CAHIER D'ÉTUDES
WORKING PAPER

N° 91

HOUSEHOLD WEALTH IN THE EURO AREA:
THE IMPORTANCE OF INTERGENERATIONAL TRANSFERS,
HOMEOWNERSHIP AND HOUSE PRICE DYNAMICS

THOMAS Y. MATHÄ   ALESSANDRO PORPIGLIA   MICHAEL ZIEGELMEYER

JUNE 2014

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BANQUE CENTRALE DU LUXEMBOURG
EUROSYSTÈME

Household wealth in the euro area:
The importance of intergenerational transfers, homeowner-ship and house price dynamics[*]

Thomas Y. MATHÄ[*]   Alessandro PORPIGLIA[*]   Michael ZIEGELMEYER[*,♦]

thomas.mathae@bcl.lu   alessandro.porpiglia@bcl.lu   michael.ziegelmeyer@bcl.lu

June 2014

Abstract:

Results from the Eurosystem Household Finance and Consumption Survey reveal substantial variation in household net wealth across euro area countries that await explanation. This paper focuses on three main factors for the wealth accumulation process, i) homeownership, ii) housing value appreciation and iii) intergenerational transfers. We show that these three factors, in addition to the common household and demographic factors, are relevant for the net wealth accumulation process in all euro area countries, and moreover that, using various decomposition techniques, differences therein, in particular in homeownership rates and house price dynamics, are important for explaining wealth differences across euro area countries.

Keywords: household wealth, homeownership, property prices, inheritance, euro area
JEL Codes: D31, E21, O52, C42

Non-technical summary

Recent results published in April 2013 from the Eurosystem Household Finance and Consumption Survey reveal substantial variation in household net wealth across euro area countries that await explanation. Median household net wealth varies from €51,400 (Germany) to €397,800 (Luxembourg) with the euro area figure standing at €109,200. Similarly, mean household net wealth varies from €79,700 (Slovakia) and €710,100 (Luxembourg) with a euro area figure standing at €230,800. Thus, the natural question to ask is why are mean and median net wealth differences so large between euro area countries and what are the driving factors behind? This paper provides a first in-depth analysis of factors contributing to household wealth (differences) across euro area countries. Differences in household characteristics aside, it focuses on three major factors for the wealth accumulation process, 1) homeownership, 2) housing value appreciation and 3) intergenerational transfers that, in the household wealth literature, are repeatedly found to be of relevance for the wealth accumulation process.

First, homeownership, which is usually the most important asset in household portfolios, varies greatly in the euro area (44%-90%). Second, house price dynamics in the last 20+ years differ substantially across euro area countries. In countries with very dynamic past house price developments, households owning their dwelling benefit from accrued capital gains and the more so the earlier they invested. To ensure empirical comparability we develop a survey-based house price index that is both comparable across euro area countries and more extensive in time coverage than existing publicly available price indices. Third, intergenerational transfers increase household wealth directly through the cash value of the transfer and indirectly through their impact on the homeownership versus tenancy choice, i.e. for the decision to own or not to own.

We show not only that these three factors, in addition to the common household characteristics and demographic factors, are relevant determinants of the household net wealth accumulation process in almost every euro area country, but moreover that, using various decomposition techniques, differences therein, in particular in homeownership rates and house price dynamics, are important for explaining wealth differences across euro area countries. Across euro area countries, these factors explain on average 56% of the difference in total net household wealth at their respective median level relative to Germany. Similar results are found along the whole household net wealth distribution, although the relevance of the analysed factors in explaining household net wealth differences tend to be lower for the wealthier strata of the population.

Nichttechnische Zusammenfassung

Die im April 2013 veröffentlichten Ergebnisse einer in 15 Ländern der Eurozone durchgeführten Vermögensumfrage unter Haushalten (Eurosystem Household Finance and Consumption Survey) offenbarte große Nettovermögensunterschiede zwischen den Euroländern. Das mittlere Nettogesamtvermögen in der Eurozone betrug €109.200 und variierte von €51.400 (Deutschland) bis €397.800 (Luxemburg). Gleichermaßen betrug das durchschnittliche Nettogesamtvermögen in der Eurozone €209.200 und variierte von €79.700 (Slowakei) bis €710.100 (Luxemburg). Diese Ergebnisse fordern eine Antwort auf die Frage warum die mittleren und durchschnittlichen Nettogesamtvermögensdifferenzen zwischen den Euroländern so groß und was die treibenden Faktoren hinter diesen Differenzen sind. Dieses Papier liefert eine erste detaillierte Analyse der Vermögensunterschiede in der Eurozone. Neben den üblichen Haushaltscharakteristika, liegt der Fokus auf drei Hauptfaktoren der Vermögensakkumulation: 1.) Besitz von Wohneigentum, 2.) Wertsteigerungen von Immobilienvermögen und 3.) generationsübergreifende Transfers, welche in der Fachliteratur über Haushaltsvermögen wiederholt eine wichtige Rolle spielen.

Erstens, der Besitz des selbstgenutzten Wohneigentums, normalerweise die größte Einzelvermögensposition im Vermögensportfolio von Haushalten, variiert stark zwischen den Euroländern (44%-90%). Zweitens, erfuhren Immobilien unterschiedlich starke Wertsteigerungen in den Euroländern. In einigen Ländern mit besonders starken Wertsteigerungen haben Eigentümer von selbstgenutztem Wohneigentum erheblich von Wertsteigerungen profitiert, umso mehr je eher das Eigentum erworben wurde. Zu diesem Zweck wurde ein Hauspreisindex aus den Erhebungsdaten konstruiert, welcher die Vergleichbarkeit der Immobilienwertsteigerungen zwischen den Ländern sicherstellt und über längere Zeiträume verfügbar ist. Drittens, generationsübergreifende Transfers in Form von Erbe und Geschenken erhöhen das Vermögen der Haushalte direkt, aber auch indirekt durch den Einfluss auf die Entscheidung zum Erwerb von Wohneigentum im Gegensatz zur Miete.

Dieser Aufsatz zeigt nicht nur, dass diese drei Faktoren neben den gewöhnlichen Haushaltscharakteristika entscheidende Determinanten der Vermögensakkumulation in fast allen Euroländern darstellen, sondern auch – basierend auf verschiedenen Dekompositionstechniken – , dass vor allem der Besitz von selbstgenutztem Wohneigentum und Wertsteigerungen derselben einen entscheidenden Betrag leisten, Vermögensunterschiede zwischen den Euroländern zu erklären.
Euroländer übergreifend erklären diese Faktoren im Durchschnitt 56% der gesamten Haushaltsnettovermögensdifferenz am jeweiligen mittleren Wert im Vergleich zum Referenzland Deutschland. Ähnliche Ergebnisse findet man für die gesamte Haushaltsnettovermögensverteilung, obwohl die Relevanz der analysierten Faktoren mit höheren Vermögen tendenziell abnimmt, die Haushaltsnettovermögensdifferenz zu erklären.

1 Introduction

Recent empirical evidence shows that household wealth varies substantially across developed countries (e.g. Davies et al., 2011; Christelis, Georgarakos and Haliassos, 2013). Similarly, first results from the new Eurosystem Household Finance and Consumption Network (2013a) reveal substantial wealth differences across euro area countries. Figure 1 provides a graphical illustration of this. It shows the mean and median net household wealth across 15 euro area countries that participated in the first wave of the HFCS.[1] Median household net wealth in the euro area is €109,200, ranging from €51,400 (Germany) to €397,800 (Luxembourg). The corresponding mean figure for the euro area is €230,800, ranging from €79,700) (Slovakia) to €670,900 (Cyprus) and €710,100 (Luxembourg). The advantage of the new dataset is that it provides the possibility of consistent cross-country comparisons based on ex-ante harmonised questionnaires. For several euro countries, it is the first time that representative high quality household wealth data have become available

Figure 1: Mean and median net wealth in the euro area by country
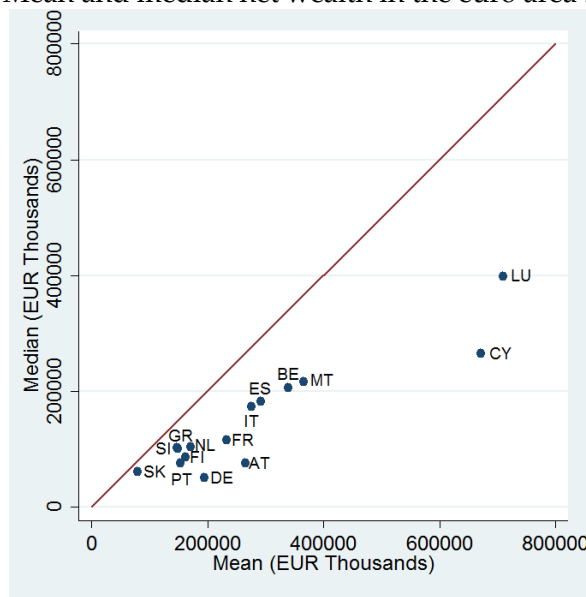
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted.

Thus, the natural question to ask is why are mean and median net wealth differences so large between euro area countries and what are the driving factors behind? This paper provides a first in-depth analysis of factors contributing to household wealth (differences)

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[1] If the text refers to euro area countries, it means the 15 euro area countries included in the first wave of the HFCS and excludes Estonia and Ireland.

across euro area countries. Differences in household characteristics aside, it focuses on, as we believe, three major factors for the wealth accumulation process.[2]

First, as it is evident from basic descriptive statistics the majority of households in the euro area are homeowners. The highest share is observed for Slovakia (90%) followed by Spain (83%) and Slovenia (82%). In two countries only the share is below 50%; Germany (44%) and Austria (48%). For most homeowners, the value of the household main residence (HMR), which is the result of initial price, accrued capital gains from increased property prices, depreciation or reinvestments, is regarded as the most valuable asset in the household wealth portfolio. The mean contribution of the HMR to total net wealth is almost 50% in the euro area. Importantly, homeowners are wealthier than their non-home owning counterparts. This applies regardless of the percentile in the net wealth distribution or the country concerned (see also Figure 2 in Section 2). Thus, household net wealth must somehow be linked to homeownership.

A priori, it is far from obvious why this should be the case, as at the time of HMR acquisition, households simply exchange financial assets for real assets (plus an eventual mortgage) whereas total net wealth stays unaffected. However, countries often promote homeownership with subsidies and tax deductible interest rate payments for mortgages etc…, which make homeownership a very attractive long-term investment relative to other financial investments, not only because it is safe, but also because it promises long-term capital gains (not least as land prices usually do not get cheaper). In some countries, homeownership is also commonly regarded as a means for old age provision, in particular if public pension rights are on the low and/or uncertain side. It is also conceivable that homeownership changes household saving and consumption behaviour. Thus, it is important to analyse how homeownership contributes to the wealth accumulation process and how differences therein can explain the household wealth differences across countries.

Second, if homeownership matters, then the dynamics of house price developments over time matter for how wealthy households are and differences therein must contribute to explaining wealth differences across countries. As we will show in this paper, the residential property prices varied indeed very substantially over time and across euro area countries, and this largely explains the observed wealth differences across countries.

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[2] The literature on household wealth has, apart from usual household characteristics, such as income, household size, civil status, age, education, etc… shown that immigration (e.g. Bauer et al., 2011), ethnicity (e.g. Blau and Graham, 1990), intergenerational transfers (e.g. Wolff and Gittleman, 2011) play an important role for differences in the wealth accumulation of households. In a cross-country setting as our, additionally cross-country differences in institutional aspects, such as differences in fiscal measures (subsidies and taxes), provision of social housing, the regulation of the rental market, financial deregulation, banking supervision, pensions and social security come into play as contributing factors (Andrews, Caldera Sánchez and Johansson, 2011; Chiuri and Jappelli, 2003).

Third, for most households becoming a homeowner is undoubtedly related to becoming indebted with a mortgage to pay off. In many countries, obtaining a mortgage is a major hurdle, as maximum loan-to-value ratios effectively limit mortgage accessibility for households in general and young households in particular as they had less time to save for necessary down payments (e.g. Chiuri and Jappelli, 2003). In this context, the importance of intergenerational transfers for wealth accumulation becomes apparent, which is the third focus of this paper; it seeks to quantify the effect of intergenerational transfers on wealth accumulation and wealth differences in the euro area. Piketty (2011) demonstrates for example for France how important the annual flow of inheritance is for the national income and wealth accumulation process. Using the Survey of Consumer Finances from 1989-2007, Wolff and Gittleman (2011) report that 21% of U.S. households received gifts or inheritances within this period, which contributes 23% to their current net wealth. Fessler, Mooslechner and Schürz (2008) report using cross-country data from the Luxembourg Wealth Study (LWS) that households receiving an inheritance are better educated, have higher income and wealth. Our results show that intergenerational transfers (excluding inherited/gifted HMRs) contribute on average 11 percentage points to mean total net wealth. Combined with the HMR contribution of 49%, these two factors contribute 60% to mean total net wealth of households.

We proceed as follows: first, we estimate country specific and euro area median regressions. We explain the median level of total net wealth with a set of covariates, including commonly used household variables (e.g. income, age, gender, marital status, education, etc…), as well as intergenerational transfers, homeownership and house price dynamics and show that the latter three are indeed important factors for the wealth accumulation process. The second part analyses to what extent these three factors are able to explain cross-countries wealth differences. For this purpose we make use of the Oaxaca-Blinder and recentred influence function (RIF) Oaxaca Blinder decompositions. We show that net wealth differences in the euro area are to a large extent driven by cross-country differences in homeownership rates, house price dynamics and to a lesser extent in received intergenerational transfers. Across euro area countries, these factors explain on average 56% of the difference in total net household wealth at their respective median level relative to Germany. Similar results are found along the whole household net wealth distribution, although the relevance of the analysed factors in explaining household net wealth differences tend to be lower for the wealthier strata of the population.

Section 2 presents the database and introduces descriptive statistics. Section 3 presents the construction of HFCS based property price indices. Section 4 presents the estimation strategy and reports the results. In section 5 we provide additional robustness tests. Section 6 concludes.

2   Data and descriptive statistics

We use data from the Eurosystem Household Finance and Consumption Survey (HFCS). The dataset includes over 62,000 observations, which represent almost 140 million private households resident in the euro area (with exclusion of Ireland and Estonia). For a brief summary of the most pertinent facts concerning the dataset see the Appendix A. For very detailed descriptive results and methodological details, see HFCN (2013a,b). First, we show the importance and variation of the HMR ownership in the euro area and the dispersion of residential property price increases in the past decades. Second, we provide figures regarding the prevalence and size of received intergenerational transfers. Variables' definitions and detailed summary statistics are provided in Appendix B.

According to a current OECD study, homeownership has risen in many OECD countries in recent decades. Reasons may be related to demographic changes caused by ageing populations (Andrews and Caldera Sánchez, 2011). Other factors may include financial market liberalisation, for example via reduction in required down payments, allowing younger people in particular to step onto the property ladder (e.g. Chiuri and Jappelli, 2003). A robust result across countries tends to be that the ownership share varies with the demographic structure of households; for example single households are less likely to own the HMR and there is a clear trend that ownership increases with the age of the household (e.g. Chiuri and Jappelli, 2003; Andrews and Caldera Sánchez, 2011). Furthermore, there is a sizeable gap between households with no formal or primary education to all other education levels. Similarly, immigrant households are twice more likely not to own their HMR. Chiuri and Jappelli (2003) for example argue that intergenerational transfers may help households to make their down payment and thus to circumvent imperfections in mortgage markets.

Figure 2 shows mean and median net wealth of HMR owners and non-owners. A robust fact is that owners have a much higher mean and median net wealth. For example, the mean (median) net wealth of HMR owners in the euro area aggregate is €351,000 (€218,000) and €50,000 (€9,000) for non-owners. There are also large differences in HMR homeownership rates across countries (Figure 3). The average homeownership rate in the euro area is 60%. The ownership rate is lowest in Germany (44%) and highest in Slovakia (90%).

Consequently, differences in homeownership rates are partially able to explain different mean contributions of the HMR to total net wealth. The contribution is for example 38% in Germany and 74% in Slovakia (Figure 3). The mean contribution in the euro area is 49%.

Figure 2: Mean and median net wealth of HMR owners and non-owners
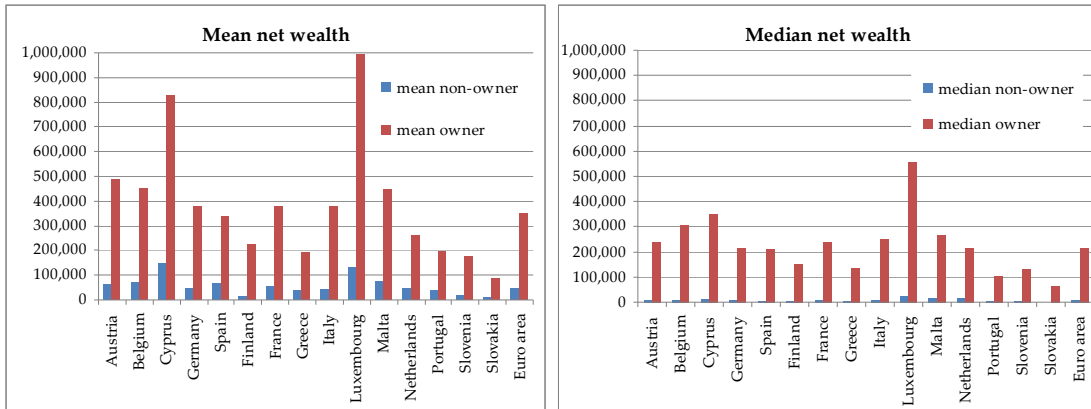
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted.

Figure 3: HMR ownership rate and mean contribution of the HMR to total net wealth
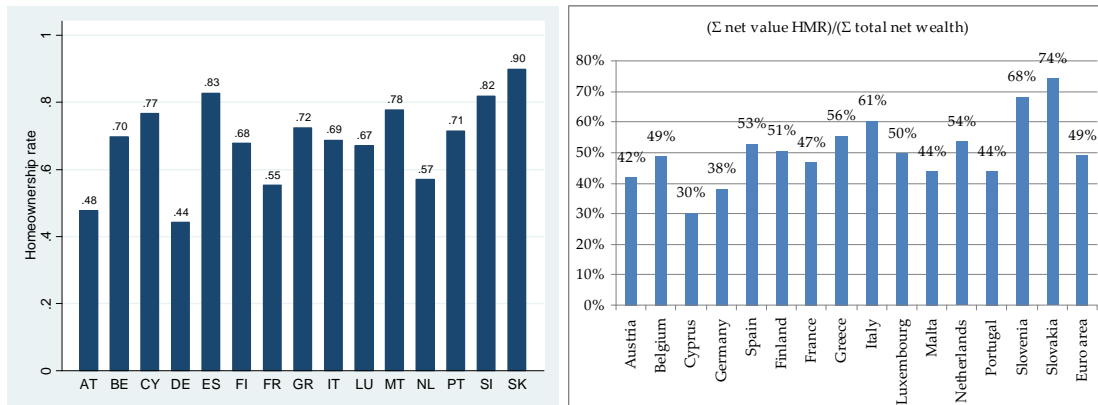
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted.

Figure 4 depicts the net HMR value for specific percentiles in relation to the household net wealth at the corresponding percentile. The left panel contains countries from Central and Northern Europe, the right panel Southern European countries and the panel at the bottom Eastern European countries and the euro area aggregate. In none of the countries do households own their HMR at the 10th percentile of the HMR distribution; therefore the share is zero. Moving to higher percentiles and depending on the share of homeowners in each country, we measure positive and increasing contributions of the HMR to total net wealth in various countries. For most countries, the contribution of the HMR to total net wealth decreases at higher percentiles. This is not surprising, as at the wealthier end of the net wealth distribution holding other real estate and financial assets increase in importance.

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Figure 4: Contribution of the HMR to total net wealth at selected percentiles
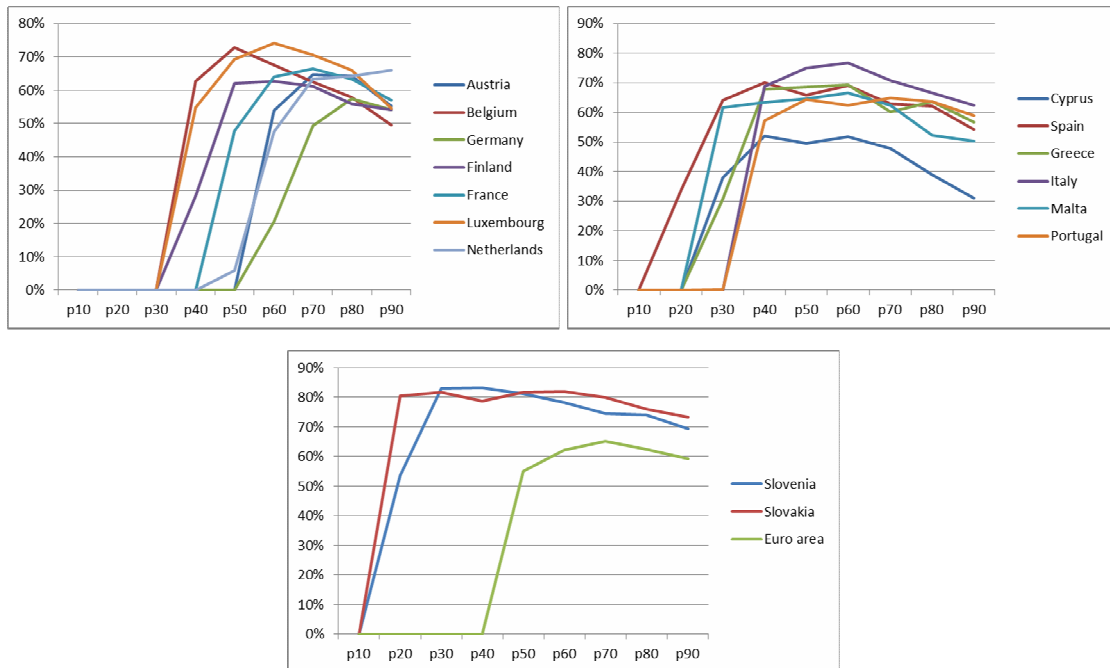
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted.

In summary, it seems that homeownership is linked to net wealth and thus contributes to explaining the observed variation of household net wealth across euro area countries. As to the likely reasons why this is the case, we can distinguish between at least two mechanisms. First, homeownership is likely to directly affect net wealth levels in countries promoting homeownership (Andrews, Caldera Sánchez and Johansson, 2011) with tax rebates or direct and indirect subsidies.

Figure 5: Changes in residential property price indices in %, 5-year moving averages
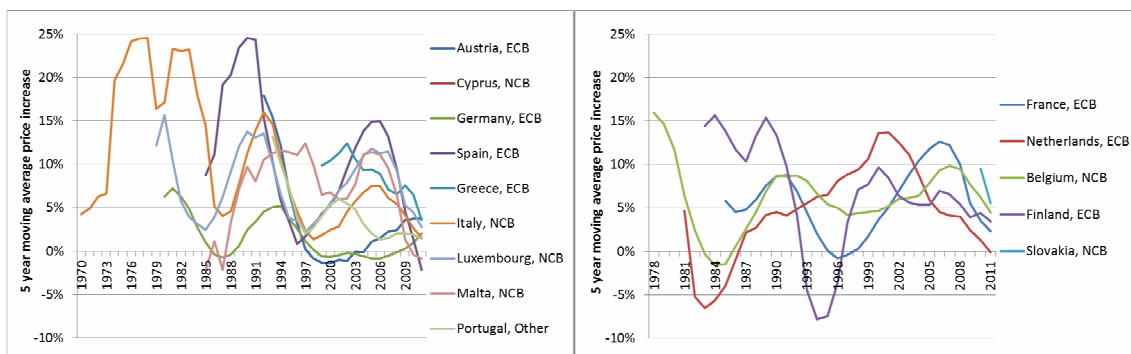
Source: ECB Statistical Data Warehouse. Individual sources are written next to each country. The time series "new and existing dwellings" is used for all countries in the left panel, "existing dwellings" are used for all countries in the right panel.

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Second, homeowners may benefit from an increase in the value of their property, either due to increased prices of their land, their dwelling or both. Residential property price indices indicate huge differences in house price dynamics across euro area countries (Figure 5). It is striking that, in Germany and Austria, the 5-year moving average growth rates were below 4% or even negative after 1996. The average yearly price increase of the HMR since acquisition between 2000 (2005) and 2010 is approximately 0% (1%) in the case of Germany. In comparison, over the same time horizon, the average yearly price increase in Belgium is 7% (6%). Figure 6 demonstrates that both the country of residence and the year of acquisition strongly influence the average yearly capital gain households were able to obtain if they sold their house today (i.e. at the time of interview). As we will show, this cross-country variation of accumulated HMR price increases is a major factor explaining levels and differences in wealth holdings across euro area countries.

As stated in the introduction, intergenerational transfers are commonly reported to contribute to the wealth accumulation process. The HFCS asks how many substantial gifts or inheritances had been received and collects detailed information of the two to three most significant transfers. These questions allow estimating the value of received gifts or inheritances at the year the household received it (excluding the HMR). Having no knowledge how intergenerational transfers were invested or consumed, we cannot but assume at this stage zero returns of these assets, which we consider, for the lack of other salient alternatives, as the best and most conservative baseline scenario.

Figure 6: Average price increase of residential property for selected years of acquisition
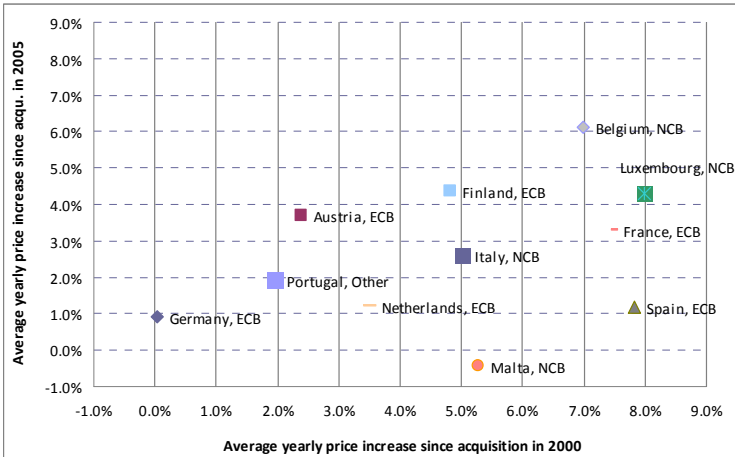
Source: ECB Statistical Data Warehouse. Data sources are written next to each country. The time series "new and existing dwellings" is used for all countries with the exception of Belgium, Finland, France, Netherlands and Slovakia, for which we use "existing dwellings". Countries for which the underlying property price index is not available for the selected years are excluded.

Figure 7 shows the share of households in each country having previously received any substantial gift or inheritance. Figure 8 further distinguishes between households having received their HMR as gift or inheritance (red bar) and households having received a gift or inheritance other than their HMR (blue bar).[3] With exception of very low values for Greece and the Netherlands, 20-40% of households report having previously received a substantial gift or inheritance (excluding the HMR). The euro area average (excluding both Finland and Italy) is 28% and thus higher than the figure reported by Wolff and Gittleman (2011) for U.S. American households (21%). For Greece, Italy, Slovenia and Slovakia about 20% or more of households report having inherited or been given the HMR.

Figure 8 depicts the mean contribution of the HMR and intergenerational transfers (both as HMR and other than HMR) to total net wealth. For the euro area aggregate (excluding Finland and Italy), intergenerational transfers excluding the HMR contribute (with their initial value) 11% to total net wealth. Combined with the HMR contribution of 49%, these two factors contribute 60% to the mean total net wealth of households. The pink bars further allow distinguishing the respective contribution of inherited/received HMR and HMR excluding inheritances/gifts. For example, in Austria the mean contribution of the HMR to total net wealth is 42%; 10% emanate from inherited/received HMR (at initial value) and 32% emanate from the HMR excluding inheritances/gifts.

Figure 7: Substantial gifts and inheritances
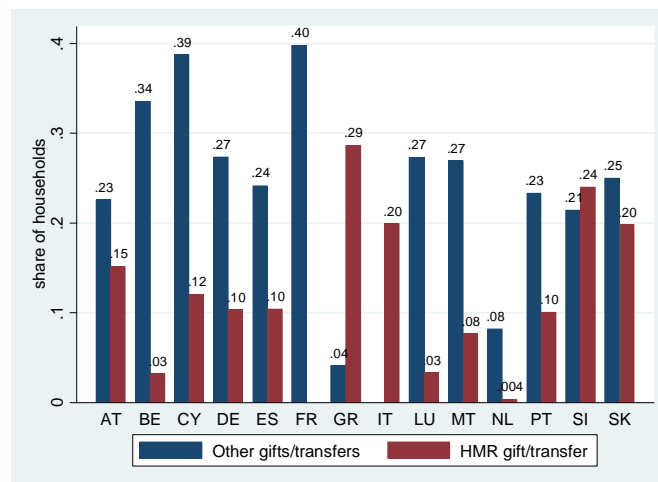
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted. No information for Finland on intergenerational transfers, for France on HMR gifts/inheritances and for Italy on gifts/inheritances other than HMR.

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[3] For Finland and Italy a corresponding question was not asked. For France data on HMR gift or inheritance does not exist in the HFCS.

Figure 8: Mean contribution of the HMR and intergenerational transfers to total net wealth
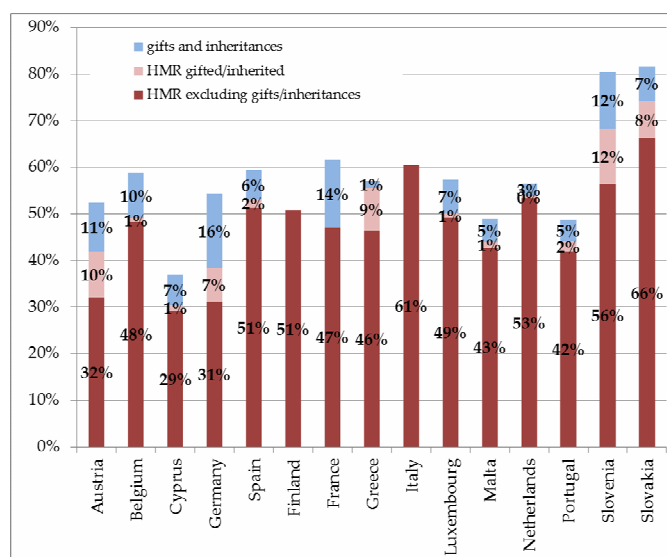
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted. No information for Finland and Italy on intergenerational transfers.[4] No information for France on whether the HMR was received as gift or inheritance. Euro area figures are not displayed due to different numbers of countries included in the three categories.

3 Residential property price dynamics

Trying to assess the contribution of house price dynamics and thus capital gains from homeownership for household net wealth across countries, it is key to be able to rely on indicators that appropriately reflect past dynamics. Unfortunately, the development of high quality house price indices is plagued by many difficulties and challenges. For example, collecting mean and medians of house price transactions may suffer from compositional changes of transactions over time or transactions may not be fully representative or cease to be representative for the market in question. A key issue is that dwellings are usually transacted very infrequently and repeat sales methods require at least two transactions of a single property, while hedonic price models require large and detailed data sets to correct for quality differences over time (see for example Hilbers et al., 2008 and Case and Wachter, 2005 for details).

Furthermore, available residential property price indices for euro area countries differ rather substantially in scope and availability (Figure 5). For example, residential property price indices for all euro area countries are publicly available for the years 2007-2008 only, as several countries only recently began to publish corresponding indices (Slovenia in 2007, Cyprus in 2006, Slovakia in 2005). The longest time spans are available for Italy (1965-), Belgium (1973-) and Germany (1974-). An additional complication is that the available macroeconomic indices differ in concept. Residential property price indices

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[4] In Italy, the purchase price of the dwelling is not collected for those that have received the HMR as a gift or inherited it (see questionnaire page 26, questions D07-D08). Nevertheless the information is collected for those that have only partially inherited the HMR (182 households). Thus, it is not possible to report correctly the share of the HMR value related to the initial value of the inherited/ gifted HMR.

available for France, the Netherlands, Belgium, Finland and Slovakia refer to existing dwellings whilst for the remaining majority of euro area countries it refers to new and existing dwellings.

In this paper, we will therefore take a different approach. We construct an index of housing value appreciation calculated from self-assessed HMR values for each euro area country using information available in the Eurosystem Household Finance and Consumption Survey.[5] A similar approach has previously been used by Bucks and Pence (2008). They use data from the U.S. Survey of Consumer Finances and report that U.S. homeowners report house values reasonably accurately. Further, on the positive side, it both avoids the above-mentioned pitfalls and uses local dynamics, specific to the dwelling and household in question and in the sample. It is known that local developments may differ from country-wide developments. Furthermore, constructing a housing value appreciation index based on self-assessment embodies relevant information of both demand and supply conditions, which together shape the development of property prices. Such an index is based on a comparison of the same property over time and is internally coherent as it uses the same data source as used for the calculation of households' net wealth. Moreover, we can harmonise the time span of the index across countries. Finally, the HFCS indices are constructed out of currently-owned HMRs only.[6] This ties in nicely with the paper's objective of explaining current net wealth levels and current net wealth differences between countries. Our index includes all HMRs used to calculate the current net wealth for the population sample we are interested in. On the negative side, self-reported house prices are known for being slightly (usually in the order of <10%) biased upward (e.g. Ihlanfeldt and Martinez-Vazquez, 1986; Goodman and Ittner, 1992; Benítez-Silva et al., 2009).

For each country, we calculate an appreciation index to HMR ownership based on self-assessed HMR values from the HFCS data. For each year, we take the average of the estimated current (self-assessed) value or selling price and divide it by the average (self-assessed) acquisition price over all HMRs (either bought or built) in this particular year. The result is a country-specific time-varying index of the average accumulated nominal Housing Value Appreciation since the acquisition of the HMR (henceforth also referred to as mean HVA index). It represents an index based on (non-realised) capital gains from homeownership. Expressed in mathematical terms, for each country C, for each home-

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[5] Using the same methodology as in the present paper, Mathä, Porpiglia and Ziegelmeyer (2014) exploit house price discontinuities at the national border of Luxembourg and report cross-country and spatial differences in house price increases to be the main contributing factor for observed wealth differences in Luxembourg and its surrounding regions.

[6] The numerator of the HFCS index is based on self-assessed HMR values. The denominator is the value of the HMR at the time of acquisition, thus it can be argued that it is not entirely self-assessed. Only if the HMR was inherited or received as gift, the denominator is also self-assessed. Moreover, there is a self-assessment component if the owner, friends or relatives self-contributed to the HMR. The initial price of the property is something that people remember although it cannot be excluded that memory recall problems exist. However, as long as the assessment is unbiased, memory recall problems are only expected to increase the variance, but do not affect the value itself.

owner household h in the set H_t of households who bought an HMR in year t, we sum over the self-assessed value P at the time of interview T and divide by the sum of the value P at time of acquisition t.

$$(1) \qquad h \in H_t \qquad r_{t,C}^{\text{HVA}} = \sum\nolimits_{h \in H_t} P_{T,C}^{\text{HFCS}} / \sum\nolimits_{h \in H_t} P_{t,C}^{\text{HFCS}}$$

Due to the unavailability of the initial value of the HMR in Finland and France housing value appreciation based on HFCS cannot be calculated.[7] For Slovenia the HVA index is constructed but not shown since the sample size is too small to be considered country representative.

Next, we apply a kernel-weighted local polynomial smoothing (Appendix C, Figure 10). The smoothing is carried out to reduce the influence of outliers as a result of a low number of observations for one or more specific years (Appendix C, Table 8). Figure 9 depicts the development of the smoothed mean HVA index over time for the remaining 12 countries. For reasons of robustness, we additionally construct two more HFCS based HVA indices; the corresponding median index (median HVA index) and a median index calculated as the median over individual accumulated nominal housing value appreciations (median ratio HVA index). The latter is derived for each household as the accumulated nominal HVA from the ratio of the self-assessed value P at the time of interview T to the value P at time of acquisition. Graphically comparing the three HFCS based indices shows their close correspondence (Figure 9).[8]

Figure 9 also depicts the development of the corresponding macroeconomic residential property price index. For this purpose, the index is scaled to 1 in the year of data collection to ensure that indices refer to the same reference year.[9] On the one hand, we need to take into account that the smoothing of the HVA indices is necessary due to measurement error. On the other hand, smoothing decreases the prevalence of business cycle effects. For countries, such as Belgium, Spain, Greece, Luxembourg, the Netherlands and Portugal the

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[7]   The index for Italy only includes the HMR for households who built or purchased the HMR. The purchase price of the dwelling is not collected for those that have received the *complete* HMR as a gift or inherited it. The initial value of the HMR is only available for households who *partially* inherited the HMR (182 households). We drop these 182 households from the index construction for IT due to unknown ownership shares.

[8]   Figure 11 in Appendix C adds to Figure 9 two additional indices: the mean and median HVA indices adjusted by the square metre size of the HMR. The differences compared to the unadjusted mean and median HVA indices are minor and often not even visible in the Figures. Since the square metre size of the HMR is not available in Malta and Portugal, the following analysis focuses on the unadjusted HVA indices.

[9]   In cases where the field phase covered more than one year, the end year is taken. For Greece, we set the index value for the year 2008 to one since the macroeconomic property price index (new and existing dwellings) for the survey year of 2009 is not available yet (latest check 14.04.2014). For most recent years only an index covering new and existing flats is available, which does not cover houses as our other macroeconomic property price indices.

HVA indices are more or less in line with their corresponding macroeconomic index. For Italy, Malta and especially Austria discrepancies are larger.

Figure 9: Housing value appreciation and macro residential property price indices
- Inverted scale -
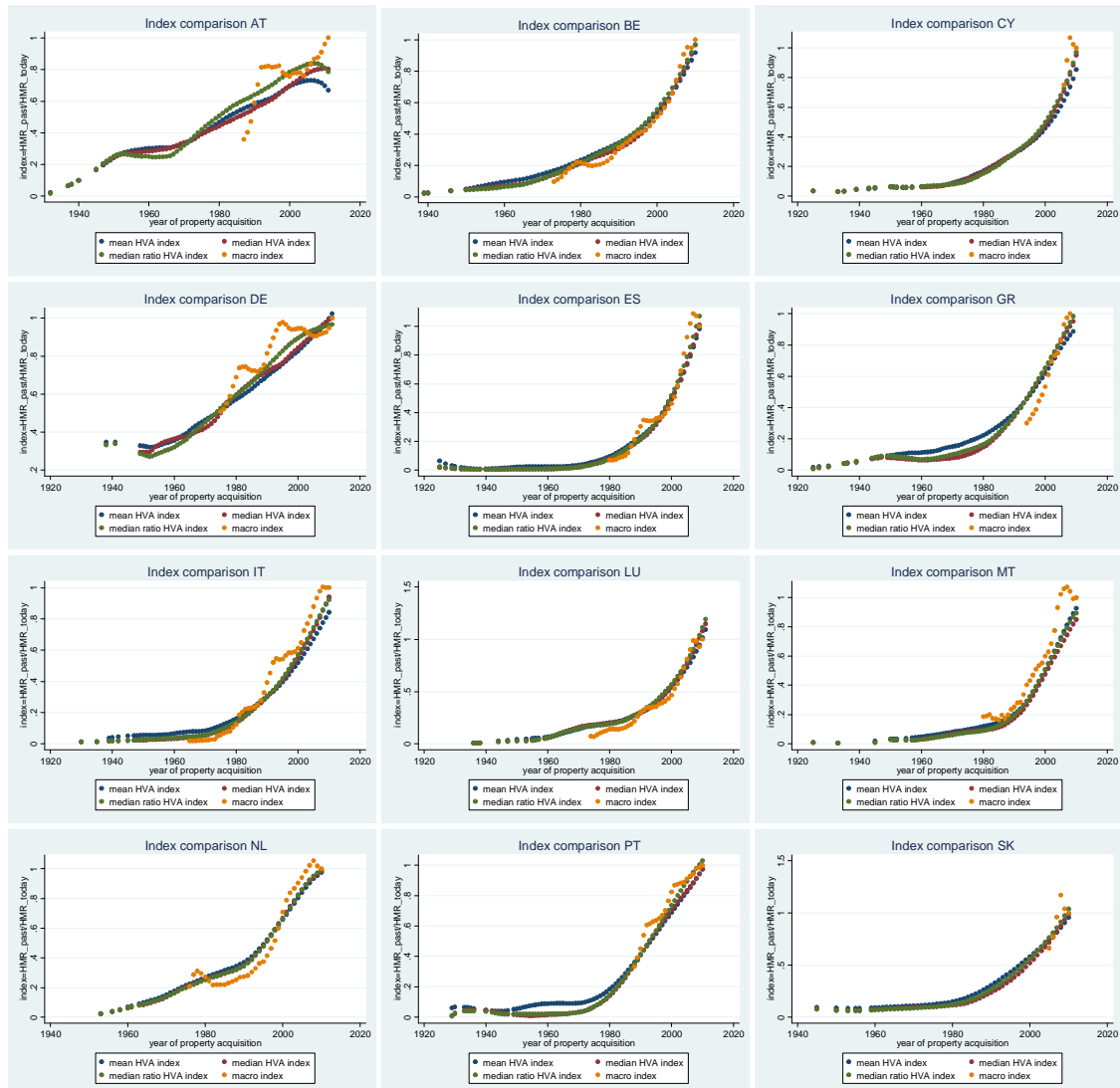
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted. Slovenia is excluded since it has no country representative survey. Information on the initial value of the HMR does not exist for Finland and France. The kernel-weighted local polynomial regression uses the Epanechnikov kernel-function. The kernel bandwidth is 5 and the degree of the polynomial smooth is 1.

An interesting question in this respect is whether differences observed between the HVA index and the macroeconomic index, i.e. the respective over- or under-evaluation of the HMR relative to the macroeconomic index, is related to household and country characteristics. However, this is out of scope of the present paper and we leave this for future research. Furthermore, we set the HFCS based HVA indices to missing if the year of acquisition was prior 1970. Reasons for this are: first, it seems appropriate to exclude all HMRs

with acquisition during or before World War II; second, the number of dwellings underlying each annual data point become relatively small prior to 1970 - at least for some countries; third, if the recall bias concerning the initial value of the HMR increases with the time elapsed since acquisition, the most critical years should be excluded; and fourth, we ensure that the time overlap between the macroeconomic and HFCS based indices becomes larger in relative terms. Using identical time periods for the HFCS based HVA and the macroeconomic indices, all key results presented remain unchanged. We use the mean HVA index for the presentation of the results. Results are however generally robust to using other HVA indices or the macroeconomic index. The robustness is explored in more detail in the penultimate section.

The number of household observations using the macroeconomic and HVA indices is shown in Table 1. The reduction of observations for the euro area is similar at about 40%. However, the reduction of observations is much more unevenly distributed for the macroeconomic indices ranging from 7% for the Netherlands to 79% for Slovenia, whereas for the HVA indices, it ranges from 2.5% for the Netherlands to 12% in Spain. The higher overall missing rate of the HVA indices is caused by the exclusion of France since the construction of the HVA indices is not possible (the initial value of the HMR is unknown). Since France is the country with the largest sample size, this strongly affects the number of observations lost. The available time spans of the macroeconomic indices are normally shorter than for the HVA indices. However, the problem is less severe since most households acquired their HMR in recent decades.

Table 1: Availability of housing value appreciation and residential property price indices

Country	Total	Non owners	Macro index					HVA index				
			Owners w/o index		Loss of hh	Index period		Owners w/o index		Loss of hh	Index period	
			with	without	in %	min	max	with	without	in %	min	max
Austria	2,380	1,199	652	529	22.2	1987	2011	1,038	143	6.0	1970	2011
Belgium	2,327	602	1,437	287	12.4	1973	2010	1,501	224	9.6	1970	2010
Cyprus	1,237	247	238	752	60.8	2006	2010	943	47	3.8	1970	2010
Germany	3,565	1,552	1,675	338	9.5	1975	2011	1,828	185	5.2	1970	2011
Spain	6,197	809	3,562	1,826	29.5	1980	2009	4,641	747	12.0	1970	2009
Finland			no year of acquisition available					no year of acquisition available				
France	15,006	5,003	7,560	2,443	16.3	1980	2010	no initial value of HMR available				
Greece	2,971	985	796	1,190	40.1	1994	2008	1,699	287	9.7	1970	2009
Italy	7,951	2,315	5,070	566	7.1	1965	2010	4,763	873	11.0	1970	2010
Luxembourg	950	285	584	81	8.5	1974	2010	618	47	4.9	1970	2011
Malta	843	200	481	162	19.2	1980	2010	593	50	5.9	1970	2010
Netherlands	1,301	337	878	86	6.6	1976	2010	932	32	2.5	1970	2010
Portugal	4,404	1,349	1,644	1,411	32.0	1988	2010	2,732	323	7.3	1970	2010
Slovenia	343	58	15	270	78.7	2007	2010	255	30	8.7	1970	2010
Slovakia	2,057	466	386	1,205	58.6	2005	2010	1,530	61	3.0	1970	2010
Euro area	51,532	15,408	24,977	19,721	38.3	1,965	2,011	23,074	21,625	42.0	1970	2011

Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted.

4 Estimation technique

First, we assess whether homeownership, house price developments (using either the HVA or macroeconomic residential property price indices) and the amount of intergenerational transfers received in the past influence the median level of total net wealth. We run separate regressions for each country to explore whether these factors individually matter in each country. Second, we use decomposition techniques described in Fortin, Lemieux and Firpo (2011) to analyse the respective contribution of the three factors in explaining cross-country differences in household wealth in the euro area.

The intuition behind the decomposition analysis is that the difference between two groups in a relevant statistic (e.g. mean, median, 75th and 90th percentile) of the variable of interest (in our context the household net wealth) can be broken down into differences in the level of a set of covariates and into differences in the size of the coefficients on the aforementioned set of covariates. In the literature and in the remainder of the paper, the contribution of the former is referred to as *"explained part"*, which means the part of the net wealth difference explained by observable differences in the two populations, while the latter is referred to as *"unexplained part"*, which means the part of the net wealth difference that is not explainable by observable characteristics. The repartition of the household net wealth differences in these two components is done via counterfactual analysis.

At mean level we make use of the Oaxaca-Blinder (Oaxaca, 1973; Blinder, 1973) decomposition. The right skewness of the household total net wealth distribution as well as the varying importance of the HMR and inheritance in the household portfolio along the net wealth distribution require undertaking the counterfactual analysis not only at mean level but also at various points of the net wealth distribution. In the context of our analysis this objective is accomplished using the Oaxaca-Blinder decomposition applied to the recentred influence function of the median, the 75th and the 90th percentile (Fortin, Lemieux and Firpo, 2011; Firpo, Fortin and Lemieux, 2007, 2009) (thereafter RIF-OB decomposition). Other distribution decomposition techniques, which have been proposed in literature (see among others Juhn, Murphy and Pierce, 1993; Di Nardo, Fortin and Lemieux, 1996; Machado and Mata, 2005), can either not or only partially break down the endowment and coefficient effects over household net wealth differences for the vector of covariates, whereas the RIF-OB decomposition is able to provide a detailed decomposition of the wealth gap along the whole household net wealth distribution fully comparable with the Oaxaca-Blinder decomposition.

Coefficients and standard errors presented hereafter are adjusted to account for the multiply imputed nature of the database following Rubin's (1987) combination rules. Results are weighted to take into account the complex survey design structure if not indicated otherwise. We excluded Slovenia from the analysis due to the small sample size and being non-representative. Since information on the initial value of the HMR is missing for France we have to solely rely on the macroeconomic index.

4.1 Median regression

We firstly address whether homeownership and housing value appreciation are able to explain the level in total net wealth in each of the euro area countries. We also provide some pooled regressions for the whole sample. In addition, we are interested in the contribution of received gifts and inheritances on total net wealth controlling for covariates commonly used in wealth regressions (see, among others, Gale and Pence, 2006; Sinning, 2007; Bauer et al., 2011). Secondly we assess whether there are substantial differences between euro area countries with respect to the contribution of these factors on total net wealth. For this purpose we estimate a median regression of the following form:

$$(2) \qquad W = \beta_0 + \beta_1 Z + \beta_2 E + \beta_3 Y + \beta_4 I + \beta_5 T + \varepsilon ,$$

where, omitting the household identifier i, W represents total net wealth of each household in the sample, Z stands for a set of household or reference person[10] characteristics such as gender, age and age squared, household size, civil status (single, couple, divorced or widowed) and a immigration dummy indicating whether or not the reference person is born outside the country of residence.[11] E is a vector of dummies representing the education level (low, middle, high). Y is a vector representing total household income, employment status (employee, self-employed, unemployed, retired and other), a dummy for having a temporary contract and two dummies for working in the financial or public sector. I contains a homeownership dummy and the mean Housing Value Appreciation (HVA) index introduced in the previous section. The indices used in the multivariate analysis are constructed for both the HFCS and the macroeconomic data in the following way: The variable takes the value zero for non-homeowners and takes the value of the HVA index corresponding to the year of the HMR acquisition. The intuition behind this variable is that homeowners profit from appreciation in the value of their HMR over time. The increase in the housing value represents the capital gains of the investment into homeownership if the household were to sell the HMR at the time of the interview. HMR owners that acquired their HMR earlier, thus, are expected to receive higher capital gains, ceteris paribus. Finally, T includes the received amount of gifts and inheritances (including the HMR)[12] and a variable indicating the time passed in terms of number of years since the largest gift or inheritance was received.[13] ε is the error term which is assumed to be i.i.d.[14]

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[10] The reference person of each household refers to the "financially knowledgeable person" (FKP), i.e. the person who knows best about the finances of the household.

[11] The country of birth is unavailable for Spain, France and the Netherlands. For those countries where this variable is available, it is included in the country specific analysis. In the decomposition analysis, it is excluded for the comparisons of Spain, France and the Netherlands with Germany.

[12] For France, information on whether the HMR was inherited or gifted is unavailable.

[13] Due to the arising endogeneity issue, we decided not include dummies for various total net wealth quintiles to proxy for different household behaviour or attitudes along the wealth distribution.

[14] The model presented in the paper controls for returns on inherited wealth by including the variable "number of years since the largest gift or inheritance was received". This specification requires the weakest assumptions. The presented results are robust to assuming zero real return on inheritances (i.e. returns on inherited wealth equal inflation) instead. These results are available from the authors upon request.

Table 2: Household characteristics of weighted mean (based on HVA index sample)

Country	Austria	Belgium	Cyprus	Germany	Spain	Greece	Italy	Luxemb.	Malta	Netherlands	Portugal	Slovenia	Slovakia
No. obs.	2218	1956	974	3380	5436	2613	7071	903	785	1243	3933	295	1996
male	43.9%	53.5%	57.5%	51.0%	51.3%	40.2%	55.9%	61.0%	53.8%	63.1%	71.2%	41.6%	44.9%
age	50	50	50	51	51	48	54	48	53	51	53	50	47
age2	2756	2778	2774	2909	2817	2533	3175	2513	3029	2862	3091	2711	2433
single	25.8%	20.6%	12.9%	25.5%	13.6%	19.1%	14.0%	26.1%	11.8%	37.0%	11.3%	16.4%	19.8%
divorced	15.3%	14.4%	9.2%	12.6%	8.1%	6.6%	8.4%	14.2%	8.3%	12.8%	8.9%	7.7%	10.0%
widowed	9.4%	10.6%	10.6%	12.0%	12.0%	9.1%	13.3%	6.6%	9.5%	7.4%	12.9%	14.8%	12.9%
hhsize	2.1	2.4	2.8	2.1	2.8	2.7	2.6	2.5	2.9	2.2	2.8	2.6	2.9
mideduc	69.0%	38.0%	31.9%	56.4%	19.8%	39.5%	37.2%	37.9%	22.5%	38.4%	13.8%	54.8%	77.6%
higheduc	14.3%	38.5%	42.0%	29.3%	27.6%	21.8%	11.9%	27.7%	15.3%	33.9%	9.4%	22.6%	16.8%
born in country of residence	88.9%	89.1%	86.4%	85.5%		91.5%	90.5%	54.9%	94.6%		92.8%	90.7%	97.9%
ihs(total income)	10.6	10.4	10.5	10.5	10.3	10.1	10.3	11.2	10.2	10.7	9.8	9.3	9.6
self-employed	10.1%	5.4%	10.3%	6.9%	9.0%	16.7%	11.7%	6.2%	8.1%	3.9%	11.2%	3.6%	7.6%
unemployed	5.1%	10.9%	5.6%	5.4%	10.2%	4.5%	3.8%	2.7%	2.2%	1.7%	8.3%	10.6%	5.6%
retired	32.8%	27.5%	22.1%	27.3%	17.6%	22.9%	34.1%	21.3%	26.0%	20.1%	31.6%	36.1%	22.8%
other	7.1%	9.7%	6.1%	9.7%	19.1%	21.1%	9.0%	9.6%	25.7%	13.4%	4.4%	6.9%	5.0%
employment status missing	0.0%	2.0%	1.0%						0.1%	13.0%	0.1%		0.5%
temporary contract	2.2%	4.2%	3.5%	6.3%	8.3%	7.9%	4.8%	4.2%	1.6%	4.2%	5.5%	6.5%	5.3%
financial sector	2.2%	2.3%	4.4%	2.7%	2.4%	0.8%	1.7%	10.0%	3.7%	2.6%	1.1%	2.2%	1.8%
public sector	13.0%	17.9%	19.3%	13.0%	12.2%	6.8%	11.3%	18.2%	12.1%	14.7%	10.9%	8.3%	15.4%
owner	44.7%	66.5%	73.3%	41.7%	80.9%	69.1%	65.4%	64.6%	76.4%	56.0%	68.7%	80.3%	89.2%
mean HVA index	0.8	1.9	2.3	0.6	5.0	2.1	2.7	1.8	4.0	1.2	2.3	0.9	2.9
median HVA index	0.8	2.1	2.3	0.6	6.2	2.9	3.2	1.8	4.8	1.2	3.5	1.6	3.5
median ratio HVA index	0.7	2.0	2.3	0.6	6.4	2.6	3.1	1.8	4.8	1.2	3.4	1.8	3.3
ihs(amount gifts & transfers)	3.9	3.4	3.6	3.6	3.0	2.9		3.2	3.2	0.7	2.4	3.9	3.8
years since largest transfer	6.3	3.7	5.1	4.3	3.9	5.3		3.7	3.4	0.6	4.0	6.1	4.6
ihs(net wealth)	9.9	11.0	11.2	9.2	11.0	10.3	11.1	11.4	11.8	8.9	10.2	10.7	10.7

Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted.

To ease interpretation of the presented results, Table 2 provides some basic household statistics across countries. The variables selected correspond to the covariates included in the regressions and decompositions. The sample is based on the available observations for the mean HVA index.

All monetary units (total net wealth, total income and amount of intergenerational transfers) are transformed using an inverse hyperbolic sine (IHS) transformation in log form (Pence, 2006). This is necessary to avoid convergence problems of the pooled median regression resulting from the large dispersion of total net wealth in combination with large sample sizes.

There has been a long debate on whether or not to use weighted regressions. Due to the complex survey design of the HFCS, weighting is preferable as weighting includes relevant information, such as geographic and operational variables that influence non-response rates across countries. Since geographic and operational variables are not included in the HFCN (at least not to the extent necessary to construct the weights), Faiella (2010) and Magee, Robb and Burbidge (1998) recommend to run weighted regressions. As Stata13 is unable to calculate weighted median regressions, we include the final sampling weights as additional covariate to reduce any potential selection bias normally corrected for by weighted regressions.[15] We address problems related to heteroskedasticity and sampling uncertainty via a new option in Stata13 to calculate robust standard errors for median regressions. We estimate equation (1) for each country separately and in addition in pooled form across countries. In the latter case, we include country fixed effects, where Germany serves as the base country.[16]

Table 3 presents the country results of equation (2) where the HMR capital gains are represented by the mean HVA index and the full set of covariates. We briefly note that coefficient estimates of the household specific covariates are as expected. Total net wealth is humped shaped over age for most countries. Being a single, divorced or widowed has usually a negative impact on median total net wealth. The median total net wealth increases with higher education and income. Having a temporary contract and being unemployed normally decreases, while being self-employed increases median net wealth. The results are very much in line with results reported in the household wealth literature. Concerning the variables of main interest, the homeownership dummy has the strongest impact of all explanatory variables and is highly significant for all countries. For example, homeownership increases the expected median total net wealth between 119% (Germany) to 278% (Spain).

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[15] We do not report the coefficients and standard errors of the final sampling weight variable in the tables below since we are not interested in the coefficients themselves. In some countries the included final sampling weights were highly collinear with other variables included in the specification. In cases where this leads to the problem of parameter instability, the weight variable was dropped.

[16] We do not run any median regression for Slovenia since the sample size is too small for a country representative sample.

Table 3: Median regression
- Mean HVA index -

		(1) AT	(2) BE	(3) CY	(4) DE	(5) ES	(6) FR	(7) GR	(8) IT	(9) LU	(10) MT	(11) NL	(12) PT	(13) SK	(14) EA ex FR	(15) EA ex IT
Socio-demographic variables	male	0.095 **	0.067	0.185 *	0.013	0.107 ***	0.053 ***	0.111 ***	0.067 ***	0.125 **	-0.187 **	0.138	0.254 ***	0.059 *	0.090 ***	0.107 ***
		(0.048)	(0.043)	(0.106)	(0.046)	(0.028)	(0.018)	(0.030)	(0.020)	(0.061)	(0.073)	(0.090)	(0.053)	(0.034)	(0.016)	(0.020)
	age	0.047 ***	0.057 ***	0.080 ***	0.014	0.041 ***	0.024 ***	0.032 ***	0.028 ***	0.045 **	0.024	0.073 ***	0.052 ***	0.011	0.035 ***	0.028 ***
		(0.014)	(0.013)	(0.026)	(0.011)	(0.006)	(0.004)	(0.008)	(0.005)	(0.020)	(0.023)	(0.027)	(0.010)	(0.008)	(0.003)	(0.004)
	age2	-0.000 ***	-0.000 ***	-0.001 **	-0.000	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000	-0.000	-0.000 *	-0.000 ***	-0.000	-0.000 ***	-0.000 ***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	single	-0.060	-0.139 *	-0.290	0.006	-0.056	-0.181 ***	-0.166 ***	-0.072 *	-0.173 *	-0.175	-0.253 **	-0.180 **	-0.060	-0.069 ***	-0.086 ***
		(0.092)	(0.081)	(0.205)	(0.091)	(0.043)	(0.024)	(0.055)	(0.037)	(0.102)	(0.140)	(0.121)	(0.079)	(0.058)	(0.026)	(0.031)
	divorced	-0.320 ***	-0.151 **	-0.333 **	-0.318 ***	-0.124 *	-0.226 ***	-0.242 **	-0.179 ***	0.048	-0.419 **	-0.204 *	-0.232 ***	-0.087 *	-0.195 ***	-0.196 ***
		(0.121)	(0.071)	(0.137)	(0.074)	(0.069)	(0.035)	(0.096)	(0.045)	(0.107)	(0.178)	(0.107)	(0.063)	(0.052)	(0.028)	(0.034)
	widowed	-0.235 **	-0.248 ***	-0.482 *	-0.113	-0.010	0.009	-0.159 **	-0.166 ***	-0.028	-0.074	-0.030	-0.154 *		-0.144 ***	-0.120 ***
		(0.095)	(0.077)	(0.266)	(0.081)	(0.041)	(0.049)	(0.072)	(0.033)	(0.083)	(0.203)	(0.147)	(0.090)		(0.028)	(0.035)
	hhsize	0.044	0.028	0.008	-0.012	-0.030 **	-0.055 ***	0.032 *	-0.023 **	0.042 *	-0.004	0.023	-0.008	0.056 ***	-0.002	0.009
		(0.030)	(0.018)	(0.038)	(0.019)	(0.014)	(0.009)	(0.019)	(0.011)	(0.025)	(0.036)	(0.058)	(0.022)	(0.018)	(0.007)	(0.009)
	mideduc	0.405 ***	0.298 ***	0.332 **	0.386 ***	0.296 ***	0.304 ***	0.347 ***	0.297 ***	0.111	0.262 ***	0.037	0.424 ***	0.299 ***	0.350 ***	0.344 ***
		(0.090)	(0.064)	(0.130)	(0.126)	(0.037)	(0.021)	(0.040)	(0.022)	(0.104)	(0.082)	(0.080)	(0.044)	(0.086)	(0.019)	(0.025)
	higheduc	0.579 ***	0.483 ***	0.465 ***	0.566 ***	0.569 ***	0.472 ***	0.556 ***	0.505 ***	0.362 ***	0.302 ***	0.258 ***	0.879 ***	0.580 ***	0.603 ***	0.567 ***
		(0.126)	(0.068)	(0.136)	(0.129)	(0.034)	(0.026)	(0.052)	(0.029)	(0.112)	(0.082)	(0.075)	(0.069)	(0.099)	(0.022)	(0.026)
	born in country of residence	0.338 ***	0.459 ***	0.151	0.300 ***			0.552 ***	0.625 ***	0.110		0.060	0.112			
		(0.126)	(0.076)	(0.112)	(0.076)			(0.120)	(0.072)	(0.068)		(0.109)	(0.176)			
Employment related variables	ihs(total income)	0.594 ***	0.174 ***	0.354 ***	0.796 ***	0.507 ***	0.532 ***	0.354 ***	0.407 ***	0.369 ***	0.385 ***	0.036	0.263 ***	0.305 ***	0.397 ***	0.395 ***
		(0.114)	(0.027)	(0.058)	(0.039)	(0.023)	(0.018)	(0.047)	(0.019)	(0.064)	(0.062)	(0.055)	(0.025)	(0.035)	(0.008)	(0.014)
	self-employed	0.569 ***	0.533 ***	0.183	0.337 ***	0.688 ***	0.680 ***	0.339 ***	0.484 ***	0.590 ***	0.667 ***	0.397 *	0.673 ***	0.335 ***	0.583 ***	0.554 ***
		(0.117)	(0.154)	(0.139)	(0.073)	(0.053)	(0.031)	(0.051)	(0.037)	(0.142)	(0.147)	(0.205)	(0.046)	(0.082)	(0.028)	(0.032)
	unemployed	-0.539 *	-0.417 ***	-0.033	-2.001 ***	-0.070	-0.516 ***	-0.093	0.184 **	-0.436	0.064	0.056	-0.160 *	-0.202 **	-0.212 ***	-0.275 ***
		(0.315)	(0.094)	(0.180)	(0.386)	(0.051)	(0.075)	(0.123)	(0.077)	(0.666)	(0.271)	(0.231)	(0.092)	(0.102)	(0.036)	(0.042)
	retired	0.063	-0.144 *	-0.036	0.177 **	0.094 *	0.007	0.138 **	0.187 ***	-0.012	0.003	-0.219 **	0.120 **	-0.036	0.087 ***	0.044
		(0.096)	(0.075)	(0.211)	(0.069)	(0.048)	(0.033)	(0.060)	(0.032)	(0.134)	(0.130)	(0.088)	(0.056)	(0.073)	(0.027)	(0.034)
	other	0.218	-0.236 **	-0.335 *	0.161	0.215 ***	-0.126 **	0.168 ***	0.202 ***	-0.056	-0.140	-0.190	0.149	0.045	0.179 ***	0.140 ***
		(0.141)	(0.100)	(0.195)	(0.114)	(0.052)	(0.059)	(0.053)	(0.034)	(0.201)	(0.120)	(0.123)	(0.126)	(0.053)	(0.029)	(0.034)
	employment status missing		0.089	0.236								0.052	0.397		0.018	0.033
			(0.590)	(0.544)								(0.116)	(0.572)		(0.124)	(0.119)
	temporary contract	0.094	-0.055	0.055	-0.225	-0.182 ***	-0.063	-0.099 **	-0.120 **	-0.119	-0.043	-0.047	-0.117	-0.254 ***	-0.193 ***	-0.185 ***
		(0.421)	(0.194)	(0.298)	(0.226)	(0.045)	(0.065)	(0.045)	(0.058)	(0.414)	(0.477)	(0.357)	(0.125)	(0.082)	(0.037)	(0.046)
	financial sector	0.032	0.049	-0.337 **		0.108	0.179 ***	0.158	0.108 ***	0.135	0.103	-0.170	0.121	0.248 ***	0.092 *	0.101 *
		(0.117)	(0.125)	(0.132)		(0.129)	(0.045)	(0.152)	(0.038)	(0.103)	(0.251)	(0.290)	(0.164)	(0.065)	(0.051)	(0.058)
	public sector	0.082	-0.034	-0.321 ***		-0.053	-0.099 ***	0.069	0.042	-0.111	0.036	-0.096	0.042	0.045	0.001	-0.013
		(0.094)	(0.053)	(0.115)		(0.037)	(0.027)	(0.048)	(0.028)	(0.088)	(0.089)	(0.097)	(0.064)	(0.060)	(0.026)	(0.030)
Variables of main interest	owner	1.875 ***	2.426 ***	2.537 ***	1.189 ***	2.781 ***	2.265 ***	2.574 ***	2.487 ***	1.956 ***	2.087 ***	1.896 ***	2.724 ***	2.446 ***	2.543 ***	2.415 ***
		(0.184)	(0.107)	(0.283)	(0.129)	(0.130)	(0.042)	(0.096)	(0.037)	(0.191)	(0.177)	(0.094)	(0.094)	(0.106)	(0.019)	(0.024)
	mean HVA index	0.133 *	0.055 ***	0.051 **	0.438 ***	0.004 **		0.070 ***	0.027 ***	0.094 ***	0.019	0.043 *	0.035 ***	0.056 ***	0.017 ***	0.016 ***
		(0.081)	(0.017)	(0.024)	(0.074)	(0.002)		(0.013)	(0.004)	(0.027)	(0.012)	(0.026)	(0.006)	(0.008)	(0.002)	(0.003)
	ihs(gifts & transfers)	0.054 ***	0.029 ***	0.058 ***	0.059 ***	0.039 ***	0.053 ***	0.033 ***		0.030 ***	0.036 ***	0.033 **	0.043 ***	0.030 ***		0.042 ***
		(0.007)	(0.005)	(0.010)	(0.004)	(0.003)	(0.002)	(0.005)		(0.007)	(0.007)	(0.014)	(0.005)	(0.005)		(0.002)
	years since largest transfer	-0.006 *	0.002	-0.007	-0.010 ***	-0.001	-0.000	-0.017 ***		-0.005	-0.006	-0.004	-0.008 ***	-0.011 ***		-0.005 ***
		(0.003)	(0.003)	(0.005)	(0.002)	(0.002)	(0.001)	(0.002)		(0.005)	(0.007)	(0.011)	(0.003)	(0.003)		(0.001)
	macro index						0.037 ***									
							(0.008)									
	constant	1.407	5.543 ***	3.840 ***	0.233	2.740 ***	3.340 ***	3.838 ***	4.074 ***	4.896 ***	5.422 ***	7.108 ***	4.263 ***	4.621 ***	4.200 ***	4.249 ***
		(1.271)	(0.495)	(0.756)	(0.507)	(0.310)	(0.222)	(0.495)	(0.230)	(0.773)	(0.800)	(0.941)	(0.370)	(0.436)	(0.134)	(0.209)
	min. no. of obs.	2213	1954	972	3379	5433	12197	2612	7071	903	785	1236	3929	1996	33231	25723

*Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation; robust standard errors in parentheses; * p<0.1 ** p<0.05 *** p<0.01. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form. For France the macro index is used. For collinearity reasons, the following variables were dropped: financial and public sector in Germany; widowed in Slovakia; country of birth in Malta; final population weights in Germany, the Netherlands and Slovakia. The pooled regressions for the euro area include country fixed effects.*

Acquiring the HMR should not change the household wealth position at the point of transaction since, most likely, financial wealth is exchanged with real estate wealth and mortgage debt. The wealth effect of homeownership is likely to be linked to homeowners having a different consumption and saving behaviour. Before the acquisition of the HMR

they are likely to consume less and save more in order to make required down payments or decrease the loan to value ratio, which generally helps to reduce the interest rate on the mortgage. In addition, they are likely to save more regularly in form of their (often monthly) mortgage repayment. This also is confirmed by results from the German HFCS, which contains information on yearly net saving (Deutsche Bundesbank, 2013, p. 48). The mean (median) saving rate of tenants is 8% (3%). The corresponding saving rate of HMR owners with mortgage is 22% (21%) and without mortgage 13% (7%). The higher saving rate of owners ignores the fact that owners are more likely to have higher income on average and hence a higher possibility of saving. The multivariate analysis takes this into account since the equation includes total income as control. Moreover, they do pay their rent in terms of either interest and/or redemption payments. Finally, interest rate payments on HMR mortgages are tax deductible in most euro area countries.[17]

Despite controlling for homeownership, the property price dynamics contribute positively for most countries. Only for Malta, the HVA index seems to play no role. For example, 2010 HMR values in Germany are on average 21% higher than in 2000. The estimated coefficient of the mean HVA index for Germany is 0.438 (see Table 3). This means that a household acquiring the HMR in 2000 has a median net wealth, which is 9.2% higher holding homeownership, income and other controls constant. Italian house prices in 2010 using the mean HVA index are 230% larger than in 1990. The estimated coefficient for Italy is 0.027, meaning that an Italian household acquiring the HMR in 1990 has 6.2% higher median net wealth than a comparable household acquiring the HMR in the year the survey was conducted. These two examples show that the estimated coefficients of the mean HVA index are not only statistically but also economically important.

Gifts and inheritances significantly increase total net wealth in all countries. A ten percent increase in the inherited amount increases median net wealth between 0.29% (Belgium) and 0.59% (Germany). The additional control variable "time elapsed since the largest transfer was received" is insignificant for six and for the other six countries it has a negative impact. On the one hand, this negative effect might be a surprise since households had more time to earn returns on the inheritance. We do not know what households did with the additional wealth; they also had more time to consume the inheritance in total or in part, for example by buying a car. Judging on the basis of the estimated coefficients, it seems indeed that the latter effect dominates. The results carry over to the pooled median regression for the euro area (spec. 14 and 15). The effects of the control variables are as described before. Homeownership increases median net wealth by between 242% and 254%.

To sum up, these results provide compelling evidence that homeownership, capital gains to property and received inheritances matter a great deal for the wealth accumulation process in the euro area and in most euro area countries individually.

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[17]   The exceptions are Germany, Cyprus, Malta and Slovenia (see Table 3 in ECB (2009), p. 35).

4.2 Oaxaca-Blinder decomposition

In the second part of the analysis, we apply the widely used Oaxaca-Blinder decomposition (Oaxaca 1973, Blinder 1973) to quantify how much of the observed mean household total net wealth differences are due to the difference in covariates – *the explained part* – and how much is due to the differences in the covariates' coefficients – *the unexplained part* (Jann, 2008). For each country, we compute the household total net wealth difference with respect to Germany. Germany is a natural choice as reference country since on the one hand it is the largest country in the euro area with respect to population and total GDP and on the other hand it has the lowest median net household wealth in the sampled euro area countries. In addition, German data includes all the variables included in the model. All these facts ease the economic interpretation of the results given the decomposition coefficients (for what concerns the household net wealth differences) have the same sign for all the considered countries and no variables need to be dropped from the model because they are missing in the country of reference.

The size of the unexplained part in the Oaxaca-Blinder decomposition can differ across euro area countries because of differences in institutional aspects (e.g. differences in fiscal measures such as subsidies and taxes, financial market development and deregulation, banking supervision, pensions and social security), but also aspects related to differences in housing markets (e.g. provision of social housing, the regulation of the rental market, transaction cost differences, competition between mortgage banks).

Relying on the notation as outlined by Jann (2008) the two-fold Oaxaca-Blinder decomposition of the mean household total net wealth gap between a euro area country (*CT*) and Germany (*DE*) can be written as:

$$(3) \qquad R = \underbrace{(\bar{X}_{CT} - \vec{X}_{DE})' \hat{\beta}_{CT}}_{\text{Endowment effect/explained part}} + \underbrace{\bar{X}'_{DE} (\hat{\beta}_{CT} - \hat{\beta}_{DE})}_{\text{Coefficient effect/unexplained part}} \quad ,$$

where *R* represents the household total net wealth difference between the country in question and Germany, which implies in our context that wealth differences are usually positive. *X* is the set of relevant covariates as employed in the median regression and β is the relative vector of coefficients; the subscript *CT* and *DE* indicate respectively the country of interest and Germany. Furthermore, relying on the algebraic properties of the Oaxaca-Blinder decomposition, it is possible to identify the contribution of each endowment difference and each coefficient difference to the household total net wealth difference.[18]

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[18] As indicated in the first term of equation (3), we use the coefficients of the country (CT), which we compare to Germany, to calculate the endowment effect. This complies with the best practice in decomposition analysis since the range of realisations of the dependent variable in CT includes the range of realisations in Germany.

The Oaxaca-Blinder decomposition assumes, as all the OLS based methodologies, the quasi-normality of the dependent variable (e.g. Cobb-Clark and Hildebrand, 2006; Gale and Pence, 2006). Due to the substantial skewness of the net wealth distribution and to reduce possible biases introduced by outliers, we transform the dependent variable and all the monetary explanatory variables (total income and the amount of intergenerational transfers) in log form, using an inverse hyperbolic sine transformation. A further advantage of this non-linear transformation is that the assumed linearity in the Oaxaca-Blinder decomposition between the dependent and the independent variables is relaxed (Barsky et al., 2002).

For the clarity of exposition, Table 4 shows covariates grouped into various categories: *"demographic"* includes household characteristics such as gender, age, age squared, marital status, household size, educational attainment and where available the variable *"born in the country of residence"*; *"employment"* includes dummies of the employment status, a dummy for having a temporary contract and two dummies for working in the financial or public sector. All other variables are separately reported since they are in the key interest of this study. We address the possible concerns related to heteroskedasticity and sampling uncertainty calculating bootstrapped standard errors over 500 replicate weights (Cameron and Trivedi, 2010).

The decomposition results presented in Table 4 show that (IHS transformed) mean household total net wealth is significantly higher in all countries (with the exception of the Netherlands) than in Germany. Differences in endowments play a major role in explaining wealth differences between Germany and respectively Belgium, Cyprus, Spain, Greece and Slovakia. For the remaining countries, differences in endowments' returns are more relevant.

For all euro area countries, differences in homeownership rates help to explain wealth differences to Germany. Differences in house price dynamics (as captured by the mean HVA index) positively contribute in explaining wealth differences between Germany and Cyprus, Spain, France, Greece, Italy, Portugal and Slovakia, respectively. The higher gross income of German households reduces the net wealth differences with respect to Greece, Italy, Malta, Portugal and Slovakia. If German households had the same gross income as the households in these countries, the net wealth difference would have been even larger than currently observed. Intergenerational transfers and the years since the household obtained the largest transfer play no role in explaining net wealth differences. In Spain, Greece and Portugal they even contribute negatively.

Turning to the effect of endowments' returns on household wealth differences, the interpretation of the values reported for homeownership and the HVA index are not straightforward. The first represents the effect of the HMR capital gain not reflected by the endowment effect of the HVA index on the difference of household total net wealth between Germany and the respective country in question. The latter represents the effect of a return

over the HMR capital gain, being conceptually similar to a squared term effect. The residual effect of homeownership (after controlling for the HVA index) on the household total net wealth difference between Germany and the respective country is positive and statistically significant in most of the countries, which suggests for those countries that households investing in homeownership might may have enjoyed benefits not related to capital gains in the context of property price appreciations (e.g. subsidies or tax benefits such as deductible interest rates payments for mortgages etc.). The unexplained part relative to the HVA index is negatively significant only once; this being the case for Malta (Table 4).

Thus, the results of the Oaxaca-Blinder decomposition reinforce the results obtained from the median regressions. While in the median regressions homeownership and property price dynamics were important factors helping to explain net wealth levels, the mean decomposition shows that the differences in these two factors also strongly contribute in explaining mean household total net wealth differences between euro area countries (and Germany).

Table 4: Oaxaca-Blinder decomposition
- Mean HVA index -

	(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
overall												
country of interest	9.915 ***	10.970 ***	11.240 ***	11.030 ***	10.160 ***	10.340 ***	11.150 ***	11.400 ***	11.770 ***	8.914 ***	10.160 ***	10.730 ***
	0.142	0.125	0.190	0.119	0.065	0.089	0.069	0.177	0.090	0.258	0.090	0.044
Germany	9.188 ***	9.188 ***	9.188 ***	9.188 ***	9.092 ***	9.188 ***	9.188 ***	9.188 ***	9.188 ***	9.188 ***	9.188 ***	9.188 ***
	0.153	0.153	0.153	0.153	0.158	0.153	0.153	0.153	0.153	0.153	0.153	0.153
difference	0.727 ***	1.785 ***	2.057 ***	1.845 ***	1.073 ***	1.147 ***	1.958 ***	2.210 ***	2.583 ***	-0.274	0.972 ***	1.537 ***
	0.210	0.202	0.252	0.193	0.174	0.178	0.171	0.234	0.187	0.311	0.181	0.158
explained	0.023	0.910 ***	1.716 ***	1.763 ***	0.181 ***	1.223 ***	0.644 ***	0.877 ***	0.858 ***	0.295	0.283 **	2.072 ***
	0.120	0.122	0.274	0.180	0.063	0.120	0.064	0.251	0.159	0.337	0.143	0.203
unexplained	0.705 ***	0.875 ***	0.340	0.081	0.891 ***	-0.076	1.314 ***	1.333 ***	1.725 ***	-0.569	0.688 ***	-0.534 **
	0.200	0.230	0.385	0.271	0.171	0.228	0.172	0.347	0.241	0.434	0.211	0.263
explained												
mean HVA index	0.049	0.102	0.329 ***	0.094 *	0.053 *	0.216 ***	0.100 ***	0.130	-0.072	0.164	0.128 ***	0.181 ***
	0.041	0.085	0.108	0.054	0.029	0.062	0.026	0.097	0.094	0.116	0.036	0.049
owner	0.082 **	0.988 ***	1.230 ***	1.874 ***	0.326 ***	1.148 ***	0.767 ***	0.901 ***	1.226 ***	0.325 ***	0.922 ***	2.023 ***
	0.041	0.114	0.219	0.166	0.030	0.100	0.044	0.136	0.146	0.119	0.077	0.143
ihs(total income)	0.033	-0.024	-0.004	-0.018	-0.010	-0.160 ***	-0.075 ***	0.201	-0.194 ***	-0.023	-0.145 ***	-0.225 **
	0.033	0.015	0.012	0.021	0.007	0.029	0.018	0.166	0.051	0.027	0.035	0.088
employment status	0.006	-0.093 **	0.028	0.007	0.002	0.089 **	0.012	0.038	-0.087	-0.153	-0.005	0.004
	0.043	0.045	0.067	0.039	0.018	0.044	0.019	0.080	0.056	0.132	0.025	0.017
demographics	-0.158 **	-0.053	0.157	-0.142	-0.215 ***	-0.018	-0.160 ***	-0.382 **	-0.012	0.256	-0.514 ***	0.084
	0.063	0.064	0.193	0.124	0.043	0.114	0.048	0.192	0.118	0.234	0.111	0.106
ihs(gifts & transfers)	0.036	-0.003	-0.001	-0.055 ***	0.022	-0.034 *		-0.025	-0.015	-0.331	-0.107 ***	0.008
	0.025	0.008	0.029	0.019	0.014	0.018		0.017	0.013	0.243	0.024	0.008
years since largest transfer	-0.026	-0.008	-0.023	0.003	0.002	-0.018		0.014	0.011	0.057	0.005	-0.003
	0.020	0.009	0.018	0.003	0.005	0.012		0.016	0.011	0.180	0.005	0.004
unexplained												
mean HVA index	-0.228	-0.312	-0.245	-0.345	-0.259	-0.275	-0.175	-0.298	-0.370 *	-0.195	-0.315	-0.311
	0.247	0.222	0.223	0.224	0.193	0.222	0.215	0.229	0.222	0.258	0.221	0.220
owner	0.300	0.835 **	0.801 **	1.171 ***	0.601 **	0.926 ***	0.188	0.814 **	0.650 *	0.125	0.601 **	0.954 ***
	0.342	0.332	0.367	0.332	0.262	0.329	0.272	0.358	0.337	0.458	0.288	0.307
ihs(total income)	-0.384	-5.252 **	-6.181 **	-6.232 **	-4.984 **	-2.992	-2.521	-3.704	-0.505	-8.453 ***	-4.911 **	-4.474 *
	2.900	2.610	3.090	2.525	2.524	2.580	2.528	3.446	2.869	2.912	2.501	2.592
employment status	0.358	0.263	-0.069	0.443	0.399 *	0.521 **	0.317	0.269	0.311	-0.866 *	0.468 **	0.377 *
	0.283	0.269	0.386	0.277	0.228	0.265	0.204	0.407	0.235	0.456	0.229	0.216
demographics	0.755	1.514	-0.717	2.430	-1.796	-1.201	-0.894	-0.337	-1.153	17.360 ***	0.981	-1.967
	2.263	2.368	2.697	2.512	1.964	2.067	1.915	3.116	2.349	4.295	2.388	2.006
ihs(gifts & transfers)	-0.201	-0.553 ***	-0.217	-0.283 **	-0.326 ***	-0.416 ***		-0.382 ***	-0.453 ***	-0.204	-0.286 **	-0.503 ***
	0.132	0.137	0.137	0.119	0.119	0.127		0.127	0.113	0.320	0.117	0.110
years since largest transfer	0.095	0.212 ***	0.030	0.121 **	0.149 ***	0.069		0.060	0.098	0.084	0.092 *	0.108 **
	0.063	0.069	0.083	0.055	0.054	0.064		0.090	0.067	0.215	0.053	0.054
constant	0.009	4.169	6.938 **	2.777	7.108 ***	3.293	4.399	4.912	3.147	-8.416 *	4.060	5.282 *
	3.130	3.017	3.375	3.123	2.706	2.784	2.785	4.179	3.204	5.112	2.972	2.804
minium no. obs.	5592	5333	4353	8814	15423	5993	10450	4282	4164	4617	7310	5375

Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation and bootstrapped standard errors with 500 replicates; * $p<0.1$ ** $p<0.05$ *** $p<0.01$. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form. For France, the macro index is used. Variables are grouped as follows: Employee status (self-employed, unemployed, retired, other employment status, temporary contract, financial sector, public sector), demographics (male, age, age2, single, divorced, widowed, hhsize, mideduc, higheduc, born in the country of residence). Household total net wealth differences are relative to Germany.

4.3   RIF-OB decomposition

The recentred influence function (RIF) OB decomposition allows obtaining detailed information on the factors explaining differences between our two sub-populations for the entire distribution of the variable of interest. While a detailed explanation of the RIF-OB decomposition is beyond the scope of this paper, it is worth to introduce some general notions. As detailed in Firpo, Fortin, Lemieux (2007, 2009) and in Fortin, Lemieux and Firpo (2011), by replacing the variable of interest (in our case the household total net wealth) with the recentred influence function of a specific quantile, it is possible to link a distributional analysis to a standard regression framework. Given the properties of the recentred influence function (RIF), it is possible to model the expected value of RIF of the percentile of interest as a linear function of a set of covariates.

$$(4)\ E\big[RIF(W;q)\,|\,X\big]=X\gamma+\varepsilon$$

where W is the household total net wealth, q is the percentile of interest, X is a vector of covariates and γ is a vector of coefficients. Equation (4) can be estimated via OLS for the respective subpopulation and therefore it is possible to apply an Oaxaca-Blinder decomposition analogous to the decomposition presented in equation (3). As the Oaxaca-Blinder decomposition, the RIF-OB decomposition can provide a covariate breakdown of the coefficient estimates, it is robust to the inclusion of non-binary covariate sets and it is not sensitive to the ordering of the covariates (Fortin, Lemieux and Firpo, 2011; Firpo, Fortin and Lemieux, 2007, 2009). To increase the comparability with the Oaxaca-Blinder decomposition presented in Table 4, the dependent variable is transformed using an IHS in log form and we use the same set of covariates and the same reference group as before.

Table 5 shows the results of the RIF-OB decomposition at 50th, 75th and 90th quantile, as well as the mean from the OB decomposition from Table 4 for the variables of main interest (homeownership rate, mean HVA index, amount of gifts and transfers and years since the largest transfer). As for the OB decomposition, heteroskedasticity and sampling uncertainty concerns are addressed, calculating bootstrapped standard errors over 500 replicate weights for each of the proposed specifications (Cameron and Trivedi, 2010).

At *median* level the difference in (IHS) total net wealth levels between the country in question and Germany are always statistically significant a 99% level (95% for Austria). For Austria, France, the Netherlands and Slovakia, wealth differences are mainly explained by differences in endowments (note that the unexplained part is the difference between the total difference and the explained part). For the remainder of the countries, differences in endowments, while not being most important, still contribute substantially to the explanation of differences in IHS net wealth (with the exception of Portugal).

Table 5: OB and RIF-OB decomposition at mean, 50th 75th and 90th quantile

– *Mean HVA index* –

Decomposition		(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
Oaxaca-Blinder Decomposition	**difference**	0.73 ***	1.79 ***	2.06 ***	1.85 ***	1.07 ***	1.15 ***	1.96 ***	2.21 ***	2.58 ***	-0.27	0.97 ***	1.54 ***
	explained	0.02	0.91 ***	1.72 ***	1.76 ***	0.18 ***	1.22 ***	0.64 ***	0.88 ***	0.86 ***	0.30	0.28 **	2.07 ***
	mean HVA index	0.05	0.10	0.33 ***	0.09 *	0.05 *	0.22 ***	0.10 ***	0.13	-0.07	0.16	0.13 ***	0.18 ***
	owner	0.08 **	0.99 ***	1.23 ***	1.87 ***	0.33 ***	1.15 ***	0.77 ***	0.90 ***	1.23 ***	0.33 ***	0.92 ***	2.02 ***
	ihs(gifts & transfers)	0.04	0.00	0.00	-0.06 ***	0.02	-0.03 *		-0.03	-0.01	-0.33	-0.11 ***	0.01
	years since largest transfer	-0.03	-0.01	-0.02	0.00	0.00	-0.02		0.01	0.01	0.06	0.00	0.00
RIF-OB Decomposition 50th Percentile	**difference**	0.32 **	1.38 ***	1.56 ***	1.33 ***	0.68 ***	0.82 ***	1.26 ***	2.00 ***	1.48 ***	0.75 ***	0.45 ***	0.30 ***
	explained	0.18 **	0.54 ***	0.64 ***	0.22 ***	0.44 ***	0.36 ***	0.37 ***	0.64 ***	0.35 ***	0.41 ***	0.03	0.40 ***
	mean HVA index	0.11 ***	0.29 ***	0.16 ***	0.07 ***	0.21 ***	0.07	0.06 ***	0.34 ***	0.17 ***	0.24 ***	0.04	0.21 ***
	owner	0.11 **	0.25 ***	0.30 ***	0.31 ***	0.32 ***	0.35 ***	0.41 ***	0.24 ***	0.30 ***	0.22 ***	0.40 ***	0.23 ***
	ihs(gifts & transfers)	0.04	-0.01	0.00	-0.03 ***	0.03	-0.03 **		-0.02	-0.01	-0.11 *	-0.06 ***	0.01
	years since largest transfer	-0.03 *	0.00	-0.01	0.00	-0.01	-0.02 **		0.00	0.01	0.05	0.01	0.00
RIF-OB Decomposition 75th Percentile	**difference**	0.21 ***	0.69 ***	1.03 ***	0.51 ***	0.31 ***	0.04	0.46 ***	1.23 ***	0.68 ***	0.24 ***	-0.21 ***	-0.64 ***
	explained	0.08	0.24 ***	0.31 ***	0.00	0.11 ***	0.12 ***	0.06 *	0.28 ***	0.04	0.11	-0.23 ***	0.10
	mean HVA index	0.01	0.15 ***	0.07	0.06 ***	0.14 ***	0.05	0.07 ***	0.19 ***	0.11	0.24 ***	0.00	0.17 ***
	owner	0.04 **	0.06 **	0.17 ***	0.12 ***	0.05 ***	0.14 ***	0.14 **	0.03	0.11 **	0.06 ***	0.20 ***	0.09 ***
	ihs(gifts & transfers)	0.02	-0.01	0.00	-0.03 ***	0.02	-0.02		-0.03	-0.02	-0.21 ***	-0.04 ***	0.01
	years since largest transfer	-0.01	0.00	-0.01	0.00	-0.01 *	-0.01		0.01	0.00	0.09 *	0.00	0.00
RIF-OB Decomposition 90th Percentile	**difference**	0.22 ***	0.45 ***	1.11 ***	0.35 ***	0.17 ***	-0.19 **	0.27 ***	1.08 ***	0.47 ***	-0.01	-0.38 ***	-0.98 ***
	explained	0.09 *	0.07 *	0.14	-0.11 *	0.01	-0.01	-0.01	0.19 *	-0.07	-0.18 **	-0.43 ***	-0.15
	mean HVA index	-0.02	0.01	0.12	0.04	0.06 ***	0.00	0.06 **	0.11	0.09	0.11 ***	0.00	0.09 *
	owner	0.03 *	0.05 *	0.06	0.07 **	0.03 ***	0.09 ***	0.08 ***	0.03	0.02	0.04 **	0.12 ***	0.05
	ihs(gifts & transfers)	0.02	0.00	0.00	-0.04 ***	0.02	-0.01		-0.02	-0.02	-0.28 ***	-0.04 ***	0.01
	years since largest transfer	0.00	0.00	-0.02	0.00	-0.01 *	0.00		0.01	-0.01	0.04	0.00	0.00

*Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation and bootstrapped standard errors with 500 replicates; * p<0.1 ** p<0.05 *** p<0.01. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form. For France, the macro index is used. Variables are grouped as follows: Employee status (self-employed, unemployed, retired, other employment status, temporary contract, financial sector, public sector), demographics (male, age, age2, single, divorced, widowed, hhsize, mideduc, higheduc, born in the country of residence). Household total net wealth differences are relative to Germany.*

Differences in the homeownership rates explain a substantial part of the wealth difference between Germany and the respective country at median level. In analogy with the Oaxaca-Blinder decomposition, the median RIF-OB decomposition shows that net wealth differences are significant at the 95% level or better in all countries (relative to Germany) with the exception of Portugal. Differences in house price dynamics and thus non-realised capital gains as synthesised by the HVA index have a strong effect on the household median net wealth differences in the analysed countries (with the exception of Greece and Portugal). With respect to the contribution to difference in net wealth, the HVA index is for a minority of countries more important than the HMR ownership indicator variable itself (Belgium, Luxembourg, the Netherlands), in other countries roughly as important (Austria) and for most countries less important than the HMR ownership (Cyprus, Spain, France, Greece, Italy, Malta, Portugal, Slovakia).

In most countries, differences in the amount of gifts and inheritances received by households (relative to German households) seem to be of low relevance for explaining net wealth differences at median level. For Spain, Greece, the Netherlands and Portugal, it contributes negatively, and significantly so, to explaining net wealth differences with Germany. This means that the wealth difference would have been even larger if German households had received the same amount of gifts and inheritances as household populations in these countries.

At the *75th quantile,* the difference in (IHS) total household net wealth between each considered country and Germany is generally lower than at median level. The explained part is significant in about one half of the countries (7 out of 12). The homeownership dummy contributes (to the difference in IHS household total net wealth) in 11 out of 12 euro area countries. The average contribution of the four factors (the summed four coefficients divided by the difference in IHS net wealth) across euro area countries is 20% (neglecting those countries where the difference in IHS net wealth is insignificant), and thus smaller than at the median level. This may reflect the decreasing importance of the HMR in the household portfolio at the upper end of the net wealth distribution (see Figure 4). Supporting this argument is that differences in the HVA index contribute significantly to the difference in (IHS) total household net wealth in 7 out of 12 euro area countries, thus three countries less than at the median level. Overall, the significance and contribution of the inheritances to the difference in IHS household total net wealth between each analysed country and Germany stays modest and in line with what was observed at median level.

At the *90th quantile,* the explained part is significant in 6 out of 12 euro area countries. For some countries, the difference in IHS wealth is negative as is the explained part, reflecting in part the high skewness of the German net wealth distribution. Furthermore, the explained part is insignificant for Cyprus, France, Greece, Italy, Malta and Slovakia. At this point of the household net wealth distribution, the differences in the factors encompassed in the explained part have difficulty to capture the difference in IHS wealth. Consequently, the unexplained part or the differences in the coefficients tends to become more important.

This suggests that wealth differences in euro area countries in wealthier strata of the population may be influenced by factors other than those relevant at lower strata of net wealth distribution.

In line with the decrease of both the difference in IHS wealth and the overall explained part, the importance of differences in homeownership rates decreases when we move through the household net wealth distribution from bottom to top; similarly differences in property price dynamics become less relevant. Thus, just for a handful of countries both the difference in IHS net wealth and the overall explained part remain significant at the 90th percentile (Austria, Belgium, Spain, the Luxembourg and Portugal); This suggests that homeownership and the HVA index are better in explaining wealth differences at middle part of the net wealth distribution than at the upper tail. At the upper tail, household total net wealth differences in the euro area seem to become more erratic, meaning that we are note able to capture them as well with our factors of interest. The generally lower contributions of differences in homeownership rates and property prices are not much of a surprise, as differences genuinely diminish and HMR related wealth looses importance relative to other real wealth and financial wealth in household portfolios.

In summary, the RIF-OB decomposition supports the findings at mean level. At the respective median, a large part of the observed household total net wealth differences between euro area countries and Germany is attributable to differences in homeownership rates and in property price dynamics. The relevance of differences in property price indices and homeownership rates in explaining net wealth differences tends to decrease toward the upper tail of the net wealth distribution. At the median net wealth level, the aggregate difference in endowments of the four factors of main interest explains on average 56% across euro area countries of the differences in (IHS) household total net wealth (always relative to Germany). This shrinks to 20% at 75th percentile, and to 11% at 90th percentile. This is coincides with the reduced relevance of the endowment effects towards the upper end of the net wealth distribution.

5   Robustness

The main results make use of the HFCS based mean housing value appreciation index. To assess the robustness of the results we run a battery of checks where we essentially replace the mean HVA index with the median or the median ratio HVA index. Overall, the results are very similar, regardless of whether we refer to the median regression, the Oaxaca-Blinder decomposition or the RIF-OB decomposition. Tables referring to these estimations are provided in Appendix D. Furthermore, we replace the mean HVA index with the macroeconomic residential property price index. Here, more differences are discernible, which is partially related to the sometimes much smaller sample size at our disposal.

Median regression

At the median regression, the coefficients with regard to homeownership and intergenerational transfers are very robust (Table 9) regardless of the index used. The size of the property price coefficient is different from the baseline specification for most countries using the macroeconomic index. Turning to the pooled estimation results, excluding Italy from the sample to include the inheritance variables increases the coefficient for the macroeconomic property price index from 0.5% to almost 3.3% (Table 10). This is likely to be linked to the fact that the time period for the macroeconomic index is very long in Italy. The values for the macroeconomic property price index in the early years (1965-1967) are above 50. If Italy is excluded, these very influential observations are dropped and the impact of the other observations increases. Using the mean, median, or median ratio HVA indices instead has less of an influence. If the HVA index is increased by 1 unit, median net wealth increases by roughly 1-2%. Despite controlling for homeownership, the property price dynamics contribute to explaining net wealth levels for most countries. Robust evidence of the influence of the house price index over all specifications is obtained for Belgium, Germany, Greece, Italy, Luxembourg, the Netherlands, Portugal and Slovakia.

Decomposition analysis

Turning to our key results, Table 11 presents results analogous to Table 5 but replaces the mean HFCS index with the macroeconomic property price index. To ease the exposition, for each country, the table reports the household total net wealth difference to Germany (IHS transformed), the contribution of the explained part to this difference as well as the contributions of the four variables of main interest. The results in this table generally reinforce previously discussed results.

With regard to the *Oaxaca-Blinder decomposition*, replacing the mean HVA index with the macroeconomic index results in similar (IHS transformed) mean net wealth differences to Germany. Noteworthy, differences now are not statistically significant for Austria, Cyprus, Greece, the Netherlands and Slovakia. The total explained part turns insignificant for Cyprus, the Netherlands and Portugal. This is mainly due to the smaller sample size for these countries when using the macroeconomic property price index. With regard to the *RIF-OB decomposition*, replacing the mean HVA index with its macroeconomic index produces sizable variations for some selected coefficient estimates (Table 11). For example, at the median, this is particularly the case for the total difference and the explained part with regard to Austria, Cyprus, Greece and Slovakia.

Furthermore, with exception of Cyprus, the differences in homeownership rates always help to explain net wealth differences to Germany at the mean and median. Even at the 75th percentile homeownership contributes significantly to the explained part in 10 out of 12 countries. At 90th percentile the contribution remains significant for one half of our countries. Differences in property price developments contribute to the mean net wealth difference between Germany and five other countries (Spain, France, Greece, Italy and Portugal). For the median decomposition, it contributes significantly to the explained part

in 9 out of 12 countries, at the 75th percentile decomposition in 7 countries and at the 90th percentile decomposition in 5 countries. In summary, main results are robust when we use the macro index.

Table 12 presents non-bootstrapped results of the *Oaxaca-Blinder decomposition* for all four property price indices. The three HVA indices show roughly similar contributions. Larger differences to the macroeconomic index are only visible for some countries. Homeownership is significant in all countries and specifications with the exception of Austria and to a minor extend Cyprus. The role of differences in intergenerational transfers and the years since the largest transfer seems equally economically important in all specifications, again with the exception of Cyprus and to smaller extent to Austria.

Table 13, Table 14 and Table 15 show the robustness of the results substituting the mean HVA index with the other HVA indices for different percentiles at the median and the upper end of the net wealth distribution (results non-bootstrapped). Still, the alteration of the index does not change the economic interpretation of the analysis in any of the analysed countries.

6   Conclusion

Recent results from the Eurosystem Household Finance and Consumption Survey reveal large wealth differences within the euro area, which has sparked a lot of media attention. This paper aims to uncover some of the main factors driving these differences. Doing so, we focus on three main factors: 1) homeownership, 2) property price dynamics and 3) intergenerational transfers. In the household wealth literature, these factors are recurringly found to be of importance for the wealth accumulation process, and differences across countries therein are therefore expected to contribute to explaining the observed wealth differences across euro area countries. For example, homeownership, which is the most important household asset, varies greatly in the euro area (44%-90%). Similarly, past house price dynamics in the last 20+ years differ substantially across euro area countries. In some countries, notably Germany, house prices have increased very modestly in the last twenty years (until 2010), whereas in other countries house price developments were very dynamic. In the latter countries, early investors into the household main residence were therefore able to benefit substantially. In this context, intergenerational transfers increase household wealth directly, as they are an important factor for the tenancy choice, i.e. for the decision to own or rent.

We show that these three factors, in addition to the common household and demographic factors, are relevant determinants of the household wealth accumulation process across euro area countries. Furthermore, using various econometric regressions and decomposition techniques, we show that (after controlling for household heterogeneity) homeownership and house price dynamics are important for explaining the observed wealth differences across euro area countries, whereas intergenerational transfers and gifts matter to a

much smaller extent. Homeownership and house price dynamics are particularly relevant contributing factors in middle part of the wealth distribution. Across euro area countries, these factors explain 56% of the difference in (IHS transformed) total net household wealth at their respective median level relative to Germany. The absolute contribution of these factors in explaining net wealth differences remains substantial but diminishes for higher percentiles of the net wealth distribution.

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Appendix A: The Eurosystem Household Finance and Consumption Survey

The Eurosystem HFCS, coordinated by the ECB and implemented by 15 National Central Banks in the Eurosystem (with the exception of Ireland and Estonia), is an ex-ante harmonised micro database focussing on households' balance sheets and economic behaviour. It includes 62,521 observations representing 138,122,237 private households resident in the participating countries (HFCN, 2013a; HFCN, 2013b).

Table 6: Survey Characteristics

	Fieldwork	Assets & Liabilities	Income	Interview mode
AT	09/10 – 05/11	Time of interview	2009	CAPI
BE	04/10 – 11/10	Time of interview	2009	CAPI
CY	04/10 – 01/11	Time of interview	2009	88% PAPI, 12% CAPI
DE	09/10 – 07/11	Time of interview	2009	CAPI
ES	11/08 – 07/09	Time of interview	2007	CAPI
FI	01/10 – 05/10	31.12.2009	2009	97% CATI. 3% CAPI
FR	10/09 – 02/10	Time of interview	2009	CAPI
GR	06/09 – 09/09	Time of interview	Last 12 months	CAPI
IT	01/11 – 08/11	31.12.2010	2010	85% CAPI, 15% PAPI
LU	09/10 – 04/11	Time of interview	2009	CAPI
MT	10/10 – 02/11	Time of interview	Last 12 months	81% CAPI, 19 PAPI
NL	04/10 – 12/10	31.12.2009	2009	CAWI
PT	04/10 – 07/10	Time of interview	2009	CAPI
SI	10/10 – 12/10	Time of interview	2009	CAPI
SK	09/10 – 10/10	Time of interview	Last 12 months	CAPI

Note: CAPI (Computer Assisted Personal Interview), CATI (Computer Assisted Telephonic Interview, CAWI (Computer Assisted Web Interview), PAPI (Paper Assisted Personal Interview). Source: HFCN (2013b).

Table 6 highlights the main characteristics of the different country modules in terms of fieldwork period, reference year and survey mode. The reference year of the most surveys is 2010 (2009 for income). The data collection period is not fully harmonised (spanning from November 2008 (Spain) to August 2011 (Italy)). Still, any resulting biases are expected to be limited. For the same reason we chose not to apply any PPP correction mechanism (for detailed discussion of comparability of country surveys, see HFCN, 2031b). Table 7 shows that the predominant share of interviews were conducted by CAPI (Computer Assisted Personal Interviews). In some countries CAPI was supplemented with PAPI (Paper Assisted Personal Interview). CAWI (Computer Assisted Web Interview) is exclusively used by the Dutch survey. The sampling strategy mainly relies on stratified random sampling (with the exception of Slovakia) and reflects country specificities. In addition, some countries apply oversampling of wealthy household; this is mainly due the reduction of variance in the main wealth components. Each country module is intended to

be country representative (with the exception of Slovenia). Allowing for different sampling strategies, the weighting procedure follows a harmonised method (HFCN, 2013b).

Table 7: Sampling strategy

Country	Number of households	Number of obs	Type of sampling design	Oversampling of wealthy
Euro Area	**138,122,237**	**62,521**	-	-
AT	3,773,956	2,380	2 stage stratified sampling	yes
BE	4,692,601	2,327	1 stage stratified sampling	yes
CY	303,242	1,237	1 stage stratified sampling	yes
DE	39,673,000	3,565	3 stage stratified sampling**	yes
ES	17,017,706	6,197	2 stage stratified sampling*	yes
FI	2,531,500	10,989	1 stage stratified sampling	yes
FR	27,860,408	15,006	2 stage stratified sampling	yes
GR	4,114,150	2,971	2 stage stratified sampling	yes
IT	23,817,962	7,951	2 stage stratified sampling	no
LU	186,440	950	1 stage stratified sampling	yes
MT	143,677	843	1 stage stratified sampling	no
NL	7,386,144	1,301	1 stage stratified sampling	no
PT	3,932,010	4,404	2 stage stratified sampling	yes
SI	777,777	343	2 stage stratified sampling	yes
SK	1,911,664	2,057	1 stage stratified quota sampling	no

*Notes: * In Spain, one stage for households living in municipalities with over 100,000 inhabitants, two stages for others.*
*** In Germany, three stages for households living in municipalities with over 100,000 inhabitants, two stages for others.*
Source: HFCN (2013b).

Logical inconsistencies of replies and item non-response are addressed via systematic editing and multiple imputation processes (based on 5 implicates) (Rubin, 1987), using state of art methodologies and committing to broad covariate conditioning. This procedure ensures unbiased results and preserves the covariance structure of the questionnaire. In addition, to allow a correct variance estimation of each point estimate, 1000 replicate weights are calculated following the Rao-Wu method (Rao and Wu, 1988) and taking into account the sample design, unit-non-response and additional calibration information (see HFCN, 2013b for further details and a list of the imputed variables in each country module).

Appendix B: Variable definitions and summary statistics

Variable name	Variable description
total net wealth	total net wealth is the difference between total gross assets (real and financial assets) and total liabilities as defined in Annex I of HFCN (2013a)
Main household characteristics	
male (d)	reference person is male
age, age2	age and age squared of the reference person
single (d)	reference person is single
married (d) (ref.)	reference person is married or has a consensual union on a legal basis
divorced (d)	reference person is divorced
widowed (d)	reference person is widowed
hhsize	number of household members
lowedu (d) (ref.)	reference person with low education (ISCED=0,1,2)
midedu (d)	reference person with medium education (ISCED=3,4)
higheduc (d)	reference person with high education (ISCED=5,6)
born in country of residence (d)	reference person is born in the country of residence
Employment and income related characteristics	
ihs(total income)	inverse hyperbolic sine transformation of total household gross income (as defined in Annex I of HFCN, 2013a) in log form
temporary contract (d)	reference person has a temporary working contract
employee (d) (ref.)	main labour status of reference person is employee
self-employed (d)	main labour status of reference person is self-employed
unemployed (d)	main labour status of reference person is unemployed
retired (d)	main labour status of reference person is retired
other (d)	main labour status of reference person is other empl. status not listed before
employment status missing (d)	main labour status of reference person is missing
financial sector (d)	reference person works in the financial sector (NACE: K)
public sector (d)	reference person works in the public sector (NACE: O, P, Q)
Variables related to homeownership and house prices	
owner	household owns fully or partially the HMR
macro index	macroeconomic property price index
mean HVA index	smoothed mean housing value appreciation index
median HVA index	smoothed median housing value appreciation index
median ratio HVA index	smoothed median ratio housing value appreciation index
Variables related to intergenerational transfers	
ihs(amount gifts & transfers)	inverse hyperbolic sine transformation of the total amount of received gifts or inheritances in log form (at the time of transfer; including HMR)
years since largest transfer	number of years since the largest gift or inheritance was received
Country fixed effects	
country (d)	C=1 if household resident in C ∈ {AT, BE, CY, ES, FR, GR, IT, LU, MT, NL, PT, SL}, zero otherwise; DE is reference country.

(d) denotes variable being a dummy variable. (ref.) indicates the reference group in the estimations.

Basic summary statistics

Variable	Obs	Mean	Std. Err.	Min	Max
AT	62,521	2.7%	0.065%	0	1
BE	62,521	3.4%	0.072%	0	1
CY	62,521	0.2%	0.019%	0	1
ES	62,521	12.3%	0.131%	0	1
FR	62,521	20.2%	0.160%	0	1
GR	62,521	3.0%	0.068%	0	1
IT	62,521	17.2%	0.151%	0	1
LU	62,521	0.1%	0.015%	0	1
MT	62,521	0.1%	0.013%	0	1
NL	62,521	5.3%	0.090%	0	1
PT	62,521	2.8%	0.067%	0	1
SI	62,521	0.6%	0.030%	0	1
SK	62,521	1.4%	0.047%	0	1
male	62,521	54.3%	0.199%	0	1
age	62,521	53	0.069	16	100
age2	62,521	3074	7.526	256	10000
single	62,514	22.2%	0.166%	0	1
divorced	62,514	10.7%	0.124%	0	1
widowed	62,514	13.4%	0.137%	0	1
hhsize	62,521	2.32	0.005	1	16
mideduc	62,370	41.4%	0.197%	0	1
higheduc	62,370	23.6%	0.170%	0	1
born in country of residence	40,017	89.1%	0.155%	0	1
ihs(total income)	62,521	10.4	0.005	-13.1	16.0
self-employed	62,521	8.2%	0.110%	0	1
unemployed	62,521	5.4%	0.090%	0	1
retired	62,521	30.9%	0.185%	0	1
other	62,521	10.3%	0.121%	0	1
employment status missing	62,521	0.8%	0.035%	0	1
temporary contract	57,930	5.3%	0.108%	0	1
financial sector	62,241	2.0%	0.057%	0	1
public sector	62,241	12.3%	0.140%	0	1
owner	62,521	60.1%	0.196%	0	1
macro index	40,385	2.1	0.030	0	52.7
mean HVA index	33,478	2.0	0.019	0	27.9
median HVA index	33,478	2.4	0.027	0	46.0
median ratio HVA index	33,478	2.4	0.027	0	46.0
ihs(amount gifts & transfers)	43,063	3.4	0.024	0	17.9
years since largest transfer	43,105	5.1	0.053	0	86

Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted.

Appendix C: Construction of HVA indices

Figure 10: Construction of mean HVA index over countries

-    *Inverted scale –*
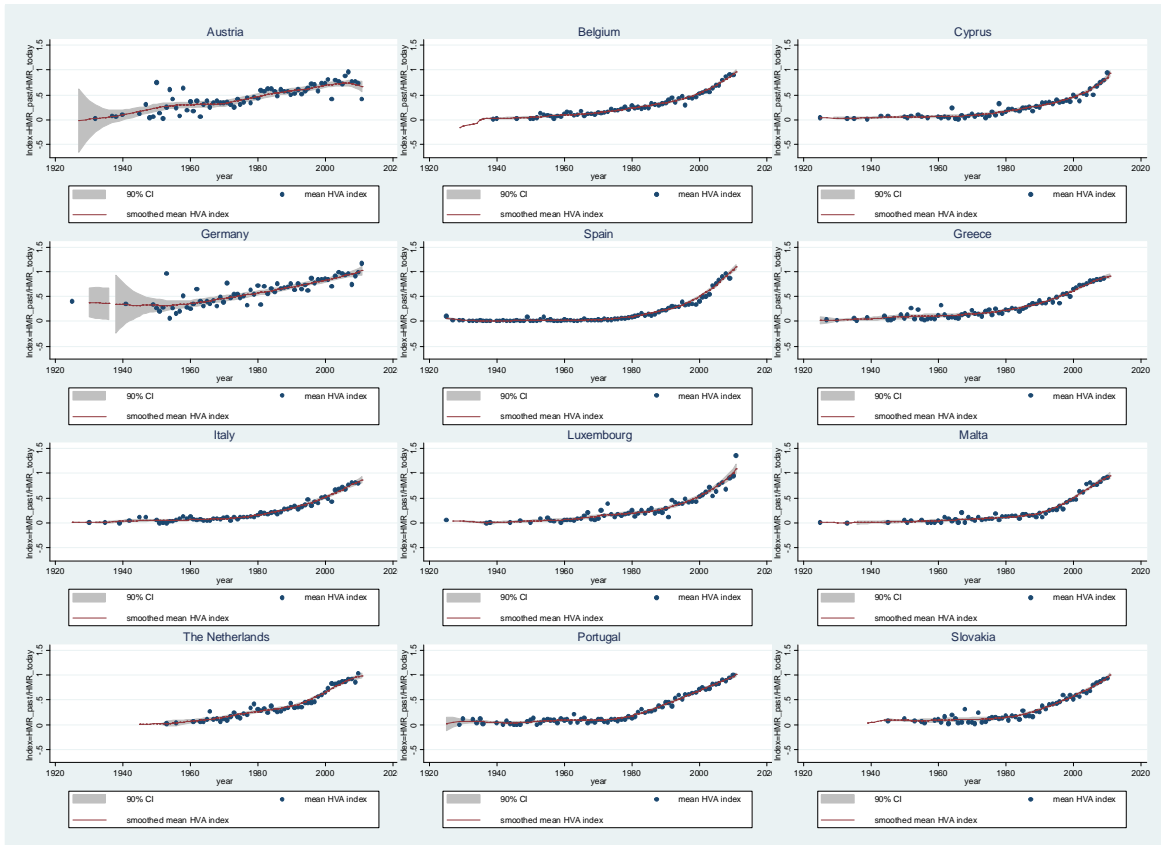
Source: own calculations based on the HFCS UDB 1.0; data are multiply imputed and weighted. Slovenia is excluded since it has no country representative survey. Information on the initial value of the HMR does not exist for Finland and France. The kernel-weighted local polynomial regression uses the Epanechnikov kernel-function. The kernel bandwidth is 5 and the degree of the polynomial smooth is 1. The confidence intervals are determined by the kernel smoothing.

Table 8: Number of observations for index construction

year	AT	BE	CY	DE	ES	GR	IT	LU	MT	NL	PT	SI	SK
1925			1.0	1.0	4.0	1.0		2.0	1.0				
1927				1.0	1.0								
1929					1.0						1.0		
1930					1.0	1.2	1.0				2.0		
1932	1.0				1.0								
1933			1.0		1.0				1.0		1.0	1.0	
1934					1.0						1.0		
1935			1.0		2.0	1.0	1.0				1.0		
1936					2.0	1.2		1.0			1.0	1.0	
1937	1.0				1.0			1.0					
1938	0.2			1.2	2.0			1.0					
1939		1.0	1.0			1.0	1.0						
1940	1.0	1.0			7.0		1.0				4.0		
1941				1.2	2.2								
1942					4.0		1.0				2.0		
1943			0.2		4.0						1.0		
1944					3.0	3.0		0.4			3.0		
1945	1.2		1.0		9.0	3.0	2.0		2.0		5.0		1.0
1946		1.0			2.0	1.0					2.0		
1947	0.2				4.0	1.4	4.0	1.0			2.0		
1948	1.0				4.2		4.0						
1949	1.2			0.2	3.0	3.0	4.0				2.0		
1950	8.0	1.0	3.0	3.4	30.0	23.2	19.0	1.2	1.0		26.0	1.0	3.0
1951	3.0	2.0	1.0	4.0	5.0	4.2	2.0		1.0		2.0		
1952	1.2	2.0	0.2	3.2	10.8	6.0	1.0		1.0		1.0	1.0	
1953	1.0	3.2		2.0	5.4	6.2	5.0	2.0		1.0	3.2	1.0	1.0
1954	1.0	4.0	2.0	4.0	13.0	5.2	6.0				7.0	1.0	
1955	6.0	4.0	4.0	2.0	14.6	6.0	14.0	3.2	6.0		17.4	3.0	1.0
1956	2.0	9.0		3.2	12.2	2.2	13.0	1.0		1.0	7.4		1.0
1957	2.4	4.2	1.0	5.2	7.2	4.0	14.0	1.0	3.0		9.0		
1958	4.6	14.6		5.2	24.8	5.2	18.0		1.0	1.0	9.4		
1959	5.2	11.2		7.0	23.0	11.0	17.0	0.2	2.0		4.4	1.0	1.0
1960	13.2	13.0	1.0	10.0	86.2	53.8	73.0	4.0	7.0	4.0	37.6		18.0
1961	2.0	8.2	2.0	10.4	19.4	6.0	22.0	1.0	1.0	2.0	10.8	2.0	2.0
1962	8.4	13.0	2.0	7.0	41.4	6.0	26.0	3.0	3.0		11.6	3.0	6.0
1963	9.0	18.2	5.0	5.0	42.6	8.2	25.0	3.0	3.0	2.0	14.0	3.0	1.0
1964	9.0	12.4	1.0	11.0	43.8	17.0	33.0	3.0	4.0	2.0	11.0	2.0	1.0
1965	19.2	19.0	4.0	19.0	56.0	29.4	50.0	2.0	5.0	3.0	34.4		9.0
1966	7.2	15.4	2.0	14.0	52.8	10.4	27.0	3.0	1.0	6.0	23.4	3.0	4.0
1967	10.2	23.0	5.0	23.4	42.8	23.8	40.0	3.0	4.0	5.0	20.2	2.0	2.0
1968	15.8	21.2	8.0	26.0	77.4	16.4	56.0	3.0	1.0	4.0	23.0	2.0	7.0
1969	7.8	22.0	1.0	16.0	78.8	24.8	53.0	7.0	2.0	1.0	22.0	3.0	3.0
1970	31.4	29.6	9.2	36.0	150.0	57.0	131.0	9.0	13.0	4.0	74.2	7.0	35.0
1971	9.6	14.0	2.2	25.0	52.4	8.8	54.0	10.0	3.0	5.0	17.4	4.0	1.0
1972	12.4	20.2	3.2	35.0	97.0	20.6	61.0	6.2	7.0	11.0	33.6	4.0	6.0
1973	18.4	27.0	6.2	28.2	127.4	14.4	53.0	8.0	7.0	16.0	39.2	5.0	11.0
1974	20.2	24.6	4.0	29.2	93.8	33.2	56.0	13.0	7.0	9.0	58.2	2.0	10.0
1975	24.6	43.2	9.4	29.4	133.6	33.0	70.0	9.0	17.0	9.0	75.4	4.0	25.0
1976	16.6	36.2	5.4	43.2	88.8	18.8	63.0	11.2	14.0	17.0	57.2	1.0	4.0
1977	12.8	27.0	11.2	33.4	71.0	20.8	45.0	7.0	8.0	10.0	42.8	9.0	6.0
1978	19.4	33.4	12.2	41.0	147.4	28.8	98.0	11.0	16.0	12.0	51.8	3.2	14.0
1979	14.8	33.4	4.2	36.0	118.0	60.2	55.0	12.0	20.0	8.0	40.6	6.0	8.0
1980	56.6	52.0	25.0	60.2	171.4	111.6	186.0	12.2	31.0	17.0	173.6	11.0	57.0
1981	19.4	32.2	11.2	36.2	84.0	28.4	60.0	9.0	15.0	15.0	33.6	4.0	10.0
1982	24.6	30.0	15.4	32.4	108.8	29.6	77.0	10.2	24.0	14.0	75.4	9.2	12.0
1983	31.4	22.2	16.2	29.0	118.2	29.2	84.0	9.0	21.0	15.0	35.0	3.4	11.0
1984	20.4	32.0	11.4	33.6	126.0	45.2	87.0	8.0	10.0	17.0	57.4	6.0	18.0
1985	36.4	44.0	27.0	47.0	132.4	42.2	136.0	12.2	19.0	26.0	110.6	11.2	43.2
1986	16.6	22.2	19.0	48.6	91.0	21.2	84.0	10.0	21.0	23.0	54.6	6.4	11.0
1987	17.8	34.4	14.2	32.4	95.0	24.0	81.0	8.0	16.0	18.0	58.0	4.0	14.0
1988	22.2	34.2	17.0	26.0	151.8	22.4	77.0	13.0	18.0	28.0	70.2	5.6	25.0
1989	17.6	33.2	15.0	49.2	139.4	58.6	65.0	17.0	21.0	35.0	50.0	10.2	15.2
1990	50.6	42.0	28.0	51.6	163.0	92.8	163.0	14.0	34.0	26.0	125.0	18.6	80.0
1991	26.8	35.4	13.8	40.4	81.6	33.4	87.0	17.0	12.0	24.0	41.8	10.6	18.2
1992	20.4	45.2	18.2	51.6	134.4	32.0	63.0	19.0	27.0	26.0	70.0	6.0	31.4
1993	17.0	42.2	21.0	47.0	101.2	26.4	49.0	13.0	14.0	32.0	68.2	7.6	29.2
1994	16.8	29.6	20.0	58.8	147.4	46.0	83.0	16.0	12.0	17.0	71.4	4.2	25.0
1995	42.6	54.0	25.0	38.4	118.6	37.4	85.0	18.0	16.0	28.0	108.0	7.2	72.8
1996	15.8	38.0	19.0	59.2	121.4	29.2	68.0	18.0	21.0	35.0	71.8	6.0	19.6
1997	15.2	44.0	17.0	60.6	161.4	49.2	81.0	11.6	20.0	29.0	65.2	7.0	30.8
1998	32.2	54.0	16.0	57.6	185.8	59.0	98.0	17.0	15.0	24.0	136.8	6.2	53.8
1999	30.2	42.2	18.0	57.6	170.6	81.2	87.0	21.0	11.0	39.0	142.0	3.2	44.0
2000	39.2	51.0	52.0	59.8	176.4	95.2	152.0	20.0	23.0	26.0	146.6	13.2	145.2
2001	36.8	35.0	21.0	60.4	99.6	25.2	98.0	12.0	17.0	31.0	50.4	7.0	56.4
2002	19.6	36.0	35.0	56.6	106.4	33.2	100.0	28.0	18.0	18.0	55.2	2.0	57.8
2003	19.6	44.2	43.0	57.8	117.6	43.4	75.0	18.0	17.0	27.0	36.2	6.0	71.2
2004	39.0	41.0	49.0	47.6	115.4	65.0	91.0	31.0	7.0	31.0	55.2	5.0	72.6
2005	40.2	60.0	69.6	64.0	95.2	68.4	109.0	25.0	5.0	44.0	71.2	10.0	104.2
2006	26.4	42.0	62.4	56.2	106.6	52.8	80.0	20.2	5.0	41.0	59.0	4.0	67.2
2007	33.8	49.0	80.0	54.0	74.6	62.2	80.0	33.2	1.0	44.0	49.0	4.0	80.2
2008	27.2	39.2	58.0	49.2	51.8	48.2	66.0	23.0	3.0	39.0	48.2	4.0	66.0
2009	22.4	29.0	26.0	38.0	14.8	11.0	75.0	26.0	3.0	32.0	40.2	3.0	40.0
2010	17.4	23.0	12.0	27.0			48.0	11.0	4.0	10.0	12.0	4.0	28.0
2011	5.6			4.0				1.0					
total	1181.0	1724.6	990.0	2013.0	5387.8	1986.0	3994.0	665.0	643.0	964.0	3055.0	285.0	1591.0

Source: own calculations based on the HFCS UDB 1.0; number of observations is not an integer since the average number over 5 implicates is shown. Information on the initial value of the HMR does not exist for Finland and France.

Figure 11: Comparison of macroeconomic indices and HVA indices with and without adjustment for the size of the HMR

- Inverted scale -
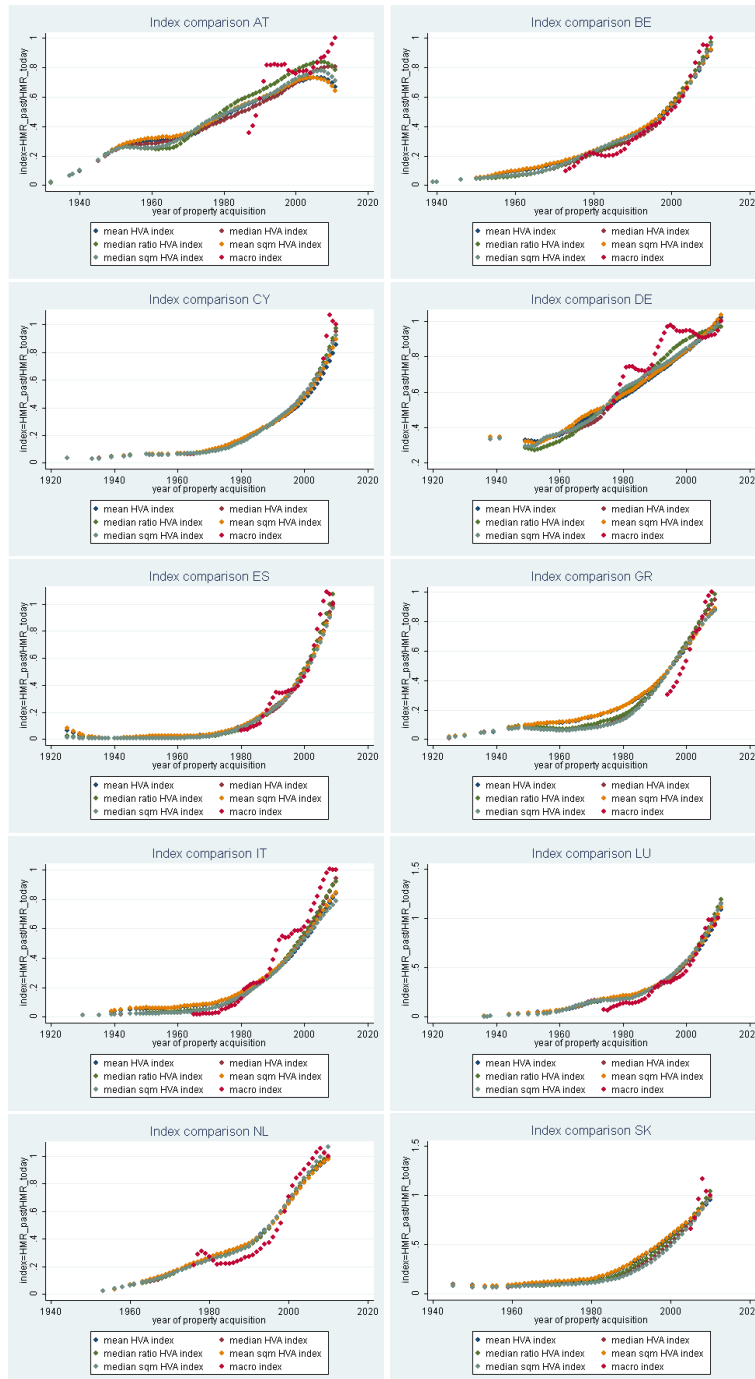
Appendix D: Robustness results

Table 9: Median regression:
- Different property price index specifications -

	(1) AT	(2) BE	(3) CY	(4) DE	(5) ES	(6) FR	(7) GR	(8) IT	(9) LU	(10) MT	(11) NL	(12) PT	(13) SK
macro index													
owner	1.841 ***	2.469 ***	1.664 **	1.104 ***	2.723 ***	2.265 ***	2.288 ***	2.568 ***	1.984 ***	2.076 ***	1.785 ***	2.375 ***	1.983 ***
	(0.185)	(0.104)	(0.821)	(0.140)	(0.130)	(0.042)	(0.110)	(0.034)	(0.175)	(0.186)	(0.194)	(0.114)	(0.223)
macro index	0.109	0.029 **	0.064	0.532 ***	0.012 ***	0.037 ***	0.165 ***	0.005 ***	0.040 **	0.034	0.079 ***	0.211 ***	0.286 *
	(0.100)	(0.012)	(0.743)	(0.099)	(0.004)	(0.008)	(0.035)	(0.001)	(0.018)	(0.021)	(0.021)	(0.046)	(0.164)
ihs(amount gifts & transfers)	0.056 ***	0.029 ***	0.079 ***	0.059 ***	0.039 ***	0.053 ***	0.040 ***		0.029 ***	0.034 ***	0.027 **	0.052 ***	0.031 ***
	(0.008)	(0.005)	(0.021)	(0.005)	(0.004)	(0.002)	(0.008)		(0.007)	(0.007)	(0.013)	(0.007)	(0.010)
years since largest transfer	-0.000	0.005 *	-0.016	-0.010 ***	0.002	-0.000	-0.028 ***		-0.007	-0.004	-0.000	-0.007	-0.002
	(0.004)	(0.003)	(0.017)	(0.003)	(0.003)	(0.001)	(0.009)		(0.005)	(0.009)	(0.009)	(0.006)	(0.014)
mean HVA index (reference specification)													
owner	1.875 ***	2.426 ***	2.537 ***	1.189 ***	2.781 ***		2.574 ***	2.487 ***	1.956 ***	2.087 ***	1.896 ***	2.724 ***	2.446 ***
	(0.184)	(0.107)	(0.283)	(0.129)	(0.130)		(0.096)	(0.037)	(0.177)	(0.170)	(0.191)	(0.094)	(0.106)
mean HVA index	0.133 *	0.055 ***	0.051 **	0.438 ***	0.004 **		0.070 ***	0.027 ***	0.094 ***	0.019	0.043 *	0.035 ***	0.056 ***
	(0.081)	(0.017)	(0.024)	(0.074)	(0.002)		(0.013)	(0.004)	(0.027)	(0.012)	(0.026)	(0.006)	(0.008)
ihs(amount gifts & transfers)	0.054 ***	0.029 ***	0.058 ***	0.059 ***	0.039 ***		0.033 ***		0.030 ***	0.036 ***	0.033 **	0.043 ***	0.030 ***
	(0.007)	(0.005)	(0.010)	(0.004)	(0.003)		(0.005)		(0.007)	(0.007)	(0.014)	(0.005)	(0.005)
years since largest transfer	-0.006 *	0.002	-0.007	-0.010 ***	-0.001		-0.017 ***		-0.005	-0.006	-0.004	-0.008 ***	-0.011 ***
	(0.003)	(0.003)	(0.005)	(0.002)	(0.002)		(0.002)		(0.005)	(0.007)	(0.011)	(0.003)	(0.003)
median HVA index													
owner	1.849 ***	2.450 ***	2.550 ***	1.294 ***	2.784 ***		2.669 ***	2.519 ***	1.937 ***	2.107 ***	1.890 ***	2.792 ***	2.454 ***
	(0.197)	(0.106)	(0.277)	(0.123)	(0.130)		(0.092)	(0.036)	(0.177)	(0.164)	(0.190)	(0.091)	(0.101)
median HVA index	0.147 *	0.042 ***	0.048 **	0.353 ***	0.002		0.024 ***	0.016 ***	0.104 ***	0.015	0.041 *	0.010 ***	0.044 ***
	(0.083)	(0.014)	(0.022)	(0.074)	(0.001)		(0.005)	(0.002)	(0.024)	(0.010)	(0.024)	(0.002)	(0.006)
ihs(amount gifts & transfers)	0.055 ***	0.029 ***	0.058 ***	0.059 ***	0.039 ***		0.030 ***		0.031 ***	0.035 ***	0.033 **	0.041 ***	0.030 ***
	(0.007)	(0.005)	(0.010)	(0.004)	(0.003)		(0.005)		(0.007)	(0.007)	(0.014)	(0.005)	(0.005)
years since largest transfer	-0.006 **	0.002	-0.007	-0.011 ***	-0.000		-0.015 ***		-0.006	-0.005	-0.004	-0.008 **	-0.011 ***
	(0.003)	(0.003)	(0.005)	(0.003)	(0.002)		(0.002)		(0.005)	(0.007)	(0.011)	(0.003)	(0.003)
median ratio HVA index													
owner	1.916 ***	2.464 ***	2.562 ***	1.267 ***	2.785 ***		2.642 ***	2.518 ***	1.970 ***	2.140 ***	1.891 ***	2.793 ***	2.461 ***
	(0.157)	(0.105)	(0.285)	(0.126)	(0.130)		(0.093)	(0.036)	(0.176)	(0.166)	(0.189)	(0.092)	(0.105)
median ratio HVA index	0.121 *	0.040 ***	0.042 **	0.384 ***	0.002		0.038 ***	0.016 ***	0.092 ***	0.010	0.039 *	0.010 ***	0.043 ***
	(0.073)	(0.014)	(0.020)	(0.080)	(0.001)		(0.008)	(0.002)	(0.023)	(0.009)	(0.023)	(0.003)	(0.006)
ihs(amount gifts & transfers)	0.053 ***	0.029 ***	0.058 ***	0.059 ***	0.039 ***		0.031 ***		0.031 ***	0.034 ***	0.033 **	0.041 ***	0.030 ***
	(0.006)	(0.005)	(0.010)	(0.004)	(0.003)		(0.005)		(0.007)	(0.008)	(0.014)	(0.005)	(0.005)
years since largest transfer	-0.006 *	0.002	-0.007	-0.011 ***	-0.000		-0.016 ***		-0.006	-0.005	-0.004	-0.008 **	-0.011 ***
	(0.003)	(0.003)	(0.006)	(0.002)	(0.002)		(0.002)		(0.005)	(0.007)	(0.011)	(0.003)	(0.003)
in all specifications													
socio-demographics	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
employment controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
min. number of observations													
specification macro index	1829	1894	418	3226	4355	12197	1720	7378	868	674	1182	2899	851
specification HFCS indices	2213	1954	972	3379	5433		2612	7071	903	785	1236	3929	1996

Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation; robust standard errors in parentheses; * p<0.1 ** p<0.05 *** p<0.01. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form.

Table 10: Pooled median regression for the euro area
- Different HVA and macroeconomic index specifications -

	(1) all	(2) ex FR	(3) ex FR	(4) ex FR	(5) ex IT	(6) ex IT & FR	(7) ex IT & FR	(8) ex IT & FR
owner	2.538 ***	2.543 ***	2.563 ***	2.565 ***	2.315 ***	2.415 ***	2.431 ***	2.433 ***
	(0.018)	(0.019)	(0.019)	(0.018)	(0.024)	(0.024)	(0.023)	(0.023)
macro index	0.005 ***				0.033 ***			
	(0.001)				(0.005)			
mean HVA index		0.017 ***				0.016 ***		
		(0.002)				(0.003)		
median HVA index			0.009 ***				0.008 ***	
			(0.002)				(0.002)	
median ratio HVA index				0.009 ***				0.008 ***
				(0.001)				(0.002)
ihs(amount gifts & transfers)					0.048 ***	0.042 ***	0.042 ***	0.042 ***
					(0.002)	(0.002)	(0.002)	(0.002)
years since largest transfer					-0.001	-0.005 ***	-0.005 ***	-0.005 ***
					(0.001)	(0.001)	(0.001)	(0.001)
constant	3.125 ***	4.200 ***	4.173 ***	4.167 ***	3.512 ***	4.249 ***	4.224 ***	4.222 ***
	(0.154)	(0.134)	(0.129)	(0.128)	(0.189)	(0.209)	(0.190)	(0.194)
socio-demographic variables	yes	yes	yes	yes	yes	yes	yes	yes
employment controls	yes	yes	yes	yes	yes	yes	yes	yes
final population weights	yes	yes	yes	yes	yes	yes	yes	yes
country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
minimum number of observations	40019	33231	33231	33231	32195	25723	25723	25723

Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation; robust standard errors in parentheses; * p<0.1 ** p<0.05 *** p<0.01. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form.

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Table 11: OB and RIF-OB decomposition at mean, 50th, 75th and 90th quantile

Total net wealth, macroeconomic index – 500 bootstrap replicates

		(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
Oaxaca-Blinder Decomposition	**difference**	0.32	1.83 ***	0.28	1.70 ***	1.07 ***	0.18	2.11 ***	2.22 ***	2.55 ***	-0.26	0.51 **	0.13
	explained	-0.42 ***	0.92 ***	0.00	1.66 ***	0.18 ***	0.39 **	0.74 ***	0.95 ***	0.81 ***	0.33	-0.21	0.86 **
	macro index	0.00	0.04	-0.02	0.17 **	0.05 **	0.20 **	0.05 ***	0.10	0.02	0.18	0.23 ***	0.08
	owner	-0.15 ***	1.05 ***	0.00	1.73 ***	0.33 ***	0.31 ***	0.90 ***	0.90 ***	1.14 ***	0.34 ***	0.44 ***	0.76 ***
	ihs(gifts & transfers)	0.01	0.00	-0.17 **	-0.07 ***	0.02	-0.10 *		-0.03	-0.02	-0.31	-0.14 ***	-0.01
	years since largest transfer	-0.01	-0.01	0.07	0.00	0.00	0.11		0.02	0.02	0.04	0.01	-0.01
RIF-OB Decomposition 50th Percentile	**difference**	-0.16	1.44 ***	0.63 ***	1.36 ***	0.68 ***	0.37 ***	1.37 ***	2.02 ***	1.47 ***	0.78 ***	0.27 ***	-0.26 ***
	explained	-0.27 ***	0.54 ***	-0.08	0.28 ***	0.44 ***	0.39 ***	0.38 ***	0.66 ***	0.35 ***	0.48 ***	0.00	0.08
	macro index	0.00	0.19 ***	-0.01	0.11 ***	0.21 ***	0.18 ***	0.02 *	0.20 ***	0.24 ***	0.30 ***	0.13 ***	0.10
	owner	-0.19 ***	0.34 ***	0.03	0.32 ***	0.32 ***	0.25 ***	0.46 ***	0.35 ***	0.29 ***	0.22 ***	0.33 ***	0.37 ***
	ihs(gifts & transfers)	0.01	-0.01	-0.11 **	-0.03 ***	0.03	-0.10 ***		-0.02	-0.02	-0.07	-0.08 ***	-0.01
	years since largest transfer	0.00	0.00	0.09 **	0.01	-0.01	0.10 *		0.00	0.02 *	0.03	0.00	-0.02
RIF-OB Decomposition 75th Percentile	**difference**	0.02	0.73 ***	0.34 **	0.52 ***	0.31 ***	-0.11 *	0.54 ***	1.27 ***	0.68 ***	0.25 ***	-0.31 ***	-1.01 ***
	explained	-0.15	0.24 ***	0.01	0.03	0.11 ***	0.05	0.06 ***	0.32 ***	0.07	0.13 *	-0.29 ***	0.03
	macro index	-0.01	0.13 ***	-0.01	0.10 ***	0.14 ***	0.10 *	0.04 ***	0.17 ***	0.13	0.23 ***	0.06	0.10
	owner	-0.11 **	0.09 ***	-0.04	0.10 ***	0.05 ***	0.06 **	0.17 ***	0.06 **	0.11 *	0.09 ***	0.14 ***	0.08
	ihs(gifts & transfers)	0.01	-0.01	-0.10	-0.03 ***	0.02	-0.08 **		-0.03	-0.02	-0.20 ***	-0.06 ***	-0.01
	years since largest transfer	-0.01	0.00	0.03	0.01 *	-0.01 *	0.06		0.01	0.01	0.08 *	0.00	0.05
RIF-OB Decomposition 90th Percentile	**difference**	0.15 **	0.50 ***	0.50 ***	0.35 ***	0.17 ***	-0.32 ***	0.34 ***	1.12 ***	0.50 ***	0.03	-0.39 ***	-1.15 ***
	explained	0.00	0.08 **	0.08	-0.07	0.01	-0.02	-0.01	0.21 **	0.05	-0.15 *	-0.38 ***	-0.25
	macro index	0.00	0.02	0.00	0.11 ***	0.06 ***	0.08	0.04 ***	0.07	0.18	0.15 ***	0.09 *	0.20
	owner	-0.07 **	0.05 **	0.05	0.04	0.03 ***	0.00	0.10 ***	0.06 *	-0.02	0.04 **	0.04	-0.11
	ihs(gifts & transfers)	0.01	0.00	-0.06	-0.05 ***	0.02	-0.05		-0.02	-0.02	-0.27 ***	-0.05 **	-0.01
	years since largest transfer	-0.01	0.00	-0.02	0.01	-0.01 *	0.01	0.00	0.00	-0.02	0.05	0.01	0.05

*Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation and bootstrapped standard errors with 500 replicates; * p<0.1 ** p<0.05 *** p<0.01. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form. Slovenia is excluded since it has no country representative survey. Variables are grouped as follows: Employee status (self-employed, unemployed, retired, other employment status, temporary contract, financial sector, public sector), demographics (male, age, age2, single, divorced, widowed, hhsize, mideduc, higheduc, born in the country of residence). Household total net wealth differences are calculated relative to Germany.*

Table 12: Oaxaca-Blinder decomposition
– Different HVA and macro index specifications –

	(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
Mean HVA index												
difference	0.73 ***	1.79 ***	2.06 ***	1.85 ***		1.15 ***	1.96 ***	2.21 ***	2.58 ***	-0.27	0.97 ***	1.54 ***
explained	0.02	0.91 ***	1.72 ***	1.76 ***		1.22 ***	0.64 ***	0.88 ***	0.86 ***	0.30	0.28 **	2.07 ***
mean HVA index	0.05	0.10	0.33 **	0.09 **		0.22 **	0.10 ***	0.13	-0.07	0.16	0.13 ***	0.18 ***
owner	0.08	0.99 ***	1.23 ***	1.87 ***		1.15 ***	0.77 ***	0.90 ***	1.23 ***	0.33 ***	0.92 ***	2.02 ***
ihs(gifts & transfers)	0.04 *	0.00	0.00	-0.06 ***		-0.03 *		-0.03	-0.01	-0.33	-0.11 ***	0.01
years since largest transfer	-0.03	-0.01	-0.02	0.00		-0.02		0.01	0.01	0.06	0.00	0.00
Macro index												
difference	0.32	1.83 ***	0.28	1.70 ***	1.07 ***	0.18	2.11 ***	2.22 ***	2.55 ***	-0.26	0.51 ***	0.13
explained	-0.42 ***	0.92 ***	0.00	1.66 ***	0.18 ***	0.39 **	0.74 ***	0.95 ***	0.81 ***	0.33	-0.21	0.86 **
macro index	0.00	0.04	-0.02	0.17 ***	0.05 *	0.20 **	0.05 ***	0.10	0.02	0.18	0.23 ***	0.08
owner	-0.15	1.05 ***	0.00	1.73 ***	0.33 ***	0.31 ***	0.90 ***	0.90 ***	1.14 ***	0.34 ***	0.44 ***	0.76 ***
ihs(gifts & transfers)	0.01	0.00	-0.17 **	-0.07 **	0.02 **	-0.10 **		-0.03	-0.02	-0.31	-0.14 ***	-0.01
years since largest transfer	-0.01	-0.01	0.07	0.00	0.00	0.11		0.02	0.02	0.04	0.01	-0.01
Median HVA index												
difference	0.73 ***	1.79 ***	2.06 ***	1.85 ***		1.15 ***	1.96 ***	2.21 ***	2.58 ***	-0.27	0.97 ***	1.54 ***
explained	0.03	0.91 ***	1.71 ***	1.75 ***		1.19 ***	0.63 ***	0.88 ***	0.86 ***	0.29	0.27 **	2.08 ***
median HVA index	0.06	0.10	0.30 **	0.06		0.12 *	0.07 ***	0.14	-0.07	0.16	0.06 *	0.18 ***
owner	0.08	0.99 ***	1.25 ***	1.89 ***		1.20 ***	0.78 ***	0.90 ***	1.22 ***	0.33 ***	0.96 ***	2.03 ***
ihs(gifts & transfers)	0.04 *	0.00	0.00	-0.05 ***		-0.03 *		-0.03	-0.01	-0.33	-0.10 ***	0.01
years since largest transfer	-0.03	-0.01	-0.02	0.00		-0.01		0.01	0.01	0.06	0.00	0.00
Median ratio HVA index												
difference	0.73 ***	1.79 ***	2.06 ***	1.85 ***		1.15 ***	1.96 ***	2.21 ***	2.58 ***	-0.27	0.97 ***	1.54 ***
explained	0.01	0.90 ***	1.70 ***	1.75 ***		1.20 ***	0.63 ***	0.88 ***	0.86 ***	0.30	0.26 **	2.07 ***
median ratio HVA index	0.04	0.08	0.28 **	0.06		0.15 *	0.07 ***	0.13	-0.08	0.16	0.05 *	0.17 ***
owner	0.08	1.00 ***	1.27 ***	1.89 ***		1.19 ***	0.78 ***	0.91 ***	1.23 ***	0.33 ***	0.96 ***	2.04 ***
ihs(gifts & transfers)	0.04 *	0.00	0.00	-0.05 ***		-0.03 *		-0.03	-0.01	-0.33	-0.10 ***	0.01
years since largest transfer	-0.03	-0.01	-0.02	0.00		-0.02		0.01	0.01	0.06	0.00	0.00

*Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation; * $p<0.1$ ** $p<0.05$ *** $p<0.01$. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form. For France, the macro index is used. Variables are grouped as follows: Employee status (self-employed, unemployed, retired, other employment status, temporary contract, financial sector, public sector), demographics (male, age, age2, single, divorced, widowed, hhsize, mideduc, higheduc, born in the country of residence). Household total net wealth differences are relative to Germany. Standard errors are not bootstrapped.*

Table 13: RIF-OB 50th percentile decomposition
- Different property price specifcations -

Mean HVA index (RIF-OB Decomposition 50th Percentile)

	(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
difference	0.32 ***	1.38 ***	1.56 ***	1.33 ***		0.82 ***	1.26 ***	2.00 ***	1.48 ***	0.75 ***	0.45 ***	0.30 ***
explained	0.18 *	0.54 ***	0.64 ***	0.22 ***		0.36 ***	0.37 ***	0.64 ***	0.35 ***	0.41 ***	0.03	0.40 ***
mean HVA index	0.11 **	0.29 ***	0.16 ***	0.07 ***		0.07 *	0.06 ***	0.34 ***	0.17 ***	0.24 ***	0.04 **	0.21 ***
owner	0.11 **	0.25 ***	0.30 ***	0.31 ***		0.35 ***	0.41 ***	0.24 ***	0.30 ***	0.22 ***	0.40 ***	0.23 ***
ihs(gifts & transfers)	0.04 **	-0.01	0.00	-0.03 ***		-0.03 ***		-0.02 *	-0.01	-0.11	-0.06 ***	0.01 *
years since largest transfer	-0.03 **	0.00	-0.01	0.00 *		-0.02 ***		0.00	0.01 *	0.05	0.01	0.00

Macro index (RIF Decomposition 50th Percentile)

	(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
difference	-0.16 *	1.44 ***	0.63 ***	1.36 ***	0.68 ***	0.37 ***	1.37 ***	2.02 ***	1.47 ***	0.78 ***	0.27 ***	-0.26 ***
explained	-0.27 ***	0.54 ***	-0.08	0.28 ***	0.44 ***	0.39 ***	0.38 ***	0.66 ***	0.35 ***	0.48 ***	0.00	0.08
macro index	0.00	0.19 ***	-0.01	0.11 ***	0.21 ***	0.18 ***	0.02 ***	0.20 ***	0.24 ***	0.30 ***	0.13 ***	0.10 *
owner	-0.19 ***	0.34 ***	0.03	0.32 ***	0.32 ***	0.25 ***	0.46 ***	0.35 ***	0.29 ***	0.22 ***	0.33 ***	0.37 ***
ihs(gifts & transfers)	0.01	-0.01	-0.11 **	-0.03 ***	0.03 ***	-0.10 ***		-0.02 *	-0.02 *	-0.07	-0.08 ***	-0.01
years since largest transfer	0.00	0.00	0.09 **	0.01 **	-0.01 *	0.10 ***		0.00	0.02 **	0.03	0.00	-0.02

Median HVA index (RIF Decomposition 50th Percentile)

	(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
difference	0.32 ***	1.38 ***	1.56 ***	1.33 ***		0.82 ***	1.26 ***	2.00 ***	1.48 ***	0.75 ***	0.45 ***	0.30 ***
explained	0.19 *	0.54 ***	0.64 ***	0.21 ***		0.34 ***	0.36 ***	0.65 ***	0.35 ***	0.41 ***	0.03	0.41 ***
median HVA index	0.11 **	0.27 ***	0.14 ***	0.04 ***		0.02	0.04 ***	0.36 ***	0.16 ***	0.23 ***	0.01	0.20 ***
owner	0.11 **	0.27 ***	0.31 ***	0.32 ***		0.37 ***	0.42 ***	0.23 ***	0.31 ***	0.23 ***	0.42 ***	0.24 ***
ihs(gifts & transfers)	0.04 **	-0.01	0.00	-0.03 ***		-0.03 ***		-0.02 *	-0.01	-0.11	-0.06 ***	0.01 *
years since largest transfer	-0.03 **	0.00	-0.01	0.00 *		-0.02 **		0.00	0.01 *	0.05	0.01	0.00

Median ratio HVA index (RIF Decomposition 50th Percentile)

	(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
difference	0.32 ***	1.38 ***	1.56 ***	1.33 ***		0.82 ***	1.26 ***	2.00 ***	1.48 ***	0.75 ***	0.45 ***	0.30 ***
explained	0.16 *	0.53 ***	0.63 ***	0.21 ***		0.35 ***	0.36 ***	0.64 ***	0.34 ***	0.42 ***	0.03	0.40 ***
median ratio index	0.08 **	0.25 ***	0.13 ***	0.04 ***		0.04	0.04 ***	0.33 ***	0.13 **	0.24 ***	0.01	0.19 ***
owner	0.11 **	0.28 ***	0.32 ***	0.32 ***		0.36 ***	0.42 ***	0.25 ***	0.33 ***	0.23 ***	0.42 ***	0.24 ***
ihs(gifts & transfers)	0.04 **	-0.01	0.00	-0.03 ***		-0.03 ***		-0.02 *	-0.01	-0.11	-0.06 ***	0.01 *
years since largest transfer	-0.03 **	0.00	-0.01	0.00 *		-0.02 **		0.00	0.01 *	0.05	0.01	0.00

Table 14: RIF-OB 75th percentile decomposition
– Different property price specifications –

		(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
Mean HVA index													
difference		0.21 ***	0.69 ***	1.03 ***	0.51 ***		0.04	0.46 ***	1.23 ***	0.68 ***	0.24 ***	-0.21 ***	-0.64 ***
explained		0.08	0.24 ***	0.31 ***	0.00		0.12 ***	0.06 ***	0.28 ***	0.04	0.11	-0.23 ***	0.10
mean HVA index		0.01	0.15 ***	0.07	0.06 ***		0.05	0.07 ***	0.19 ***	0.11 *	0.24 ***	0.00	0.17 ***
owner		0.04 **	0.06 **	0.17 ***	0.12 ***		0.14 ***	0.14 ***	0.03	0.11 **	0.06 **	0.20 ***	0.09 ***
ihs(amount gifts & transfers)		0.02 **	-0.01	0.00	-0.03 ***		-0.02 **		-0.03 **	-0.02	-0.21 ***	-0.04 ***	0.01
years since largest transfer		-0.01	0.00	-0.01	0.00		-0.01		0.01	0.00	0.09	0.00	0.00
Macro index													
difference		0.02	0.73 ***	0.34 **	0.52 ***	0.31 ***	-0.11 *	0.54 ***	1.27 ***	0.68 ***	0.25 ***	-0.31 ***	-1.01 ***
explained		-0.15 **	0.24 ***	0.01	0.03	0.11 ***	0.05	0.06 ***	0.32 ***	0.07	0.13	-0.29 ***	0.03
macro index		-0.01	0.13 ***	-0.01	0.10 ***	0.14 ***	0.10 **	0.04 ***	0.17 ***	0.13 *	0.23 ***	0.06 **	0.10
owner		-0.11 ***	0.09 ***	-0.04	0.10 ***	0.05 ***	0.06 ***	0.17 ***	0.06 *	0.11 *	0.09 ***	0.14 ***	0.08
ihs(amount gifts & transfers)		0.01	-0.01	-0.10 **	-0.03 ***	0.02 ***	-0.08 ***		-0.03 **	-0.02 *	-0.20 ***	-0.06 ***	-0.01
years since largest transfer		-0.01	0.00	0.03	0.01	-0.01 ***	0.06 **		0.01	0.01	0.08	0.00	0.05
Median HVA index													
difference		0.21 ***	0.69 ***	1.03 ***	0.51 ***		0.04	0.46 ***	1.23 ***	0.68 ***	0.24 ***	-0.21 ***	-0.64 ***
explained		0.09 *	0.23 ***	0.31 ***	-0.01		0.11 ***	0.05 **	0.29 ***	0.04	0.11	-0.23 ***	0.11
median HVA index		0.03	0.14 ***	0.06	0.04 ***		0.01	0.05 ***	0.20 ***	0.11 *	0.23 ***	-0.01	0.17 ***
owner		0.04 **	0.07 ***	0.17 ***	0.13 ***		0.16 ***	0.15 ***	0.03	0.11 **	0.07 ***	0.21 ***	0.10 ***
ihs(amount gifts & transfers)		0.02 **	-0.01	0.00	-0.03 ***		-0.01 *		-0.03 **	-0.02	-0.21 ***	-0.04 ***	0.01
years since largest transfer		-0.01	0.00	-0.01	0.00		-0.01		0.01	0.00	0.09	0.00	0.00
Median ratio HVA index													
difference		0.21 ***	0.69 ***	1.03 ***	0.51 ***		0.04	0.46 ***	1.23 ***	0.68 ***	0.24 ***	-0.21 ***	-0.64 ***
explained		0.07	0.23 ***	0.31 ***	-0.01		0.12 ***	0.05 **	0.28 ***	0.04	0.12	-0.23 ***	0.10
median ratio HVA index		0.01	0.13 ***	0.05	0.04 ***		0.03	0.05 ***	0.18 ***	0.09	0.24 ***	-0.01	0.16 ***
owner		0.04 **	0.08 ***	0.18 ***	0.13 ***		0.16 ***	0.15 ***	0.03	0.12 **	0.07 ***	0.21 ***	0.11 ***
ihs(amount gifts & transfers)		0.02 **	-0.01	0.00	-0.03 ***		-0.01 **		-0.03 **	-0.02	-0.21 ***	-0.04 ***	0.01
years since largest transfer		-0.01	0.00	-0.01	0.00		-0.01		0.01	0.00	0.09	0.00	0.00

*Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation; * $p<0.1$ ** $p<0.05$ *** $p<0.01$. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form. Variables are grouped as follows: Employee status (self-employed, unemployed, retired, other employment status, temporary contract, financial sector, public sector), demographics (male, age, age2, single, divorced, widowed, hhsize, mideduc, higheduc; born in the country of residence). Household total net wealth differences are relative to Germany. Standard errors are not bootstrapped.*

Table 15: RIF-OB 90th percentile decomposition
- Different property price specifications -

RIF-OB Decomposition 90th Percentile	(1) AT	(2) BE	(3) CY	(4) ES	(5) FR	(6) GR	(7) IT	(8) LU	(9) MT	(10) NL	(11) PT	(12) SK
Mean HVA index												
difference	**0.22 *****	**0.45 *****	**1.11 *****	**0.35 *****	**0.17 *****	**-0.19 *****	**0.27 *****	**1.08 *****	**0.47 *****	**-0.01**	**-0.38 *****	**-0.98 *****
explained	**0.09 ***	**0.07 ***	**0.14**	**-0.11 ****	**0.01**	**-0.01**	**-0.01**	**0.19 ****	**-0.07**	**-0.18 ***	**-0.43 *****	**0.13**
mean HVA index	-0.02	0.01	0.12	0.04 *	0.06 ***	0.00	0.06 ***	0.11 *	0.09	0.11 ***	0.00	-0.09
owner	0.03	0.05 *	0.06	0.07 ***	0.03 ***	0.09 ***	0.08 ***	0.03	0.02	0.04	0.12 ***	0.26 *
ihs(amount gifts & transfers)	0.02 *	0.00	0.00	-0.04 ***	0.02 ***	-0.01		-0.02	-0.02	-0.28 ***	-0.04 ***	0.00
years since largest transfer	0.00	0.00	-0.02	0.00	-0.01 ***	0.00		0.01	-0.01	0.04	0.00	-0.01
Macro index												
difference	**0.15 ****	**0.50 *****	**0.50 *****	**0.35 *****	**0.17 *****	**-0.32 *****	**0.34 *****	**1.12 *****	**0.50 *****	**0.03**	**-0.39 *****	**-1.15 *****
explained	**0.00**	**0.08 ***	**0.08**	**-0.07**	**0.01**	**-0.02**	**-0.01**	**0.21 ****	**0.05**	**-0.15**	**-0.38 *****	**-0.25**
macro index	0.00	0.02	0.00	0.11 ***	0.06 ***	0.08 **	0.04 ***	0.07	0.18 *	0.15 ***	0.09 ***	0.20 ***
owner	-0.07 **	0.05 **	0.05	0.04	0.03 ***	0.10 ***	0.10 ***	0.06	-0.02	0.04 *	0.04	-0.11
ihs(amount gifts & transfers)	0.01	0.00	-0.06	-0.05 ***	0.02 ***	-0.05 **		-0.02	-0.02	-0.27 ***	-0.05 ***	-0.01
years since largest transfer	-0.01	0.00	-0.02	0.01	-0.01 ***	0.01		0.00	-0.02	0.05	0.01 *	0.05
Median HVA index												
difference	**0.22 *****	**0.45 *****	**1.11 *****	**0.35 *****	**0.17 *****	**-0.19 *****	**0.27 *****	**1.08 *****	**0.47 *****	**-0.01**	**-0.38 *****	**-0.98 *****
explained	**0.10 ****	**0.07 ***	**0.13**	**-0.12 ****	**0.01**	**-0.02**	**-0.02**	**0.19 ****	**-0.06**	**-0.18 ***	**-0.43 *****	**-0.15 ***
median HVA index	-0.01	0.00	0.11	0.02	0.06 ***	-0.03	0.04 ***	0.12 *	0.10	0.11 ***	-0.01	0.09 **
owner	0.02	0.06 **	0.06	0.08 ***	0.03 ***	0.10 ***	0.09 ***	0.03	0.01	0.04 *	0.12 ***	0.06
ihs(amount gifts & transfers)	0.02 *	0.00	0.00	-0.04 ***	0.02 ***	-0.01		-0.02	-0.02	-0.28 ***	-0.04 ***	0.01
years since largest transfer	-0.01	0.00	-0.02	0.00	-0.01 ***	0.00		0.01	-0.01	0.04	0.00	0.00
Median ratio HVA index												
difference	**0.22 *****	**0.45 *****	**1.11 *****	**0.35 *****	**0.17 *****	**-0.19 *****	**0.27 *****	**1.08 *****	**0.47 *****	**-0.01**	**-0.38 *****	**-0.98 *****
explained	**0.09 ****	**0.07 ***	**0.13**	**-0.11 ****	**0.01**	**-0.02**	**-0.02**	**0.19 ****	**-0.07**	**-0.18 ***	**-0.43 *****	**-0.15 ***
median ratio HVA index	-0.02	0.00	0.10	0.02	0.06 ***	-0.02	0.04 ***	0.11 *	0.07	0.11 ***	-0.01	0.09 **
owner	0.03 *	0.06 **	0.07	0.08 ***	0.03 ***	0.09 ***	0.09 ***	0.04	0.03	0.04 *	0.12 ***	0.06
ihs(amount gifts & transfers)	0.02 *	0.00	0.00	-0.04 ***	0.02 ***	-0.01		-0.02	-0.02	-0.28 ***	-0.04 ***	0.01
years since largest transfer	0.00	0.00	-0.02	0.00	-0.01 ***	0.00		0.01	-0.01	0.04	0.00	0.00

Source: own calculations based on the HFCS UDB 1.0; results adjusted for multiple imputation; * p<0.1 ** p<0.05 *** p<0.01. All monetary values (total net wealth, total income and intergenerational transfers) are transformed using an inverse hyperbolic sine transformation in log form. Variables are grouped as follows: Employee status (self-employed, unemployed, retired, other employment status, temporary contract, financial sector, public sector), demographics (male, age, age2, single, divorced, widowed, hhsize, mideduc, higheduc, born in the country of residence). Household total net wealth differences are relative to Germany. Standard errors are not bootstrapped.