

Modelling Wealth and Wealth Inequality in Bulgaria¹

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Abstract

This paper analyses net wealth and net wealth inequality determinants in Bulgaria, for the 2000-2020 period. The econometric results suggest that the introduction of corporate and individual flat tax rates in 2007 and 2008 contribute to households' net wealth creation but have no significant association with inequality variables. Interest rates on mortgage loans, cost of debt, budget surpluses and inflation have a negative association with wealth, while the value of houses, arable land, equity, interest income, budget deficits contribute to net wealth growth. The top percentile increases its wealth share supported by the value of houses, equity and positive current account to Gross Domestic Product (GDP) values, however the cost of debt and GDP per capita are in a negative association with top percentile inequality. The bottom half of the population increases its wealth share with higher GDP per capita values and higher consumer loans rates, however inflation affects it negatively. Inflation and investment income are in a positive association with the Gini coefficient, while interest rates on consumer loans, cost of

debt, GDP per capita, Government revenues, dividend income, equity, and the value of houses reduce inequality.

Keywords: Wealth, Wealth distribution, Inequality, Wealth determinants, Gini coefficient

JEL: D31; E01; G51; D63

1. Introduction

Wealth accumulation is postponed consumption of households and wealth can even be recognized as a want of very high utility (see Michailat and Saez 2018; Deaton, 2003). Wealth distribution and wealth inequality always focus the attention of analysts, decision-makers, and the society, with high wealth concentration being in position to erode social stability, democracy, economic growth, and the well-being even of the top decile and percentile (see Mankiw, 2015; Barro, 2000; Bagachi u Svejnar, 2013). Wealth has concentrated in the hands of fewer richer individuals in last decades and the wealth dynamics in the developed world shows no signs of automatic return to an equal and fairer distribution pattern opposing the hypothesis of Kuznets (1955) for reduced equality with economic development. According to OECD Data, the bottom 40% of the population holds a negative net wealth

¹ The analysis uses estimated wealth and wealth distribution data under an UNWE University Research Project № НИД НИ-16/2020 and this research paper is part of the same project.

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in countries like Denmark, Netherlands, Norway and the USA, while World inequality data shows the bottom five deciles own around 2.5% on average for East European countries and 3.6% for the EU (see Blanchet et al. 2021). The 2014 Gini coefficient ranges between 0.72 u 89.5 for selected countries, while accepting a value of 0.83 for Europe and North America according of Davies et al. (2017). The World Gini accepts values of 0.91 and signals even higher inequality (ibid.).

Wealth and wealth concentration are in a distinct upward trend among major economies and in general in the world, which is supported by the works of many researchers, e.g. Piketty (2014), Grabka (2015), Wolf (2015); Pfeiffer & Schoeni (2016), Saez & Zucman (2016), Lundberg & Waldenström (2018), Peshev et al. (2019), Zuckman (2019), and many more. Saez & Zucman (2016) confirm the ascending tendency in wealth and wealth concentration, since the 1980s there has been a tendency of increasing wealth inequality, with the TOP 0.1% increasing its wealth share from 7% in 1979 to 22% in 2012. According to Zuckman (2019), the TOP 1% wealth share has been increasing in the EU, China and the US since the 80s and 90s. The richest percentile owns between 33 to 40% of the total wealth on average in modern days (see ibid.).

Wealth and health relate positively, with living in poverty and misery vastly decreasing life expectancy and the wellbeing of individuals (see Patel et al, 2020 and Wilkinson and Pickett 2020). Wealth inequality deserves attention because usually it is times higher than income inequality and the problem with it is not addressed adequately, at least not in comparison to income inequality. Faster capital growth than the growth of the economy are in favour of higher wealth concentration (see Piketty, 2014).

The main challenge for analysing wealth is the lack of surveys and administrative data on the subject, which individualizes and relates all financial and real wealth and liabilities sources to a single household and individual. Some countries provide surveys and administrative data for some of the wealth components, however, difficulties of the evaluation of wealth and its distribution persist for the majority of countries. Even in the presence of survey data for some of the countries, it is a well-known fact that survey data underestimate administrative data and real distribution (see Peshev et al. 2022).

Bulgaria neither provides neither a survey, nor administrative data for wealth and wealth components. This is the reason why quite few authors analyse the wealth dynamics and inequality of wealth distribution in Bulgaria. Peshev (2015) and Peshev et al. (2019) analyse bank deposits as a major wealth component and the distribution of this wealth component suggests a times higher inequality in comparison to income distribution. Evaluated wealth and wealth concentration in Bulgaria rose during the 2000-2020, as can be seen in Fig. 1-4 in the Appendix.

The current research paper analyses net wealth and net wealth concentration determinants of Bulgarian individuals, during the 2000-2020 period. The aim of the article is to estimate the determinants of net wealth variables and to derive factors of wealth concentration. The article has the following structure: a brief survey on the literature on wealth modelling and wealth determinants follows first; the methodological framework of the study and data description comes second; the results section comes last.

2. Brief literature review

Tracking wealth inequality and wealth dynamics is still extremely difficult, due the lack of complete administrative data, if any and due to the reason of underestimation of wealth in surveys (see Atkinson, 1975; Peshev et al., 2021; Meriküll and Rõõm, 2022).

Fundamental in the study of economic inequality is the Kuznets curve (see Kuznets, 1955), which suggests that economic growth leads to greater inequality initially, but then reaches a high (critical) level of income and inequality starts to decline, forming an increasingly sustainable middle class in society. However, there are no serious empirical arguments for this dynamic and causality. The same logic of Kuznets could be applicable to wealth inequality and stages of development of society, but still no empirical results support it.

According to the work of Wolf (2015), the wealth of the middle-class consists mainly of real estate (dwellings and housing), on other hand top decile and top percentiles possess much more financial assets.

Peshev et al. (2019) found that long-term financial (deposit) wealth concentration determinants are in positive association with inflation, financial deepening, stock prices and interest rates, while real estates' value decrease wealth inequality since property prices support the net wealth of the middle class. Wealth is in a positive association with age, education, and race according to the work of Kuypers & Marx (2019) and Zhan and Xiang (2016), while for uneducated young minorities it is easy to fall in a vicious cycle of poverty. The older and better-educated part of the population own a higher share of wealth (see Gale et al., 2020; Fuller et al., 2020). Age, inheritances, employed status are among the main contributors of wealth

of the Forbes 400 US list of the super-rich (Canterbery & Nosari (1985).

According to the work of De Serres & Pelgrin (2002), wealth is negatively related to the old-age dependency ratio and the real interest rate, while maintaining a positive association with change in terms of trade and productivity growth. Life expectancy, population density, consumption, stock prices is in a positive association with wealth accumulation (see Davies et al., 2011). The publicly and non-publicly traded equity (sold shares, distributed dividends, retained corporate earnings) is the biggest contributor to wealth inequality, especially in the right tail (see Benhabib, et al. 2017). When it comes to taxation, Humber et al. (2016) find that the lower progressiveness of tax rates in the post-60s period is the main factor for higher wealth inequality.

Galbraith & Lu (1999) find that crises lead to increases in wealth inequality. Roine and Waldenström (2015) assume inflation, financial deepening, foreign trade, democracy as the main determinants of income inequality (eventually of wealth inequality) as measured by the income of the top 1%. Of the listed determinants: the openness of the economy, democracy affect the income of the richest percentile with a negative sign (see *ibid.*). Inflation and financial intermediation are shown to have a positive effect on income inequality (see *ibid.*), while taxation has no significant effect on inequality (see *ibid.*).

House prices, housing wealth and consumption move in the same direction in the US, but it is unclear which causes the other, i.e. a wealth effect cannot be easily justified, according to Iacoviello (2011). Other factors possibly affect both variables, e.g. borrowing against a house at a specific interest rate and spending the amount on

consumption (see *ibid.*). Regressing quarterly USD data from 1952 to 2008 suggest that 1% change in housing wealth results in 0.14% change in consumption, while 1% change of non-housing wealth leads to 0.6% change in consumption (*ibid.*).

Wealth and its components is worth analysing since the vast literature suggests that consumption, or the economic behaviour of humans is based not on the current income but on the overall wealth and expected wealth in the long term. The permanent income hypothesis of Milton Friedman justifies this view (see Friedman, 1957).

Inheritances and being active in a trendy industry (with rising valuation and generating a positive cash flow for shareholders) are among the main determinants of wealth in the US, at least for the top 0.01% of wealth owners according to the results of Canterbury & Nosari (1985). For people without inheritance working under labour agreement in trendy industries (Oil and Shipping industries mainly) is important for wealth creation (see *ibid.*). The results of Black et al. (2015) suggest that wealth begets wealth and wealth inheritance is a major contributor to wealth creation and inequality even in the more egalitarian Swedish economy. Piketty (2014) argues that not inheritances but a higher return on capital surpassing economic growth rate and self-made billionaires, mostly coming from the IT and High-tech industries contribute to wealth concentration the highest. Milanovic (2019) believes that we live in meritocratic world, where the winner gets all, and also suggests that usually top wealth holders can be found on the top of the list for labour income share, i.e. the wealthiest people don't rely only on capital wealth and capital income but labour income also plays a crucial role.

Fuller et al. (2020) find that house prices and to a lower extent financial assets (stocks and government bonds) valuations contribute to the wealth-to-income ratio and to wealth inequality for selected West-European countries, members of OECD. Kuhn et al. (2020) assume that stock prices increase the wealth share of the top decile in the US, while home prices reduce it. Domanski et al. (2016) support the view that higher inequality is associated with higher financial assets ownership, while house prices restore equality. Corporate equities ownership of public and non-publicly traded companies are among the largest contributors of wealth inequality in developed nations, while houses and arable land ownership lead to wealth inequality in less developed societies, according to Davies et al. (2011).

Stewart (1939) assumes that inflation and artificially low long-term interest rates contribute to wealth concentration. Opposing this view, Berisha and Meszaros (2020) find that inflation and lower interest rates help restore wealth inequality, with inflation supporting debt repayment, so do lower interest rates.

3. Data and Methodology

The review of empirical scientific articles supports the current selection of dependent and explanatory variables. Data availability constrains the time-length and the variety of variables of the study. The main challenge in analysing wealth and net wealth of individuals and households in Bulgaria in particular is the lack of a systematic survey and administrative data. The current paper considers net wealth to be the difference between the wealth and liabilities of households for the 2000-2020 period. Real and financial assets comprise wealth, where real assets include the value

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of arable land and the value of the living area (houses and dwellings), while financial wealth includes equity, bank deposits, investments in investment funds, life and general insurance investments. Equity is calculated through capitalizing capital income-adjusted for negative and positive cash flows gross operating surplus and gross mixed income. Bank loans and liabilities towards non-banking financial companies specialized in lending and leasing comprise households liabilities. The analysis uses net wealth variables and net wealth distribution calculated under an UNWE University Research Project № НИД НИ-16/2020. The analysis uses data obtained through publicly available sources, e.g., National Statistical Institute, Eurostat, Bulgarian National Bank.

The review of empirical publications on the topic supports the data selection process of the current study. Data availability also constrains dependent and explanatory variables included in the analysis. The paper includes only statistically significant variables and models. The study uses the following list of dependent and explanatory variables:

- TOP1-the share of net wealth of the top percentile;
- TOP10-the share of the net wealth of the top decile;
- TOP20-the share of net wealth of the top quintile;
- BOTTOM50- the share of the net wealth of the bottom half of the population;
- GINI-the Gini coefficient, accepting values from 0 to 1.
- LOG (NETWEALTHEUR) – a natural logarithm of net wealth in EUR;
- LOG (NETWEALTHPERADULTEUR) – the natural logarithm of the net wealth per adult in EUR;
- LOG (NETWEALTHPERADULTPPP) – the natural logarithm of net wealth per adult in Purchasing Power Parity (PPP), using International Monetary Fund (IMF) data for converting values in PPP;
- LOG (NETWEALTHPPP) – the natural logarithm of the net wealth in PPP;
- CATOGDP – the capital account balance to the GDP ratio;
- D1 – a dummy variable for the personal income flat tax of 10% introduced in 2008;
- D2 – a dummy variable for the corporate income flat tax of 10% introduced in 2007;
- GOVBALANCETOGDP – the government budget balance to the GDP ratio;
- GOVREVTOGDP – the government revenue to the GDP ratio;
- KD – Cost of debt;
- LOG (ARABLELANDPRICEPERHECTAR) – a natural logarithm of arable land price per hectare;
- LOG (DIVIDENDINCOME) – a natural logarithm of dividend income paid to households;
- LOG (EQUITY) – a natural logarithm of equity owned by households;
- LOG (GDPPERCAPITAPPS) – a natural logarithm of GDP per capita in Purchasing Power Standard (PPS), using Eurostat data;
- LOG (GDPPERCAPITABGN) – a natural logarithm of GDP per capita in BGN, 2015 constant prices.
- LOG (HICP) – a natural logarithm of the Harmonized index of consumer prices;
- LOG (INSURINCOME) – a natural logarithm of insurance income paid to households;
- LOG (INTERESTINCOME) – a natural logarithm of interest income paid to households;
- LOG (PROPERTYINCOME) – a natural logarithm of property income paid to households;

- LOG (VALUE_OF_LIVING_AREA_M2) – a natural logarithm of the value of living area (houses/dwellings) per sq.m.;
- RATECONSLOANS – interest rate consumer loans in BGN;
- RATEMORTGAGELOANS - interest rate mortgage loans in BGN.

Performed unit root tests (Augmented Dickey-Fuller test-ADF and Phillips-Perron test-PP) suggest that variables are non-stationary at levels and stationary at first differences. Time series length of 20 observations suggest that proper econometric methods, like Vector error-correction models are inappropriate. The analysis uses statistically significant Ordinary least squares (OLS) regressions.

The analysis uses the following formal OLS regression representation:

$$Y_i = \beta_0 + \beta_j X_{ij} + \epsilon_i, \quad (1)$$

Where:

Y_i - an i^{th} observation of the dependent (response) variable Y , $i=1,2,\dots,n$;

β_0 - the intercept term;

X_{ij} - an i^{th} observation of the j^{th} independent (explanatory) variable X , $i=1,2,\dots,n$ and $j=1,2,\dots,n$;

ϵ_i - an error term for the i^{th} observation

n - number of observation

j - number of explanatory variables.

4. Results

The Ordinary least squares regression results suggest that regression equations and results are statistically significant. The first differences of variables also support the presented below relationships between dependent and independent variables. The

regression equation possesses following features:

1. T-stats of coefficients and p-values of less than 0.05 reject the null of coefficient being equal to zero.
2. Possessing acceptable F-values and passing the Wald coefficient F-test successfully.
3. Accepting the null hypothesis for the lack of heteroscedasticity with high probability².
4. Accepting the null hypothesis for the lack of serial correlation with high probability of Breusch-Godfrey Serial Correlation LM Test, by testing different lags.
5. Accepting the null hypothesis of the Jarque-Bera test with high probability³.

First, the study analyses net wealth regression equations (eq.2 to 5), with net wealth in PPP and EUR and net wealth per adult in PPP and EUR being the response variables. The flat corporate tax rate and flat income tax, introduced in 2007 and 2008, are in a positive association with the net wealth variables (total and per adult, and in PPP and in EUR). The personal income flat tax of 10% which entered into force in 2008 maintains a positive association with the LOG (NETWEALTHPPP) dependent variable in eq.2, with the LOG (NETWEALTHEUR) dependent variable in eq.3, with the LOG (NETWEALTHPERADULTPPP) dependent variable in eq.4 and with the LOG (NETWEALTHPERADULTEUR) variable in eq.5. The corporate income flat tax of 10% introduced in 2007 holds a positive association with the LOG (NETWEALTHEUR) dependent variable in eq.3. Higher personal and corporate income supported by flat taxes (lower than previous progressive margins and

² Breusch-Pagan-Godfrey test and Harvey test check for heteroscedasticity.

³ Jarque-Bera test evaluates normality of the residuals.

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average tax rate) introduction eventually leads to higher net wealth.

The government budget balance maintains a negative relationship with the net wealth variables, assuming that higher expenditures than revenues support wealth creation (see eq. 3. to 5).

Interest rates on mortgage loans reduce wealth, implied by a negative association, revealed in eq.2 to 5. The cost of debt is also in a negative association with the net wealth variables as can be seen from eq. 2. to 5, with higher cost of debt values increasing the weighted average cost of capital and eroding equity and net wealth values.

Arable land prices, value of houses and dwellings and equity values have also a positive association with the net wealth, assuming that arable land, equity, and houses and dwelling are major wealth components (see eq. 2. to 5). Interest income received by households also has a positive association with wealth, laid out in eq.2 to eq.5. Inflation deteriorates net wealth and HICP maintains a negative association with the net wealth variables in eq. 2 to 5.

Second follows the analysis of wealth concentration (inequality) indicators, revealed in eq.6 to 10. Real GDP per capita in BGN (constant prices) and in PPS reduces inequality, with the indicator maintaining a negative relationship with the Gini coefficient (see eq.6), with the top percentile (see eq.7) and with the top quintile (see eq.9), while having a positive association with the bottom half of individuals, as can be seen in eq.10. Higher real GDP per capita restores equality in net wealth distribution and the variable has a strong positive relationship with the dependent variable (the bottom half of individual and adults) in eq.10.

$$\begin{aligned} \text{LOG (NETWEALTHPPP)} &= 9.22^{***} + 0.14\text{D1}^{**} \\ &- 0.03\text{RATEMORTGAGELOANS} - 0.02\text{KD} + \\ &0.156\text{LOG(EQUITY)}^{***} + 0.45\text{LOG(VALUE_} \\ &\text{OF_LIVING_AREA_M2)}^{***} + 0.10\text{LOG} \\ &(\text{ARABLELANDPRICEPERHECTAR})^{***} - \\ &0.89\text{LOG(HICP)}^{***} + 0.023\text{LOG (INTERESTINCOME)}^{**} \end{aligned} \quad (2)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.79; Adjusted R-squared: 0.71; F-statistic: 10.97; Prob. (F-statistic): 0.00.

$$\begin{aligned} \text{LOG (NETWEALTHEUR)} &= 7.05^{***} + 0.16\text{D1}^{***} \\ &+ 0.07\text{D2}^{***} - 0.01\text{GOVBALANCETO GDP}^{***} - \\ &0.04\text{RATEMORTGAGELOANS}^{***} - 0.02\text{KD}^{***} \\ &+ 0.17\text{LOG (EQUITY)}^{***} + 0.55\text{LOG} \\ &(\text{VALUE_OF_LIVING_AREA_M2})^{***} + 0.10\text{LOG} \\ &(\text{ARABLELANDPRICEPERHECTAR})^{***} - \\ &0.87\text{LOG(HICP)}^{***} + 0.03\text{LOG (INTERESTINCOME)}^{***} \end{aligned} \quad (3)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.99; Adjusted R-squared: 0.99; F-statistic: 2809; Prob. (F-statistic): 0.00.

$$\begin{aligned} \text{LOG (NETWEALTHPERADULTPPP)} &= 8.95^{***} \\ &+ 0.15\text{D1}^{***} - 0.01\text{GOVBALANCETO GDP}^{**} - \\ &0.04\text{RATEMORTGAGELOANS}^{***} - 0.02\text{KD}^{***} \\ &+ 0.14\text{LOG (EQUITY)}^{***} + 0.44\text{LOG} \\ &(\text{VALUE_OF_LIVING_AREA_M2})^{***} + 0.20\text{LOG} \\ &(\text{ARABLELANDPRICEPERHECTAR})^{***} - 1.28\text{LOG} \\ &(\text{HICP})^{***} + 0.04\text{LOG (INTERESTINCOME)}^{***} \end{aligned} \quad (4)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.99; Adjusted R-squared: 0.99; F-statistic: 1375; Prob. (F-statistic): 0.00.

$$\begin{aligned} \text{LOG (NETWEALTHPERADULTEUR)} &= 4.06^{***} \\ &+ 0.15\text{D1}^{***} - 0.01\text{GOVBALANCETO GDP}^{***} - \\ &0.03\text{RATEMORTGAGELOANS}^{***} - 0.03\text{KD}^{***} \\ &+ 0.18\text{LOG (EQUITY)}^{***} + 0.59\text{LOG} \\ &(\text{VALUE_OF_LIVING_AREA_M2})^{***} + 0.21\text{LOG} \\ &(\text{ARABLELANDPRICEPERHECTAR})^{***} - 0.89*\text{LOG} \\ &(\text{HICP})^{***} + 0.04\text{LOG (INTERESTINCOME)}^{***} \end{aligned} \quad (5)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.99; Adjusted R-squared: 0.99; F-statistic: 2868; Prob. (F-statistic): 0.00.

Inflation, through HICP, increases inequality by having a positive association with the Gini coefficient, the top quintile, the top decile as well (see eq. 6, eq.8, eq.9). HICP reduces the wealth share of the bottom half of individuals, as presented in eq.10. It could be summarized that inflation deteriorates the overall net wealth creation and stimulates wealth concentration.

Interest rates on consumer loans negatively affect wealth concentration, with GINI, top decile and top quintile having a negative association with the variable. The bottom half of the distribution maintains a positive association with interest rates on loans on consumer variables.

The cost of debt also erodes inequality, with the Gini coefficient and the Top percentile wealth share having a negative association with the indicator (see eq. 6 and 7). Higher debt financing costs for companies and the higher weighted average cost of capital have a negative impact on financial and real assets value.

Wealth components, like houses and dwellings, and equity have positive association with the wealth share of the top percentile (see eq.7), while dividend income and property (investments) income are in positive association with the Gini coefficient (see eq.6).

Government revenue has negative relationship with the Gini coefficient (see eq.6), while the government balance maintains a negative association with the net wealth share of the top percentile (see eq.7). Higher government expenditures than revenues

supports inequality, while higher government revenues depress wealth concentration (see eq. 6 and 7).

$$\begin{aligned} \text{GINI} = & 8.6^{***} - 0.85\text{LOG}(\text{GDPPERCAPITABGN})^{***} \\ & - 0.02\text{GOVREVTGDP}^{***} - 0.03\text{RATECONSLOANS} \\ & ^{***} - 0.04\text{KD}^{***} - 0.15\text{LOG}(\text{DIVIDENDINCOME})^{***} \\ & - 0.04\text{LOG}(\text{EQUITY})^{***} + 0.45\text{LOG}(\text{HICP})^{***} + \\ & 0.12\text{LOG}(\text{PROPERTYINCOME})^{**} \end{aligned} \quad (6)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.90; Adjusted R-squared: 0.83; F-statistic: 12.8; Prob. (F-statistic): 0.00.

$$\begin{aligned} \text{TOP1} = & 1.19^{**} - 0.01\text{KD}^{***} + 0.09\text{LOG} \\ & (\text{VALUE_OF_LIVING_AREA_M2})^{***} \\ & - 0.24\text{LOG}(\text{GDPPERCAPITAPPS})^{***} - \\ & 0.04\text{GOVBALANCETGDP}^{***} + 0.02\text{LOG}(\text{EQUITY})^{***} \end{aligned} \quad (7)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.80; Adjusted R-squared: 0.74; F-statistic: 12.1; Prob. (F-statistic): 0.00.

$$\begin{aligned} \text{TOP10} = & 1.28^{**} - 0.04\text{RATECONSLOANS}^{***} + \\ & 0.02\text{RATEMORTGAGELOANS}^{***} - 0.30\text{LOG}(\text{VALUE_} \\ & \text{OF_LIVING_AREA_M2})^{***} + 0.67\text{LOG}(\text{HICP})^{***} \end{aligned} \quad (8)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.82; Adjusted R-squared: 0.78; F-statistic: 18.9; Prob. (F-statistic): 0.00.

$$\begin{aligned} \text{TOP20} = & 4.46^{***} + 0.76\text{LOG}(\text{HICP})^{***} \\ & - 0.02\text{RATECONSLOANS}^{**} - 0.50\text{LOG} \\ & (\text{GDPPERCAPITAPPS})^{**} - 0.17\text{LOG}(\text{VALUE_OF_} \\ & \text{LIVING_AREA_M2})^{**} \end{aligned} \quad (9)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.72; Adjusted R-squared: 0.65; F-statistic: 10.08; Prob. (F-statistic): 0.00.

$$\begin{aligned} \text{BOTTOM50} = & -1.30^{**} + 0.008\text{RATECONSLOANS}^{**} - \\ & 0.2\text{LOG}(\text{HICP})^{***} + 0.23\text{LOG}(\text{GDPPERCAPITAPPS})^{**} \end{aligned} \quad (10)$$

Where: * - 10% level of significance; ** - 5% level of significance; *** - 1% level of significance; Summarized results: R-squared: 0.66; Adjusted R-squared: 0.60; F-statistic: 10.95; Prob. (F-statistic): 0.00.

5. Conclusions

Rising wealth in Bulgaria is accompanied by rising wealth inequality, which requires the topic to be scrutinized. Justified policies for addressing wealth and wealth inequality should be based on a reliable pattern of wealth and distribution.

The main findings of the article suggest that flat tax rates on income and corporate profits and budget deficits seem to stimulate the wealth creation process in Bulgaria. In this regard arable land prices, the value of houses and dwellings and equity value are major wealth components and experience a positive relationship with wealth variables. Interest rates on mortgage loans, the cost of debt and budget surpluses maintain a negative association with net wealth. Inflation deteriorates net wealth and HICP maintains a negative association with the net wealth variables.

When it comes to modelling wealth inequality – the GDP per capita reduces inequality, and the indicator maintains a negative relationship with wealth concentration indicators, while having a strong positive association with the wealth share of the bottom half of individuals. Inflation increases inequality, by having a positive association with the Gini coefficient, the top quintile, the top decile as well and HICP reduces the share of the bottom half of individuals. The cost of debt, together with interest rates on consumer loans negatively impact wealth concentration.

Wealth components, like houses and dwellings, equity, dividend income

and investment (property) income have a positive association with the wealth concentration variables, hence stimulate wealth concentration. On other hand, higher government expenditures than revenues supports inequality, while higher government revenues depress wealth concentration.

Open government administrative data, digitalization and administrative registers synchronisation will improve data availability on wealth and wealth distribution, supporting researchers and analysts in their work of studying inequality in Bulgaria and providing justified policy measures for addressing rising and high wealth inequality.

Rising wealth inequality should be properly addressed so it does not result in social unrest, deteriorating the wellbeing even of the top deciles and percentiles. The introduction of progressive taxation on wealth sources and imposing taxes on abnormal profits for specific sectors could be a step in the right direction for tackling wealth inequality. Industries with monopolist and oligopolistic characteristics, e.g. electricity producers, gas station chains, oil companies, other utility companies, large retailers, etc. could be the first candidates to be subject to abnormal profits taxation. Effective real estate wealth taxes, inheritance taxes, etc. should also be considered.

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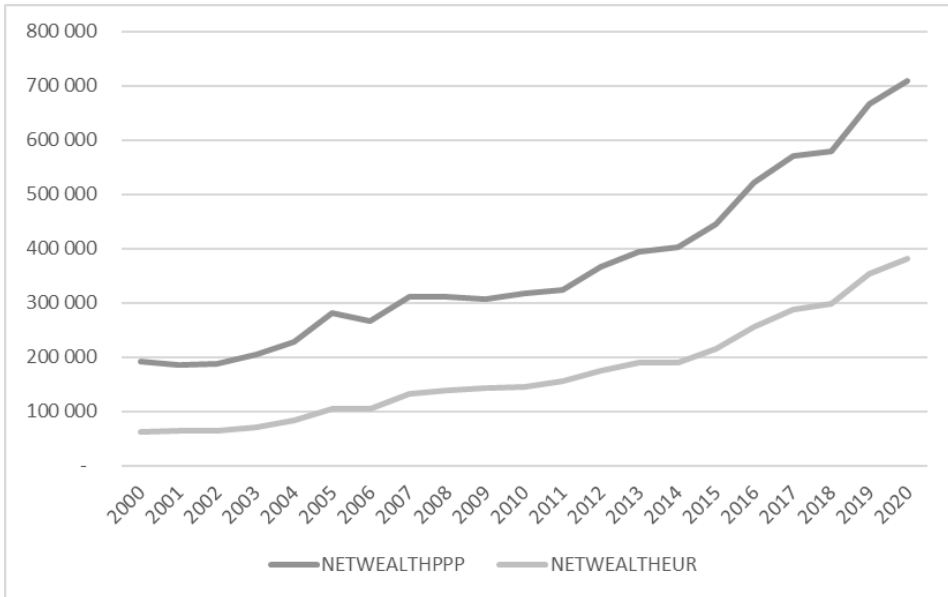
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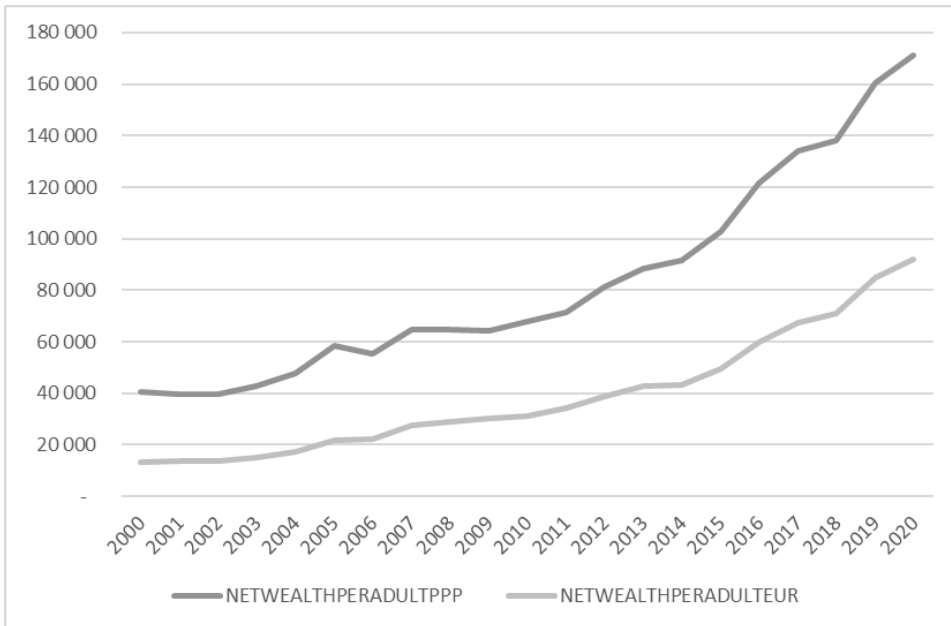
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Appendix



Source: Own calculations
 Note: values are in mln. EUR and mln. PPP

Figure 1. Net wealth

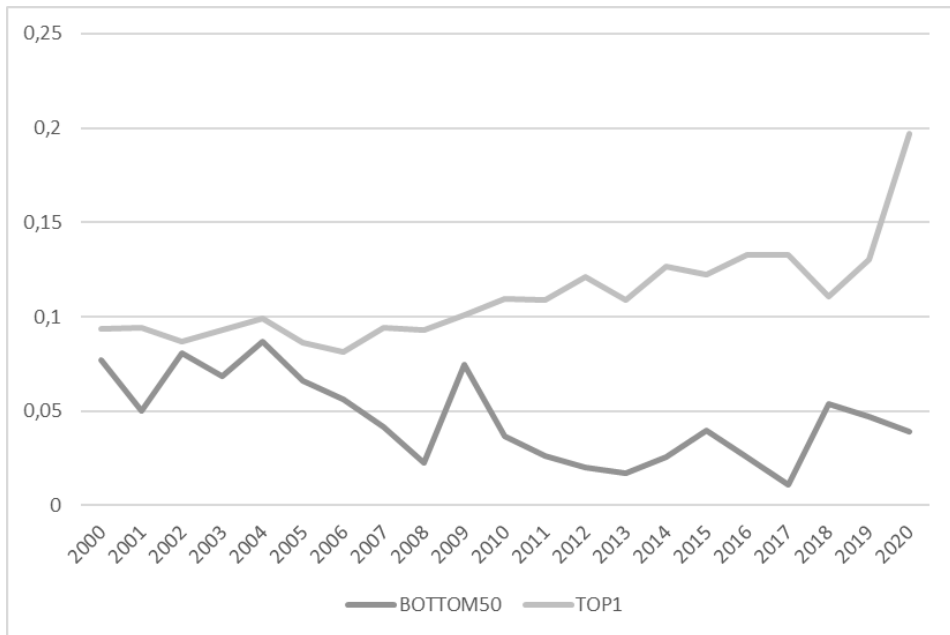


Source: Own calculations
 Note: values are in EUR and PPP

Figure 2. Net wealth per capita



Source: Own calculations
 Figure 3. Wealth concentration indicators



Source: Own calculations
 Figure 4. Wealth concentration indicators (continuation)