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Comparing Determinants of Household Wealth in CEE Countries: A Quantile Regression Perspective

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Abstract

This paper examines the factors influencing household wealth and wealth inequality in Central and Eastern European (CEE) countries, with a focus on Slovakia, Poland, Hungary, and neighbouring Austria. Using data from the Household Finance and Consumption Survey (HFCS), the study employs quantile regression to analyse the impact of various determinants on net wealth. The determinants considered include the value of the household's main residence, the value of vehicles, total financial assets, household gross income, mortgage debt, consumer spending, inheritance/gifts, and gender of the reference person. The findings reveal that the value of the household's main residence is the most significant factor affecting wealth across all observed countries and quantiles of the population. Additionally, inheritance and gifts have a notable impact on wealth in all countries except Austria. The value of vehicles, total financial assets, and mortgage debt also play significant roles. By comparing the results not only between countries but also between different determinants, this paper provides insights into the current trends of household wealth in the CEE region.

Keywords

Wealth, inequality, HFCS, CEE countries, quantile regression

JEL Classification

D14, D31, P52

Introduction

The distribution of wealth is one of the most pressing topics nowadays, because every year the inequality in wealth deepens and reaches new and new highs. Additionally, in the last decade, numerous events have affected the development of the entire society and the wealth of households. These events include the economic crisis, technological progress, and the global pandemic. According to statistics, the poorer part of the world owns approximately 2% of the total wealth, and their wealth is growing at a slower pace. On the other hand, the richest 10% owns over 70% (Fessler et al., 2012). The richest 1% of the world population owns almost 40% of the total wealth. After North America, Europe has the highest concentration of wealth, amounting to 230% of the world average (Alvaredo et al., 2022). Wealth inequality is twice the level of income inequality on average. Across the OECD, the wealthiest 10% of households hold 52% of total net wealth, compared with 24% of total income held by the 10% of people at the top of the income distribution (Balestra and Tonkin, 2018).

According to the French wealth economist Gabriel Zucman, wealth can represent the net worth of all assets owned by a household valued at current market prices. Wealth is defined as the sum of non-financial and financial values belonging to an individual who can benefit from the ownership. Zucman includes various funds from pension funds, but excludes transfers from the state and human capital. (Zucman, 2016). The German economist Markus Grabka defines wealth as the sum of various incomes, such as salary, capital income over a longer period of time, rent, pensions or private transfers (Grabka, 2013). Thomas Piketty, a French economist, views wealth as the value of ownership at a specific time. According to his perception, it consists of non-financial assets and financial assets reduced by the total value of debts. Piketty combines the definition of wealth with the definition of capital in his publications, as he finds it difficult to distinguish when it is wealth and when wealth can be used as capital that can be invested in order to obtain more wealth. (Cabello, 2015). American economist Robert Rycroft perceives wealth as assets that bring benefits to individuals. This includes tangible assets that can be used for various purposes, as

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well as intangible wealth such as acquired qualifications and education, which can generate income and contribute to wealth creation. Rycroft also considers all assets owned after deducting liabilities to be part of wealth. It is important to note that wealth is a dynamic quantity that tends to change significantly over time due to various factors (Rycroft, 2018).

Household wealth is a key indicator used to monitor the accumulation of wealth in the world, as individuals do not predominantly live alone; they share their wealth with those closest to them, with whom they live in the same household. Household wealth itself is usually understood as the sum of all financial and non-financial assets owned by individuals living in a selected household (Chancel et al., 2022).

Wealth not only reflects the standard of living, life cycle, and well-being, but also provides insights into the society itself. The real development of wealth and the development of the inequality of wealth represent a picture of the state of the given society (Pauhofová, 2012). As stated in Skopek et al. (2014), wealth also determines the economic status when individuals get older or retire, as income becomes less meaningful. Spilerman (2000), in his study of American households, defines household wealth as the capacity of a family to maintain a particular standard of living. Many of studies deal mainly with income inequality; although the relevance of wealth is also an important part of social stratification (see e.g. Nešpor and Večerník, 2023). Skopek et al. (2014), using two data sources SHARE survey and Credit Suisse data, found that levels of wealth inequality significantly differ from levels of income inequality in about half of the eighteen countries analysed.

In this paper, we focus on the study of household wealth in the selected Central and Eastern European (CEE) countries: Slovakia, Hungary, Poland and Austria. Household wealth in CEE countries varies significantly depending on the specific country and its economic development. While some CEE countries have experienced significant growth in household wealth in the recent years, others still face challenges in terms of wealth accumulation and income inequality. Using microdata from the Eurosystem Household Finance and Consumption Survey, we compare the household wealth determinants in these countries. The research on wealth inequality in the CEE countries is less advanced, but in the recent years, several authors were dealing with this topic. Wealth inequality between the CEE countries or comparing wealth disparities between the CEE and Western Europe can be found in the studies Brzezinski et al. (2020), Brzeniski and Salach (2021 and 2022).

This article has two main goals. Firstly, it contributes to the relatively small number of articles related to the topic of the wealth and wealth inequality with focus on CEE countries. Our second contribution is to shed light to the studying selected determinants on the household wealth.

We construct the model, which describes the importance of understanding net household wealth and its implications for individuals and societies. The authors Mathä et al. (2018), Korom (2018) and Peshev et al. (2023) inspired us. The research question is as followed: Which determinants are significant in relation to net wealth in EU countries? According to existing research and data availability we analyze property value, the value of household vehicles, financial assets and mortgage debt, we will test hypotheses:

H1: There is a significant relationship between the property value and the amount of net household wealth in the CEE countries.

Generally, an increase in main residence value is associated with an increase in household wealth. As the value of the main residence appreciates, homeowners may experience a growth in their overall net worth.

H2: There is a statistically significant relationship between the value of household vehicles and the amount of net household wealth in the CEE countries.

In general, the value of household vehicles is considered an asset that contributes to the overall net worth of a household. However, it is important to note that vehicles are depreciating assets, meaning their value tends to decrease over time.

H3: There is a statistically significant relationship between the financial assets and the amount of net household wealth in the CEE countries.

Financial assets play a crucial role in determining the overall net worth of a household. Higher levels of financial assets generally indicate greater wealth, as these assets can appreciate over time and generate income in form of dividends, interest, or capital gains.

H4: There is a statistically significant relationship between the outstanding balance of mortgage debt and the amount of net household wealth in the CEE countries.

The higher outstanding balance of mortgage debt can have a negative impact on net household wealth. This is caused mainly due the debt representing a liability that needs to be repaid, reducing the overall value of the household's assets.

The selected determinants and results are described in more detail in the following sections. Paper is structured as follows: Section 2 aims to provide an overview of the existing research on household wealth, including its measurement, determinants, distribution, and implications for various socioeconomic outcomes; Section 3 presents

the data and describes research method used to analyze household wealth determinants, Section 4 contains the empirical results and final section concludes. The paper contributes to the growing number of literature of wealth inequality and wealth determinants. The evidence suggests that wealth inequality is a persistent and a growing issue, with significant consequences for economic and social well-being.

Literature Review

Many of determinants influence household wealth and behaviour. Determinants play different roles, can change over time and have different impacts. These determinants can be categorized into three main dimensions: individual characteristics, household characteristics, and macroeconomic factors. Individual characteristics include education, occupation, and income, which affect earning potential and savings behaviour. Household characteristics encompass family structure, age, and homeownership, which impact wealth accumulation patterns. Macroeconomic factors, such as economic growth, inflation, and financial market conditions, also influence household wealth. Berisha and Meszaros (2020) argue that income growth contributes to lower wealth inequality, income growth may be especially helpful to lower wealth individuals/households (the bottom 50% and the middle 40%). They also state that low interest rates may induce households to borrow unsustainable amounts.

Undoubtedly, the most important determinants affecting wealth and inequality are the size and the structure of wealth (see Davies et al., 2009). Asia and post-communist countries tend towards significant saving and non-financial wealth, in Western Europe financial wealth is a significant component of wealth. The level and types of indebtedness in EU countries contribute significantly to influencing wealth (OECD, 2013; Davies at al., 2009). Along with the current situation on the financial market, the boom in cheap consumer loans and mortgages, household indebtedness is rising. Changes in the prices of individual wealth-creating attributes, such as the formation of bubbles in the markets, are a minor determinant of wealth. The country in which the household is located is worth mentioning, as there are known differences in wealth between countries. Developed countries in America or Europe own most of the wealth. Developing countries and countries in the transition process have much less wealth (Davies et al., 2009). Other determinants are the maturity of the country, the quality of life and the standard of living. Finally, yet importantly, current technological progress has an impact, and result competitiveness in the foreign trade in the given country (Stiglitz, 2015). Globalization ensures the interconnectedness of individual inequalities between countries (Fridrich-Erbert-Stiftung, 2017). An equally important role is played by the region within the selected country, whether it is richer or poorer, as well as the quality of the infrastructure (Fessler et al., 2012). Culture and traditions, which are typical for a given region, can in turn influence the household's management of wealth. We must not forget to mention determinants such as the returns and risks that individual investments bring (Vidová, 2015). Another determinant is undoubtedly consumption (OECD, 2014). Richer households have different habits than poorer ones, which spend significantly less. The structure of their expenses is different; they mainly serve to ensure the necessities of life and often spent inefficiently. Wealthier households are more cautious, have a higher propensity to save, invest better and build portfolios. They consider more carefully how to manage wealth in order to achieve efficiency and avoid potential losses (Fessler et al., 2012). Current wealth largely limits not only the current, but especially the future consumption of the entire household over a longer period than income (Grabka et al., 2013). In the future, the amount of pension funds and behavioural differences, and the related material satisfaction that everyone wants to achieve, will be a key factor. Factors related to households such as gender and age of the members have an important influence, because gender inequalities also exist in wealth (Grejcz and Zolkiewski, 2017; Schneebaum et al., 2014). The stages of the life cycle that an individual is in affect wealth, as older age tends to accumulate more wealth (Grabka et al., 2013). The resulting method of acquiring property is another determinant, as it can be inherited property or received gifts (Fessler et al. (2012); Leitner (2016)). Retirement and living to an older age, in turn, delays the intergenerational transfer of wealth to the younger generation.

Demographics of the population within the country, number of household members, number of working and non-working members such as children or pensioners living in the same household are other determinants, which are analysed in Schneebaum et al. (2014). Marital status, language and cultural differences also play a role. The education achieved, completed tertiary education and the quality of the school system are key factors (see e.g. Leitner (2016), Guriev and Rachinsky (2006)).

The importance of the inheritance and received gifts in household wealth accumulations were studied by several authors. Adermon et al. (2018) found that grandparents' wealth is associated with grandchildren's wealth but that most of the association is mediated by parents' wealth. The estimates indicate that direct transfers from parents (and grandparents) account for at least half of the recorded wealth persistence. The importance of intergenerational transfers for wealth accumulation described Mathä et al. (2017). They concluded 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.

No less important role is played by the historical development of the country. Authoritarian regimes often limit the private ownership of households. Many times, there is also a deepening of wealth and a concentration of wealth in

the narrow richest group of the population (Guriev and Rachinsky, 2006). In communist countries, private wealth was restricted to housing and land (Večerník, 2022). The period of nationalization and the subsequent period of the transitional process associated with privatization, especially in post-communist countries, caused a relatively sharp trend of increasing inequality and private property (see e.g Stiglitz, 2015; Davis et al., 2009; Guriev and Rachinsky, 2006). Homeownership and house price dynamics are important for explaining the observed wealth differences across euro area countries (see e.g. Mathä et al., 2018; Garcia and Figueira (2020); Fuller at al. (2019)). Current inequality arose from the transformation of long-term income inequality. Other factors are various migration and economic crises, wars, natural disasters and revolutions, which can deepen differences, increase expenses and significantly reduce the wealth of certain groups of the population (Fridrich-Ebert-Stiftung, 2017).

Description of Data and Methods

Household Finance and Consumption Survey (HFCS)

A basic dataset used to obtain an initial understanding of the distribution of wealth in selected countries is the Household Finance and Consumption Survey (HFCS). According to several authors, this survey serves as a basis for investigating wealth-related issues and provides a comprehensive overview of societal conditions. The survey has been conducted every three years since 2010 and is part of the Household Finance and Consumption Network (HFCN), which includes the ECB, national central banks, and statistical offices of member states. The survey follows a standardized methodology, enabling comparison of monitoring results across countries (ECB, 2020). Households are weighted using household weights and replication weights. In calculations, the weight of the household itself is always considered, along with the replication weights for each country, which are based on 1000 repetitions. The database has specific methods for calculating values, including the use of multiple imputations to replace missing values. Each missing observation is replaced with 5 imputed values. The HFCS consists of 5 files containing these imputations, and all 5 imputations were used in our calculations. At the time of writing the article, we had available the third wave of detection from 2017.

Descriptive statistics and wealth inequality

The following Table 1 shows the list of variables that we will work with in this work. In our work, we also used auxiliary variables describing the country, and technical variables such as the implied ID or the household weights. All other variables, key to our calculations, were considered to be derived, that is, derived from the original variables.

Net wealth: indicates the current amount of net wealth of the household without public funds and employee pension plans, which we get as the difference between the total assets and the total outstanding liabilities of the household. The net wealth of households can also acquire negative values if the gross wealth is less than the value of the total liabilities of the household (ECB, 2021).

Net household wealth = Gross household wealth - Total liabilities

Gross wealth: indicates the current amount of the household's gross wealth excluding public funds and employee pension programs, which is created as the sum of total real assets and total financial assets, except for public and employee pension programs. Total real assets represent the financial wealth of households. Total financial assets represent the non-financial wealth of households (ECB, 2021).

Gross household wealth = Non-financial wealth + Financial wealth

Table 1. List of variables.

Code	Model Variable	Variable Name	Variable Type
DN3001	y	Net wealth	
DA1110	X1	Value of household's main residence	Numeric
DA1130	X2	Value of household's vehicles	Numeric
DA2100	X3	Total financial assets	Numeric
DI2000	X4	Total household gross income	Numeric
DL1100	X5	Outstanding balance of mortgage debt	Numeric
DOCOGOOD	X6	Amount spent on consumer goods and services	Numeric
DOINHERIT	X7	Substantial inheritance/gift within last 3 years	Dichotomous
DHGENDERH1	X8	Gender of reference person	Dichotomous

Source: HFCS user Database Documentation, ECB (2021)

In general, the current state of the net wealth distribution in EU countries is unequal, as shown in Figure 1. We displayed wealth inequality using pyramid chart. We ordered the household wealth values into individual categories according to their amount to find out the current state. In total, the households which hold total net wealth up to

€100,000 are represented by 45% of total households. Households with a net worth of over €100,000 are often considered in our society for relatively rich. The most prominent group are households with wealth between €200,000 and €500,000, where almost one third of all households are located. When we consider households with wealth between €100,000 and €500,000 as a representation of the middle and upper class, they dominate and account for over 50% of the monitored population. The smallest category comprises only 1% of the population, representing the wealthiest group. Their accumulated wealth ranges from €500,000 to €1,000,000,000.

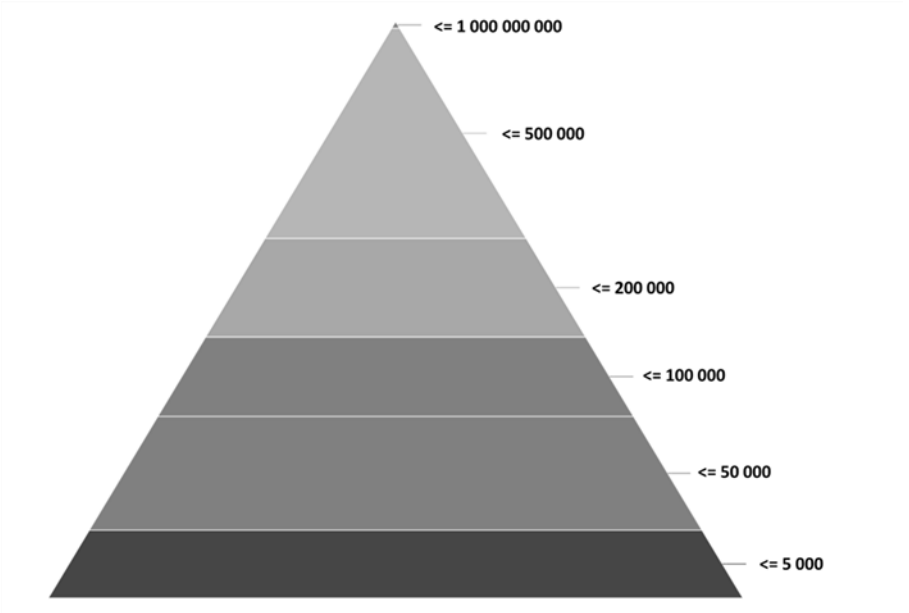

Fig. 1. Distribution of wealth in the population.
Source: Authors' own calculations based on HFCS data (2017)

In this article, we study determinants of wealth in formerly communist countries – Slovakia, Poland, and Hungary and we add Austria as the neighbour country for comparison. We use HFCS data from the third wave. The Czech Republic was not included in this wave; however, it should be included in the upcoming release from 2020. Wealth in CEE countries were strongly influenced by communist politics. The countries have gone through a deep political and socio-economic transformation. Therefore, we can see some differences in the wealth composition.

We calculated some basic statistical measures to identify properties of household wealth. Mean and standard deviation are frequently used, but in cases when data are skewed, they are not relevant. Therefore, calculating quantiles provides a more comprehensive understanding of the distribution of household wealth compared to simply calculating the mean. Quantiles are closely related to the concept of inequality. By calculating quantiles, comparisons can be made between different segments of the population, such as the difference in wealth between the top 25% and the bottom 25% of households. For the comparison of the household wealth in selected countries, we calculated the 25th, 50th, 75th, and 90th percentile.

Figures 2 and 3 together also refer to the unequal distribution of wealth. Figures describe the current state of gross and net wealth in EU countries. In both cases, we observe a clear trend in behavior due to the considerable similarity of values, since indebtedness does not make up such a significant part. The differences between the quantiles are the lowest in the Baltic and Central European countries and significant in Southern and Western Europe, especially in Cyprus, Ireland and Luxembourg, where the value doubles, and indicating significant differences in the distribution of wealth.

The data on household wealth distributions in CEE countries told us, that net wealth is the highest in Slovakia at 25th percentile (€30,936), but for the other percentiles Austria reaches the highest values (e.g. €12,735 at 25th percentile, median is €82,681 and €524,783 at 90th percentile). Values for the gross wealth are similar; households in Austria are significantly richer than households in other CEE countries. Lower median net wealth is in Poland (€60,479), while Hungary with median net wealth €36,283 occupies the end of the ranking. It is important to note that household wealth in CEE countries is influenced by various factors, including economic policies, market conditions, and historical legacies. Transition from centrally planned economies to market-based systems in the region has had a significant impact on wealth distribution and wealth accumulation. Therefore, the wealth in these countries is smaller than in Western Europe.

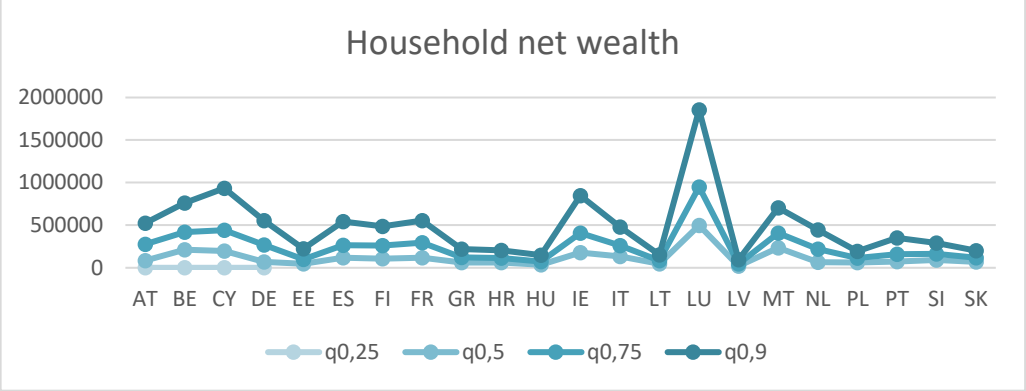

Fig. 2. Household net wealth in the EU countries.
Source: Authors' own calculations based on HFCS data

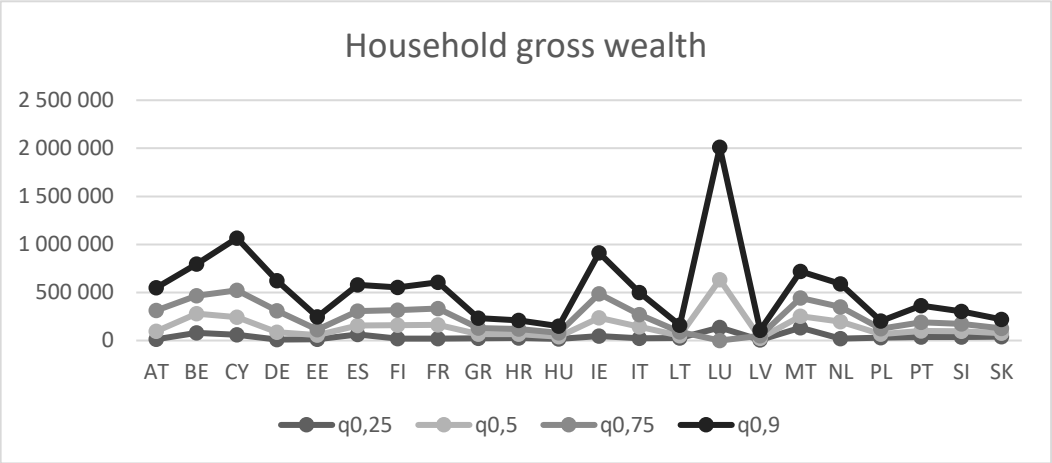

Fig. 3. Household gross wealth in the EU countries.
Source: Authors' own calculations based on HFCS data

There are many ways and indicators to measure wealth inequality. A significant feature that affects measurement is the concentration of wealth in the hands of a narrow group of individuals. Various surveys, rankings, or composite indicators contribute to the determination of household wealth. Moreover, their wide use makes it possible to compare the level of wealth between individual countries. Garbinti et al. (2021) remark that it is possible to combine household surveys, fiscal data, and national accounts in order to improve capacity to measure and analyse the evolution of the wealth distribution. The Gini coefficient based on the Lorenz curve is one of the best-known composite indicators used to examine inequality. The Gini coefficient captures how far the Lorenz curve falls from the 'line of equality' by comparing the areas A and B, as calculated in the following way:

$$Gini\ coefficient = A / (A + B)$$

The Gini coefficient will allow us to compare the current situation between countries.

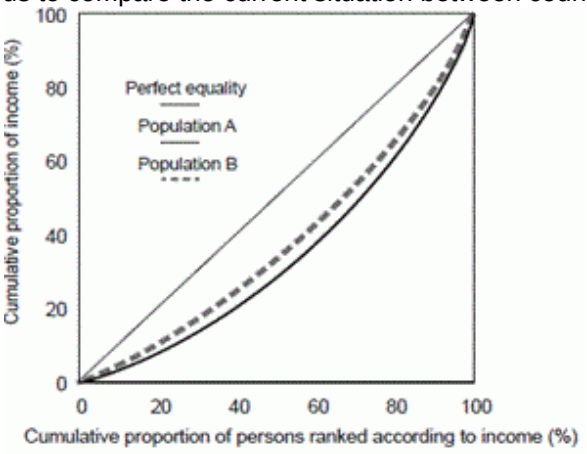

Fig. 4. Lorenz curve.
Source: Australian Bureau of Statistics (2019-20)

Data on the net wealth inequality are presented in Figure 5. In 2017, the highest values of the Gini coefficient were concentrated in Cyprus and the Netherlands. In the case of Cyprus there is a continuous increase within the individual waves of our survey, up to 4.51% between the second and the third wave due to high household indebtedness and a decrease in non-financial assets (Eurofound, 2021). The Netherlands showed stable values in the previous waves, in the third wave the value increased by 12% up to the current 78.15%. It can be assumed that wealth inequality in CEE countries is lower compared to other EU countries. The cross-country variation of wealth inequality in CEE countries is relatively high. The inequality is the lowest in Slovakia, while in Hungary and Poland the inequality is below EU average. Among the analysed countries in this paper, Austria has the richest households, but also the greatest wealth inequality. To explain differences and the source of the wealth inequality, it is important to study first determinants of household wealth.

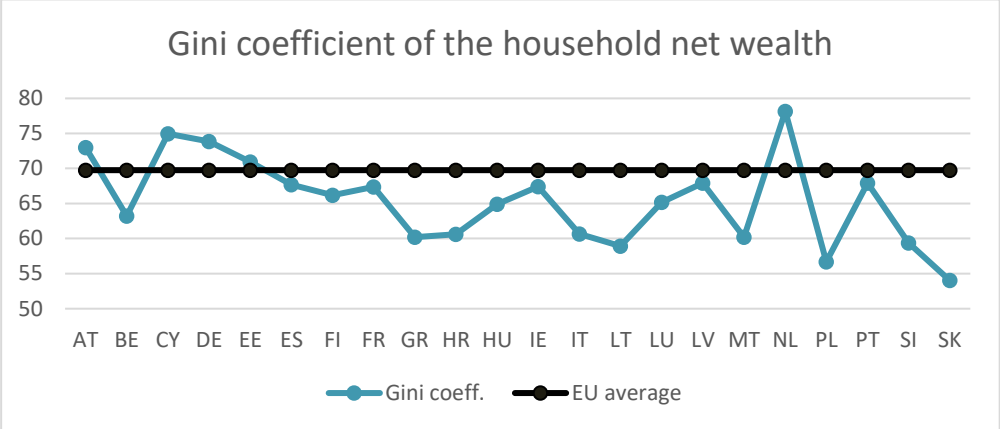

Fig. 5. Household net wealth inequality in EU countries in 2017.
Source: Authors' own calculations based on HFCS data

Quantile regression

When constructing the model to describe determinants of household wealth, we found an inspiration in the literature, especially in articles by Mathä et al. (2018). We were motivated by determinants such as household income, social characteristics such as gender, inheritance, gifts and real estate value. Scientific articles by Peshev (2023), Korom (2018), Lundberg (2017) and Humer (2017) represented another source of inspiration. We assume that these determinants are important and therefore we created a quantile regression model for CEE countries, described by the equation:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \varepsilon$$

In this work, we consider the dependent variable y as net wealth, the amount of which will depend primarily on the determinants x_1 to x_8. The vector $\boldsymbol{\varepsilon}$ represents the random component in the equation. Net wealth indicates the current amount of net wealth of the household without public funds and employee pension plans, which we get as the difference between the total assets and the total outstanding liabilities of the household. The net wealth of households can also acquire negative values if the gross wealth is less than the value of the total liabilities of the household (ECB, 2021). The formula used in this model: "Net household wealth = Gross household wealth - Total liabilities".

To study the effect of selected determinants on the household wealth quantile regression is used. Quantile regression is a statistical technique used to analyse the relationship between a set of independent variables and a specific quantile of a dependent variable. In the context of household wealth determinants, quantile regression can be used to understand how different factors contribute to wealth accumulation across different levels of the wealth distribution. Quantile regression is recommended if the dependent variable contains extreme values. Using the quantile regression, we can evaluate the relationship between dependent variable and its determinants along the entire distribution (Koenker and Hallock, 2001).

The basic quantile regression model specifies the conditional quantile as a linear function of explanatory variables: Lets Y be a random variable with distribution function $F(y) = P(Y \leq y)$, τ –quantile of the variable Y is defined as an inverse function $Q(y) = inf\{y: F(y) \geq \tau\}$, where $\tau\epsilon(0,1)$. Quantile regression model can be presented by equation:

$$y_i = \alpha_\tau + x_i\beta_\tau + z_{\tau i},$$

$$\text{and } Q_\tau(y_i|x_{i.}) \equiv inf\{y_i: F_i(y_i|x_{i.}) \geq \tau\} = \alpha_\tau + x_i\beta_\tau$$

where y_i is i-th row of the vector of dependent variable,

$x_{i.}$ is i-th row of the matrix X of independent variables,

α_τ, β_τ are parameters to be estimated,

$z_{\tau i}$is the error term, n is the number of observations,

k is the number of independent variables.

This regression examines the relationship between net wealth and its individual determinants for the 10th, 25th, 50th, 75th, 90th percentiles of the distribution of the population in the selected countries. A specific feature of quantile regression is, that the estimated coefficients of the independent variables, β, can be different in quantiles significantly, which may indicate a non-homogeneous conditional distribution of the dependent variable. Koenker and Bassett (1978) as an extension have introduced the quantile regression classic model from the notion of ordinary quantiles (also called "percentiles") in a location model, to a more general class of linear models in which the conditional quantiles have a linear form. Since than many applications of the method were used in different areas (Huang et al., 2017).

By applying quantile regression to household wealth determinants, we are allowed to identify the factors that have a varying impact on wealth accumulation at different points of the wealth distribution. This approach allows for a more nuanced understanding of the determinants of household wealth, as it takes into account the heterogeneity in wealth accumulation patterns. For example, quantile regression can help identify whether factors such as education, income, age, or homeownership have different effects on wealth accumulation for households at the lower end of the wealth distribution compared to those at the higher end.

Quantile regression is generally preferred over ordinary least squares (OLS) when we are interested in understanding the relationship between variables at different points of the distribution, rather than just the average relationship. OLS assumes that the relationship between variables is constant across the entire distribution, whereas quantile regression allows us to estimate the conditional quantiles of the response variable given the predictor variables. Quantile regression is particularly useful when dealing with skewed or heavy-tailed distributions, as it provides a more robust estimation of the relationship between variables. It can also handle outliers more effectively, as it focuses on estimating specific quantiles rather than minimizing the sum of squared residuals (Amerise and Tarsitano, 2019). Soseco (2022) used quantile regression approach to measure the impact of household size and educational level on household net wealth in Indonesia.

Results

Table 2 shows the results of the performed quantile regression. We can see the magnitude and the intensity of the coefficients and identify the relationship to net wealth. We used the 5th percentile which refers to the lowest level of household wealth, 25th percentile represents 25% of the poorest households, 50th percentile represents the median of the household net wealth, 75th percentile refers to the 75% of the poorest or 25% of the richest households, and 90th percentile which corresponds to the richest household. We will discuss the most important results.

When defining household wealth, we must undoubtedly mention the dominant effect of real estate, which is dominant for all countries and all quantiles of the population. Due to the increase in real estate by €1, there is a positive increase of the value of wealth by €1 on average. This influence has a growing tendency with increasing quantiles, except for Slovakia. Wealth will increase by a maximum value of €1.74 in the case of q0.90 in Austria and Hungary, with an increase in real estate by €1. In these three countries, a significant degree of ownership in the population, undoubtedly plays a role when, compared to Austria (Boldizsár et al., 2016; Kaas et al., 2019). Zavadil and Messner (2015) argues that households that do not own their main residence are significantly poorer than the owners are. A higher main residence value can contribute to the accumulation of wealth for homeowners. If the value of the main residence exceeds the outstanding mortgage or debt, homeowners may have a significant asset that adds to their overall wealth portfolio. This can provide financial security and potential opportunities for future investments or retirement planning (see e.g. Adermon et al., 2018; Fuller et al., 2019; Garcia and Figueira, 2020).

Financial assets significantly determine wealth in most countries and across various quantiles, except for the q0.75 in Poland. The positive impact of financial assets on wealth increases as the quantile value rises, reaching up to maximum €3.82 in Hungary. However, compared to other countries, the influence of financial assets on wealth is relatively smaller for Polish and Slovak households. This is attributed to the prevalence of non-financial assets and a lack of confidence in their ownership (Bielik and Šrámková, 2011; Grejcz and Źólliewski, 2017; Causa et al., 2019). Research paper of the authors Bielik and Šrámková (2011) concludes that Slovaks have a high component of non-financial wealth (compared to other EU countries).

Table 2. Estimated coefficient of the quantile regression model for the CEE countries.

CC	Variable	$Q_{0,05}$	$Q_{0,25}$	$Q_{0,50}$	$Q_{0,75}$	$Q_{0,90}$
AT	Main residence	1.01***	1.00***	1.00***	1.19***	1.74***
	Vehicles	1.01***	1.00***	1.11	4.32*	8.38**
	Financial assets	1.01***	1.00***	1.13***	2.41***	2.97***
	Total income	0.02	0.00	-0.02	-0.29	-0.32
	Debts	-1.00***	-1.00***	-1.00***	-0.95***	-1.15***
	Consumption	0.18	0.00	0.17	-0.68	-3.53
	Inheritance/gift (1)	2,232.65	-14.58	-812.98	21,789.93	39,141.07
	Gender (2)	-1,945.99	-35.07	1,037.9	11,775.88	30,548.11
HU	Main residence	1.01***	1.02***	1.06***	1.09***	1.74***
	Vehicles	1.30***	2.03	4.85*	7.05***	6.27***
	Financial assets	1.02***	1.06***	1.27***	1.69*	3.82**
	Total income	-0.12	-0.02	0.04	0.24	0.46
	Debts	-1.09***	-1.06***	-1.05***	-1.01***	-1.42***
	Consumption	0.01	-0.29	-1.10*	-1.29	-2.97
	Inheritance/gift (1)	1,887.40	103.45	2,801.47	5,800.05	4,903.87
	Gender (2)	2,686.91	423.67	1,862.48	2,393.96	9,072.94
PL	Main residence	1.00***	1.01***	1.07***	1.25***	1.55***
	Vehicles	1.11***	1.37***	2.17***	3.25**	5.06***
	Financial assets	1.01***	1.03***	0.86*	1.02	1.56**
	Total income	0.03	0.12	0.32	0.37	0.31
	Debts	-0.99***	-0.98***	-0.82***	-0.32	-0.71***
	Consumption	-0.22*	0.00	0.57	0.84	-0.06
	Inheritance/gift (1)	1,835.28*	1,895.90	13,857.70**	30,728.91**	44,342.31**
	Gender (2)	673.20	509.25	6,357.38	9,583.84	880.05
SK	Main residence	1.00***	1.00***	1.00***	0.95***	0.85***
	Vehicles	1.11***	1.05***	1.11**	2.18*	3.59
	Financial assets	1.04***	1.02***	1.14***	1.66***	1.27*
	Total income	-0.03	-0.01	0.04	0.60	1.75
	Debts	-1.02***	-1.00***	-1.01***	-0.94***	-0.64
	Consumption	0.26	0.02	0.06	-0.53	0.40
	Inheritance/gift (1)	-1,407.64	328.93	4,375.44	25,231.21*	25,452.02
	Gender (2)	-1,510.67	-279.56	-542.16	1,861.69	2,389.11

Source: Authors' own calculations based on HFCS data

The increase in mortgages used to purchase real estate, results in a decrease of overall wealth. The changes in the regression coefficients decrease from the highest in $q_{0.05}$ to the lowest in $q_{0.90}$ and there are significant especially in Austria and Hungary for all quantiles. In Poland and Slovakia, they are insignificant only in $q_{0.75}$ and $q_{0.90}$. The desire for real estate ownership, particularly among families with lower wealth, presents an opportunity to increase their wealth. One of the finding of the study Zavadil and Messner (2015) is that taking out a mortgage to purchase a main residence is a good long-term investment. Homeownership appears to increase wealth levels, particularly for the bottom quintiles of wealth distribution (Darvas and Midões, 2021). However, they did not find any significant effect on household net wealth. Post-communist countries in Central Europe exhibit a higher equality in wealth distribution, resulting in no significant differences between individual quantiles in terms of the determinants' significance. Households borrow from a bank to purchase a house, and this process can be controlled by policies, Colciago et al. (2019) in their study reviews the effect of central bank policies on the inequality.

Vehicle ownership is dominant in the entire population in Poland except for certain quantiles in other countries. Vehicle ownership primarily affects the poorer segment of the population in $Q_{0.05}$ and $Q_{0.25}$. The regression

coefficients in Central Europe suggest that for every €1 increase in vehicles, wealth increases by varying amounts, ranging from €1 in $Q_{0.05}$ to €8.38 in $Q_{0.90}$ in Austria. It is crucial to consider that the value of household vehicles is just one component of net household wealth, which also includes other assets such as real estate, investments, savings, and liabilities such as debts and loans. Therefore, the relationship between the value of household vehicles and net household wealth should be assessed in conjunction with the broader financial picture of the household.

In the case of households that received an inheritance or a gift, we perceive a significant increase in wealth in $Q_{0.75}$ in Slovakia by €25,231.22 and in Poland $Q_{0.05}$ by €1,835.28, in $Q_{0.50}$ by €13,857.70, in $Q_{0.75}$ by €30,728.91 and $Q_{0.90}$ up to €44,342.31 compared to households without inheritance. The majority of Austrians live in rented accommodation, and inheritance is not a significant factor, as real estate represents the most significant inheritance passed down from generation to generation (Korom, 2018). Elinder et al. (2018) find that inheritances reduce wealth inequality, that they increase absolute dispersion in wealth. Spiteri and von Brockdorff, (2023) using two waves of the HFCS that inheritance flows are positively and significantly associated with net overall household wealth, primarily through increases in the value of liquid assets such as publicly-traded shares and existing self-employment businesses, while reducing mortgage debt, particularly outstanding loans related to the household's main residence. Additionally, the absence of inheritance and the lack of receiving gifts in intergenerational processes can contribute to relatively high levels of inequality, as mentioned in the previous section for these countries.

With the increase in consumption of the poorest Polish households in $Q_{0.05}$, there is a slight decrease in wealth. However, the impact of total household income and gender on net wealth in these countries has not been proven. Similar determinants are observed in Austria and Hungary. Additionally, Polish households share similarities with Slovak households, in a high proportion of ownership in real estate, vehicles, other types of property, and inheritance (Grejcz and Żólliewski, 2017).

Conclusion

The paper analyzed the wealth inequalities in CEE countries. The roots of wealth inequalities in Slovakia, Poland, Hungary and Austria remain unclear due to a lack of sufficient data. Key determinants such as value of household's main residence, value of household's vehicles, total financial assets and outstanding balance of mortgage debt helped us to identify the most common factor influencing the current levels of wealth in the population. The analysis was based on the quantile regression model offering the view on the household behavior in the overall distribution of wealth.

With possible proposals for mitigating the problem of wealth inequality, it is necessary to pay an increased attention to the fundamental economic and political decisions. Political decisions in the form of benefits are provided in order to support the poorest part of the population so that the poor do not become even poorer. Debt reduction and secondary distribution with the active participation of the state, meaning an effective redistribution of income and wealth for all groups, are possible proposals. It is also worth mentioning the effective taxation and the progressive taxation of the richest groups can balance wealth between individual groups. We identify an alternative option in better access to health care, social services, labor market opportunities, housing, basic food and education for all.

CEE countries are considered by many to be the most developed and advanced, but there are areas in which we still have a lot to learn as a society. One of them is represented by wealth, the effects of which are far-reaching on the entire society. Finally yet importantly, it is up to us how we approach solving this problem.

Understanding property as a determinant of the long-term perspective of both households and individuals, in other words the importance of property in the case of the intergenerational transmission of inequalities and that both for its owners and for possible heirs. Household property is therefore an important factor in understanding prosperity; it provides economic protection and enables people to invest in their future (Caner, Wolff, 2004). The information about determinants and their influence on the household wealth can be valuable for policymakers and researchers seeking to address wealth inequality and design targeted interventions. The relationship between household wealth and debt directly affects overall financial well-being. Lower debt levels, coupled with higher wealth, generally contribute to increased financial security, reduced stress, and improved long-term financial prospects. Conversely, excessive debt relative to wealth can lead to financial instability, limited financial options, and potential financial hardships. Our main findings are that higher main residence value can contribute to the accumulation of wealth for homeowners with the biggest impact on the right tail of the distribution (for wealthier household). The amount spend at vehicles and financial assets are significant factors in household wealth accumulation across CEE countries. Surprisingly, consumption turned out to be an insignificant factor, similar to the gender of the reference person. The results for inheritance/gift were not consistent across CEE countries, so this cannot be reduced to a general conclusion.

Household wealth has far-reaching implications for individuals and societies. Research has shown that wealthier households have greater financial security, access to better healthcare and education, and increased opportunities for upward mobility. On the other hand, individuals with limited wealth face higher levels of economic vulnerability, limited access to resources, and reduced social mobility. Moreover, wealth inequality has been linked to social and

political unrest, as well as decreased trust in institutions.

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