taxation in the EU". For ten out of the 25 countries considered, detailed distribution data was missing (marked with a * in table 1). For those countries, we extrapolated the distribution of wealth from another country, namely that one which features the most similar Gini-coefficient respectively. Doing so, we ensure a better extrapolation than can be made by applying a simple average. The source of the Gini-coefficients is the OECD.