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PERSONAL FINANCE AND MACROECONOMIC INDICATORS IN POLAND: AN ANALYSIS OF HOUSEHOLD SAVING BEHAVIOR

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Purpose: The aim of this study is to examine the savings dimension of household personal finance in Poland and the factors influencing it. To achieve this, the analysis focuses on the relationship between the household saving rate and selected socio-economic indicators in Poland over the period from 2000 to 2022.
Design/methodology/approach: This study includes both correlation analysis and interpretation of observed relationships. Its approach is to determine whether fluctuations in household savings levels are related to noticeable macroeconomic changes and to identify the variables that most effectively explain changes in savers' behaviour.
Findings: Empirical findings showed that neither GDP growth nor GDP per capita growth showed a statistically significant correlation with household savings. Key empirical findings include the fact that unemployment and the average NBP interest rate showed positive and statistically significant correlation with household savings. The study highlights the complexity of household behaviour with regard to savings and the importance of taking several macroeconomic factors into account simultaneously.
Research limitations/implications: Limitations of the methodology include the use of aggregate-level data, which may obscure differences in the savings behaviour of different household groups, as well as a focus on linear relationships, which may not reflect more complex non-linear interactions between variables.
Practical implications: These results may be of particular practical significance in the context of monetary policy, as they indicate that interest rate policy influences household behaviour with regard to savings, although the effectiveness of such policy may depend on labour market conditions and economic uncertainty. The significant relationship between unemployment and saving rates confirms the relevance of of Poles' precautionary saving motives, highlighting the importance of employment security in household financial planning.
Originality/value: The research contributes to the literature on Polish household saving behavior by providing empirical evidence on the relationships between saving rates and macroeconomic conditions. The findings suggest that Polish households exhibit rational responses to economic uncertainty, particularly regarding employment security, while being less sensitive to aggregate economic growth or inflation than might be theoretically expected.
Keywords: personal finance, wealth planning, savings, financial behavior, financial security.
Category of the paper: research paper.

1. Introduction

Savings represent a crucial component of household personal finance, influencing not only the economic prosperity of individual households but also reflecting broader trends in the macroeconomic environment. On one hand, the level of household savings, being the counterpart of consumption, affects aggregate demand in a market economy. On the other hand, savings represent a vital source of capital for investment by entrepreneurs. The issue of household savings represents a pressing concern for individual households and a matter of considerable importance for other economic actors, thereby underscoring its relevance and broader economic significance.

On the micro level, the capacity to save is closely associated with long-term financial well-being, resilience to economic shocks, and overall psychological security. At the macroeconomic level, household savings represent a critical determinant of national investment capacity, influencing capital accumulation, interest rates, and long-term economic growth. As such, the dynamics of household saving behavior are of central concern not only to policymakers and economists, but also to sociologists, psychologists, and anthropologists seeking to understand economic decision-making within a broader social context.

The importance of savings extends beyond financial planning; it reflects consumption patterns, economic confidence, and responses to both structural and cyclical economic forces. From the Keynesian perspective, savings and consumption are inherently interrelated, with savings often viewed as deferred consumption (Keynes, 1936). Consequently, changes in saving rates can provide valuable insights into household expectations, financial constraints, and perceived risks.

Some studies suggest that savings have a positive impact on households' mental well-being and their perceived sense of financial security (Ambaw et al., 2025). However, the structure and level of savings exhibit variations across different countries (Zawadzka, Grzywińska-Rąpca, 2021).

The level of savings among households may arise from various causes, including insufficient income or a heightened desire for material possessions, often described as consumerism. The saving behavior of households is shaped by a complex set of underlying factors and motivations, which provides the objective for this study. The aim of this study is to examine the savings dimension of household personal finance in Poland and the factors influencing it. To achieve this, the analysis focuses on the relationship between the household saving rate and selected socio-economic indicators in Poland over the period from 2000 to 2022.

This study encompasses both a correlation-based analysis and a contextual interpretation of the observed relationships within the framework of existing literature and economic policy. It seeks to determine whether fluctuations in the household saving rate are associated with notable macroeconomic developments and to identify which variables most effectively account

for variations in saving behavior. The analysis covers the period from 2000 to 2022, as it allows for an examination of household behavior in response to significant economic events, including Poland's accession to the European Union in 2004, the impact of the 2008 global financial crisis, and the COVID-19 recession.

Understanding the determinants of household saving behavior is crucial for designing effective fiscal, monetary, and social policies. Given the growing complexity of financial environments and the emergence of new economic uncertainties, the study of savings remains a timely and essential area of research in the field of personal finance and macroeconomic analysis.

2. Literature Review

The motivation to save has been a subject of interest for researchers across various disciplines, including economics, sociology, psychology, anthropology, and others. Classical and neoclassical economic theories typically conceptualize savings as a function of income, interest rates, and intertemporal preferences. The life-cycle hypothesis (Ando, Modigliani, 1963) and the permanent income hypothesis (Friedman, 1957) argue that individuals smooth consumption over time based on lifetime expected income, implying that short-term income fluctuations have limited impact on savings. The interplay between individual savings behavior and life expectancy is fundamentally mediated by the structure of the pension system and households' perceived financial security in retirement (Aizenman et al., 2015; Barembruch, Bielawska, 2023; Bielawska, Kozłowski, 2024; Jing et al., 2025). Economic theory and empirical evidence suggest that these institutional and psychological determinants significantly shape savings responses to increasing longevity (Barr, Diamond, 2006; OECD, 2021).

A foundational contribution to the study of saving behavior comes from John Maynard Keynes who introduced the concept of the consumption function, positing that consumption and savings are primarily determined by current income levels. According to Keynes, as income rises, households increase their consumption but by a smaller proportion, leading to a rise in the marginal propensity to save. Keynesian theory also emphasizes the psychological motives for saving, including precaution, foresight, and the desire to leave bequests, framing saving behavior not only as a rational economic decision but also a function of individual expectations and social context (Keynes, 1936).

However, empirical evidence suggests that households do not always behave in accordance with these models, particularly under conditions of financial uncertainty, liquidity constraints, or behavioral biases (Korzeniowska, Ulman, 2023). In contemporary economic contexts, individual decision-making is significantly influenced by considerations of environmental sustainability, as well as the pursuit of harmony and balance in consumption and lifestyle

choices (Bitkowska et al., 2022; Kędzierska-Szczepaniak, 2024; Majerowska, Jasik, 2024; Płoska et al., 2024; Stepanok, 2024; Balla, 2024). This reflects a growing integration of ecological awareness into rational economic behavior, where utility maximization increasingly incorporates non-monetary factors such as personal well-being and long-term environmental impacts.

Cronqvist & Siegel (2015) employing a large sample of monozygotic and dizygotic twins has demonstrated that genetic variation accounts for approximately one-third of the individual differences in savings behavior. The findings suggest that individuals possess a stable, genetically influenced predisposition toward certain saving patterns. While parental influence appears to play a significant role in shaping savings behavior during early life stages, its impact diminishes with age. Moreover, early-life environmental factors, such as parental wealth, interact with genetic predispositions to influence financial behavior.

Psychological and sociological perspectives emphasize the influence of social norms, cultural context, and individual traits such as time preference and risk aversion on saving behavior (Beverly, Sherraden, 1999). The relationship between savings behavior and longevity is further complicated by national cultural traits, collective economic mentality, and historical institutional development, necessitating country-specific analysis (Brounen et al., 2016; Lee et al., 2025; Emara, 2025). Variations in savings rates across nations cannot be fully explained by pension systems or rational economic models alone – deep-seated sociocultural and historical factors play a crucial mediating role.

Szustak et al. (2025) emphasises that in Poland, the population has developed a cultural attitude towards thriftiness, shaped by historical experiences of economic instability, which remains a persistent factor: older generations maintain higher savings rates than younger generations. In the Polish context, households tend to favor tangible assets, particularly real estate, as the primary form of long-term savings. This preference is shaped by historical experience, which has fostered a cultural emphasis on property ownership as a secure store of value (Krupa et al., 2013; Kulpaka, 2016). Furthermore, trust in financial institutions remains relatively low in Polish society, reinforcing the tendency to prioritize physical assets over formal financial products. According to Olszewska (2023), these patterns reflect a persistent skepticism toward institutional finance and a strong material orientation in household saving strategies.

Despite the extensive development of research on household saving behavior, the number of studies specifically focused on the Polish context remains limited. This gap in the literature highlights the need for further empirical investigation into the determinants and dynamics of household savings in Poland, particularly in light of the country's unique socio-economic trajectory and transitional experience.

3. Methods

This study employs a quantitative approach to examine the relationship between household saving rates and selected macroeconomic indicators in Poland over the period 2000-2022. The analysis is based on data obtained from reliable institutional sources, specifically Statistics Poland, the World Bank database (World Bank Open Data), and the National Bank of Poland (Narodowy Bank Polski).

The dependent variable in this analysis is the household saving rate, calculated as the ratio of gross household savings to gross disposable income, adjusted for changes in pension entitlements. This indicator serves as a comprehensive measure of household financial behavior and represents the proportion of income that households allocate to savings rather than consumption.

The independent variables selected for analysis include several key macroeconomic indicators that theoretical and empirical literature identify as potential determinants of household saving behavior:

- GDP Growth Rate - representing overall economic performance and macroeconomic stability.
- GDP per capita Growth Rate - reflecting changes in individual economic well-being and living standards.
- Price Index - serving as an indicator of inflation and changes in purchasing power.
- Unemployment Rate - indicating labor market conditions and employment guarantees.
- Average NBP Interest Rate (the arithmetic mean of the NBP reference rates for the year is taken into account) - representing monetary policy stance and the opportunity cost of consumption.

The methodology used is primarily a correlation analysis using Pearson's correlation coefficients to quantitatively assess the strength and direction of linear relationships between the household savings rate and each macroeconomic variable. Statistical significance is assessed at the conventional 5% level ($p < 0.05$), with p-values indicated for each correlation coefficient.

First, a descriptive analysis is conducted to identify patterns, trends, and notable fluctuations in the variables under investigation over the observation period. Second, a correlation analysis is performed to examine the relationships between the household savings rate in Poland and each macroeconomic indicator. Third, a contextual interpretation of the statistical findings is provided, grounded in economic theory and taking into account the influence of major historical events, including Poland’s accession to the European Union (2004), the global financial crisis (2008-2009), and the COVID-19 pandemic (2020-2022).

The study period of 2000-2022 was deliberately chosen to capture Poland's economic transformation and exposure to various external shocks, providing a comprehensive view of household saving behavior under different macroeconomic conditions. This timeframe allows for the examination of both cyclical and structural factors influencing household financial decisions. The correlational approach, while not establishing causality, provides valuable insights into the systematic relationships between macroeconomic conditions and household saving patterns.

4. Results and Discussion

The household saving rate constitutes a key indicator for the household personal finance and wealth planning. It provides insight into the manner in which households allocate their income between consumption and savings. The indicator is calculated as the ratio of gross savings to gross disposable income, augmented by an adjustment for changes in pension entitlements.

Throughout the period 2000-2022, this indicator exhibited substantial fluctuations, reaching a minimum value of 0.4% in 2022 and a maximum of 12.2% in 2020 (Figure 1). The average value over the entire period amounted to 6.2%, while the median was 5.6%. These dynamics reflect the sensitivity of household saving behaviour to macroeconomic conditions, such as income uncertainty, interest rates, and fiscal policies.

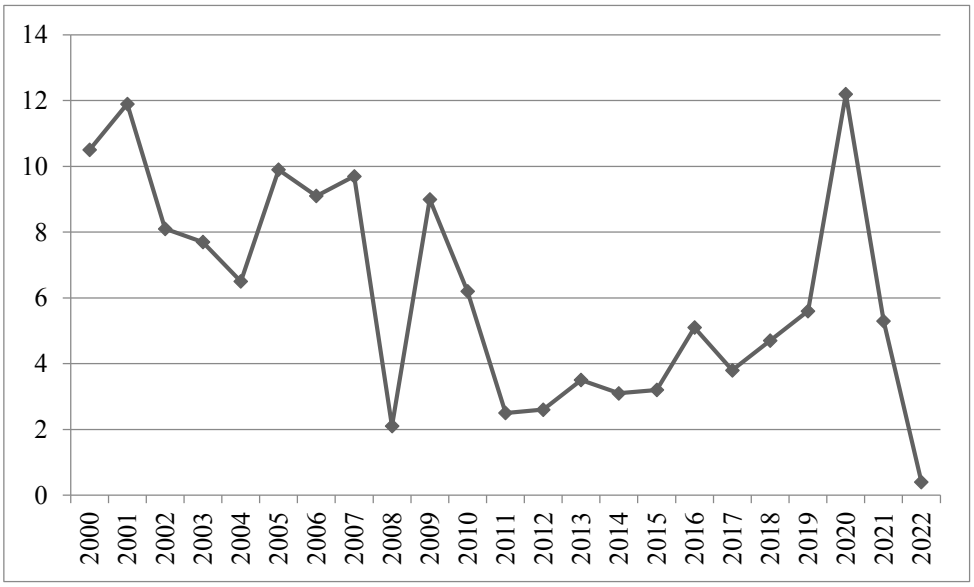

Figure 1. Household Saving Rate (%) over the period 2000-2022.

Source: own elaboration based on Statistics Poland.

The observed volatility and inconsistency in household saving behavior in Poland indicate that there are specific underlying factors and determinants influencing it. During the period under review, the Polish economy underwent historic transformations marked by significant institutional changes, the country's accession to the European Union, the consequences of the global financial crisis and the impact of the COVID-19 pandemic. These events not only affected the economy as a whole but also shaped the financial actions of individual households, creating specific behavioural patterns. In aggregate terms, the economy's response to these internal and external shocks can be seen in GDP growth fluctuations. However, it remains unclear whether changes in GDP have directly affected the level of household savings in Poland. This uncertainty highlights the need for a thorough analysis of the relationship between macroeconomic dynamics and household behaviour in the area of savings.

Table 1.
Household Saving Rate and GDP Growth in Poland (2000–2022), with Pearson Correlation Coefficient

Year	Household Saving Rate (%)	GDP Growth (%)	Pearson Correlation Coefficient	p-value
2000	10,5	4,01		
2001	11,9	2,92		
2002	8,1	1,51		
2003	7,7	3,30		
2004	6,5	4,74		
2005	9,9	6,38		
2006	9,1	6,62		
2007	9,7	5,49		
2008	2,1	2,61		
2009	9	-4,80		
2010	6,2	2,71		
2011	2,5	1,77	-0,08	0,7
2012	2,6	-0,77		
2013	3,5	-0,04		
2014	3,1	2,25		
2015	3,2	4,96		
2016	5,1	2,58		
2017	3,8	5,17		
2018	4,7	2,83		
2019	5,6	3,57		
2020	12,2	-5,30		
2021	5,3	4,03		
2022	0,4	2,85		

Source: own elaboration based on Statistics Poland and World Bank data.

A preliminary visual analysis of the data in Table 1 shows a nonlinear and inconsistent relationship between GDP growth and household savings rates. For example, in years of relatively high GDP growth, such as 2006 (6.62%) and 2007 (5.49%), the level of household savings remained fairly high, but did not exceed the maximum level for the period under review (9.1% and 9.7%, respectively). In contrast, in 2008, the level of savings fell sharply to 2.1%, despite continued positive GDP growth (2.61%).

It is noteworthy that in 2009, amid the economic downturn caused by the global financial crisis (GDP declined by -4.80%), the savings rate rose sharply to 9.0%, indicating preventive savings measures by households in the face of economic uncertainty. A similar pattern was observed in 2020, at the height of the COVID-19 pandemic, when GDP declined by -5.30% and the savings rate rose to 12.2%, the highest figure for the entire observation period.

To quantify this relationship, Pearson's correlation coefficient was calculated, which was -0.08 with a p-value of 0.7, indicating that the correlation between household savings and GDP growth during the period under review is statistically insignificant. This suggests that GDP growth alone is not a strong or reliable predictor of household savings behaviour in Poland.

GDP growth per capita is an indicator that differs from overall GDP growth, as it more accurately reflects the standard of living and economic well-being of the population. Table 2 shows the dynamics of GDP per capita growth for the period under review, which allows us to analyse whether this figure was directly related to the level of household savings in Poland.

Table 2.
Household Saving Rate and GDP per capita Growth in Poland (2000-2022), with Pearson Correlation Coefficient

Year	Household Saving Rate (%)	GDP per capita growth (annual %)	Pearson Correlation Coefficient	p-value
2000	10,5	5,76		
2001	11,9	1,26		
2002	8,1	1,95		
2003	7,7	3,59		
2004	6,5	5,15		
2005	9,9	3,31		
2006	9,1	6,27		
2007	9,7	6,82		
2008	2,1	4,37		
2009	9	2,55		
2010	6,2	3,46		
2011	2,5	5,20	-0,26	0,215
2012	2,6	1,51		
2013	3,5	0,75		
2014	3,1	4,00		
2015	3,2	4,50		
2016	5,1	3,08		
2017	3,8	5,14		
2018	4,7	6,25		
2019	5,6	4,61		
2020	12,2	-1,86		
2021	5,3	9,58		
2022	0,4	5,71		

Source: own elaboration based on Statistics Poland and World Bank data.

The data show significant variability in both indicators over the years 2000-2022. Periods of sustained GDP per capita growth, such as 2006-2007 and 2018-2019, were accompanied by moderate to high household savings rates. However, in 2008, despite relatively high GDP per capita growth (4.37%), the household savings rate fell sharply to 2.1%, indicating that other

economic or psychological factors (such as global financial uncertainty) influenced savings behaviour that year.

A particularly notable anomaly occurred in 2020, during the COVID-19 pandemic, when GDP per capita declined by 1.86% and the savings rate rose to 12.2%, likely due to precautionary measures, reduced consumption opportunities, and heightened economic uncertainty. In contrast, in 2022, GDP per capita grew significantly (5.71%), but the household savings rate fell sharply to 0.4%, the lowest level in the entire observation period, possibly reflecting a recovery in consumption after the pandemic or inflationary pressure on disposable income.

The Pearson correlation coefficient between the household savings rate and GDP per capita growth for this period is -0.26, and the p-value is 0.215, indicating a weak and statistically insignificant negative relationship. This result means that, like aggregate GDP growth, GDP growth per capita is not a reliable indicator of household savings behaviour in Poland.

So, even though GDP growth per capita in Poland is a useful indicator of how prosperous a society is, it doesn't really explain household savings patterns that well without taking into account broader contextual and behavioural factors.

Studying the impact of changes in price levels, particularly inflation, on household savings behaviour is important for understanding both macroeconomic stability and financial decision-making at the individual level. The theoretical basis for this relationship is based on the Fisher equation, introduced by Fisher (1930), which postulates that the real interest rate is equal to the nominal interest rate minus the inflation rate. According to Fisher, inflation reduces the real return on nominal savings, effectively imposing an ‘inflation tax’ on savers and potentially discouraging savings in favour of immediate consumption. Building on this concept, Tobin (1965) argued that rising inflation encourages investors and households to replace cash balances with physical assets, thereby reducing demand for real money holdings. These theoretical conclusions were supported and refined by empirical research. Juster and Wachtel (1972) and Davidson and MacKinnon (1983) investigated how inflation expectations influence households' savings decisions, while Heer and Suessmuth (2009) used several models to study the relationship between inflation and savings behaviour. Taken together, these studies show that when inflation rises faster than nominal interest rates, the associated decline in real returns may discourage saving. However, under certain conditions, such as high uncertainty or expected future inflation, households may increase their savings as a precautionary measure. Thus, the relationship between inflation and household savings is theoretically significant and empirically complex, warranting closer examination in the context of Poland's changing economic situation. Table 3 presents data on the household savings rate and the annual price index in Poland for the period 2000-2022, with the price index expressed as a percentage relative to the previous year (base year = 100). The point of this analysis is to see if changes in the overall price level, which we're using here as a measure of inflation, have had a noticeable impact on how households save over time.

Table 3.
Household Saving Rate and Price index in Poland (2000–2022), with Pearson Correlation Coefficient

Year	Household Saving Rate (%)	Price index (base year: previous year = 100)	Pearson Correlation Coefficient	p-value
2000	10,5	110,1		
2001	11,9	105,5		
2002	8,1	101,9		
2003	7,7	100,8		
2004	6,5	103,5		
2005	9,9	102,1		
2006	9,1	101		
2007	9,7	102,5		
2008	2,1	104,2		
2009	9	103,5		
2010	6,2	102,6		
2011	2,5	104,3	–0,05	0,82
2012	2,6	103,7		
2013	3,5	100,9		
2014	3,1	100		
2015	3,2	99,1		
2016	5,1	99,4		
2017	3,8	102		
2018	4,7	101,6		
2019	5,6	102,3		
2020	12,2	103,4		
2021	5,3	105,1		
2022	0,4	114,4		

Source: own elaboration based on Statistics Poland and World Bank data.

The price index for the period under review reflects several key macroeconomic events, including relatively high inflation in the early 2000s (e.g., 110.1 in 2000), a period of price stability and moderate deflation in 2014-2016, and significant inflationary pressure in 2022, when the price index jumped to 114.4, the highest value in the data set. Accordingly, the household savings rate showed noticeable volatility, but not in direct relationship to changes in the price level. For example, in 2008, the savings rate fell sharply to 2.1% despite a moderate price index of 104.2, while in 2020, amid the uncertainty associated with the pandemic, savings rose to 12.2% despite an average price index of 103.4. Pearson's correlation coefficient for the relationship between household savings and the annual price index was calculated at –0.05 with a p-value of 0.82, indicating a very weak and statistically insignificant negative correlation. This result suggests that, in the long term, changes in the general price level did not have a constant or direct influence on the savings behaviour of households in Poland.

These findings are consistent with broader theoretical perspectives suggesting that the link between inflation and savings is not linear and may depend on context.

The sharp decline in the savings rate in 2022 (0.4%), despite an unprecedented jump in the price index (114.4), may reflect households' response to pressure from rising living costs, with real income erosion reducing their ability to save. Conversely, during periods of deflation or low inflation (e.g., in 2015-2016), households did not significantly increase their savings,

suggesting that factors unrelated to inflation, such as income levels, labour market conditions or trust in institutions, play a more decisive role.

Table 4 presents data on the household savings rate and the overall unemployment rate in Poland for the period 2000-2022, as well as Pearson's correlation coefficient and the corresponding significance level. The analysis seeks to assess whether changes in the labour market have affected household behaviour with regard to savings.

Table 4.
Household Saving Rate and Unemployment in Poland (2000–2022), with Pearson correlation Coefficient

Year	Household Saving Rate (%)	Unemployment, total (% of total labor force)	Pearson Correlation Coefficient	p-value
2000	10,5	14,928	0,46	0,026
2001	11,9	18,435		
2002	8,1	20,211		
2003	7,7	19,899		
2004	6,5	18,822		
2005	9,9	17,592		
2006	9,1	13,794		
2007	9,7	9,551		
2008	2,1	7,069		
2009	9	8,131		
2010	6,2	9,578		
2011	2,5	9,576		
2012	2,6	10,031		
2013	3,5	10,293		
2014	3,1	8,971		
2015	3,2	7,475		
2016	5,1	6,141		
2017	3,8	4,867		
2018	4,7	3,835		
2019	5,6	3,267		
2020	12,2	3,155		
2021	5,3	3,268		
2022	0,4	2,811		

Source: own elaboration based on Statistics Poland and World Bank data.

The results indicate a moderately positive and statistically significant correlation between household savings and unemployment, with a Pearson correlation coefficient of 0.46 and a p-value of 0.026. This suggests that in Poland, rising unemployment is usually accompanied by an increase in household savings, and this pattern is consistent with the precautionary savings hypothesis, according to which households respond to economic uncertainty by increasing savings to protect themselves from potential income loss (Carroll, Samwick, 1997; Deaton, 1991).

In the Polish context, such behaviour was evident in years such as 2001-2002, when unemployment exceeded 18% and savings remained relatively high. Similarly, in 2009, following the global financial crisis, the savings rate recovered to 9.0%, coinciding with increased uncertainty in the labour market.

These results are consistent with the broader empirical literature emphasising the role of uncertainty about the future and the risk of income loss in shaping household financial behaviour. For example, Benito (2006) found that increased uncertainty about the future leads households to reduce consumption and increase savings in case of unforeseen circumstances. Similarly, Stephens Jr. (2004) demonstrates that both expected and actual job losses significantly affect household consumption behaviour, confirming the importance of labour market expectations in savings decisions. Gruber (1997) also emphasises how the availability of unemployment insurance helps smooth consumption during periods of job loss, suggesting that institutional mechanisms can mitigate but not eliminate the motives for precautionary savings.

It is noteworthy that the sharp increase in the savings rate in Poland in 2020 (12.2%), despite historically low unemployment (3.2%), reflects the exceptional situation caused by the COVID-19 pandemic, during which households faced unprecedented uncertainty and limited consumption opportunities. This confirms the argument that, although labour market conditions are important, subjective expectations and broader uncertainty shocks can also significantly alter savings behaviour. The decline to 0.4% in 2022, despite historically low unemployment, may reflect strong consumption recovery effects, weakening precautionary motives, and increased pressure on the cost of living due to inflation.

Thus, the positive correlation between unemployment and household savings in Poland convincingly confirms the theory that the key factor determining savings behaviour is not so much income as economic uncertainty. These findings highlight the need for policymakers to consider not only labour market indicators but also household expectations and risk perceptions when assessing savings trends and designing social protection systems.

The interest rate is one of the main factors determining household behaviour with regard to savings, both in classical and modern economic theory. According to the intertemporal choice model, interest rates influence the trade-off between current and future consumption. Higher interest rates increase the return on postponed consumption, encouraging households to save rather than spend. Conversely, lower interest rates reduce the opportunity cost of current consumption, which may discourage saving.

Theoretically, a positive relationship between nominal interest rates and household savings is expected, especially in economies where households respond to interest rate-based incentives. However, the actual effect depends on the balance between the substitution effect and the income effect: while the substitution effect encourages savings when interest rates rise, the income effect can work in the opposite direction, especially for wealthier households that already hold significant interest-bearing assets.

Given Poland's dynamic monetary policy, characterised by a sharp decline in interest rates in the early 2000s, monetary easing during the global financial crisis, and historically low rates in response to the COVID-19 pandemic, it is important to assess how changes in the average annual interest rate of the NBP (Narodowy Bank Polski) have affected behaviour.

Table 5.
Household Saving Rate and Average NBP Interest Rate in Poland (2000-2022), with Pearson Correlation Coefficient

Year	Household Saving Rate (%)	Average NBP Interest Rate (annual %)	Pearson Correlation Coefficient	p-value
2000	10,5	18,25	0,44	0,035
2001	11,9	14,30		
2002	8,1	8,28		
2003	7,7	5,88		
2004	6,5	6,08		
2005	9,9	5,15		
2006	9,1	4,13		
2007	9,7	4,63		
2008	2,1	5,54		
2009	9	3,88		
2010	6,2	3,50		
2011	2,5	4,13		
2012	2,6	4,50		
2013	3,5	3,20		
2014	3,1	2,00		
2015	3,2	1,50		
2016	5,1	1,5		
2017	3,8	1,50		
2018	4,7	1,5		
2019	5,6	1,50		
2020	12,2	0,53		
2021	5,3	1,16		
2022	0,4	4,69		

Source: own elaboration based on Statistics Poland and Narodowy Bank Polski data.

Table 5 presents the relationship between the household saving rate and the average interest rate set by the National Bank of Poland from 2000 to 2022. The Pearson correlation coefficient is 0.44, with a p-value of 0.035, indicating a moderate positive and statistically significant relationship between these two variables.

This result is consistent with standard theoretical expectations, according to which higher interest rates correlate with an increase in household savings, as households have an incentive to postpone consumption and accumulate interest-bearing financial assets. For example, in the early 2000s, when interest rates exceeded 10%, the household savings rate also remained relatively high, peaking at 11.9% in 2001. Conversely, the lowest savings rate recorded in the data set for the period under review, namely 0.4% in 2022, coincided with the recovery of interest rates from near zero during the pandemic.

However, the relationship is not perfectly linear, and several periods demonstrate divergence between interest rates and saving behavior. For instance, in 2008, despite a moderate interest rate of 5.54%, the saving rate dropped sharply to 2.1%, likely reflecting economic uncertainty and deteriorating consumer confidence amid the global financial crisis. Similarly, the sharp increase in household saving in 2020 (12.2%) occurred during a historically low interest rate of 0.53%, highlighting the dominance of precautionary motives during the

COVID-19 pandemic, when households curtailed consumption due to lockdowns and uncertainty, rather than being driven by monetary incentives.

Thus, while interest rates remain an important determinant of saving behavior, their explanatory power may be conditional on broader macroeconomic and psychological factors, such as expectations, income security, and liquidity constraints.

5. Summary

This study analysed the relationship between household savings levels and key macroeconomic indicators in Poland between 2000 and 2022, contributing to the recent literature on the financial behaviour of Polish households. The analysis revealed a number of important findings that provide a better understanding of the factors influencing household savings decisions in the context of the Polish economy.

The household saving rate in Poland demonstrated considerable volatility throughout the observation period, ranging from a minimum of 0.4% in 2022 to a maximum of 12.2% in 2020, with an average of 6.2%. This variability reflects the sensitivity of household financial behavior to changing macroeconomic conditions and extraordinary circumstances, particularly during periods of economic uncertainty.

Empirical findings showed that neither GDP growth nor GDP per capita growth showed a statistically significant correlation with household savings. This indicates that aggregate economic indicators alone are insufficient to predict household savings behaviour in Poland, highlighting the importance of other factors beyond overall economic growth.

Furthermore, inflation, as measured by the price index, did not show a significant relationship with household savings rates. This finding challenges simple theoretical predictions about the relationship between inflation and savings, suggesting that Polish households' saving decisions are not primarily driven by changes in price levels or inflation expectations.

Key empirical findings include the fact that unemployment showed a moderate positive and statistically significant correlation with household savings. This result strongly supports the precautionary savings hypothesis, indicating that Polish households respond to labour market uncertainty by increasing their savings as a protective measure against potential income loss.

The average NBP interest rate also showed a positive and statistically significant correlation with the level of household savings. This result is consistent with traditional economic theory, according to which monetary policy decisions influence household savings behaviour through the interest rate channel, although this relationship is not perfectly linear and may be mitigated by other factors.

These results may be of particular practical significance in the context of monetary policy, as they indicate that interest rate policy influences household behaviour with regard to savings, although the effectiveness of such policy may depend on labour market conditions and general economic uncertainty. The significant relationship between unemployment and saving rates confirms the relevance of precautionary saving motives in the Polish context, highlighting the importance of employment security in household financial planning. This practical result highlights the importance of stable employment and social protection systems for maintaining the financial security of households in Poland, a factor that must be taken into account in the country's social policy.

The sharp decline in the savings rate in 2008 (2.1%), despite moderate economic performance, reflects the psychological impact of global financial uncertainty. In contrast, the unprecedented rise in 2020 (12.2%) during the COVID-19 pandemic demonstrates how extraordinary circumstances can disrupt normal economic relations, with households increasing savings both out of precaution and because of reduced consumption opportunities.

The research contributes to the literature on Polish household saving behavior by providing systematic empirical evidence on the relationships between saving rates and macroeconomic conditions. The findings suggest that Polish households exhibit rational responses to economic uncertainty, particularly regarding employment security, while being less sensitive to aggregate economic growth or inflation than might be theoretically expected.

References

1. Aizenman, J., Cavallo, E., Noy, I. (2015). Precautionary strategies and household saving. *Open Economies Review, Vol. 26, No. 5*, pp. 911-939. https://doi.org/10.1007/s11079-015-9351-2
2. Ambaw, D.T., Banerjee, R., Lushington, K., Lowies, B. (2025). Understanding the Effect of Financial Behaviour on Mental Health: Evidence From Australia. *Stress and Health, Vol. 41*, e70050. https://doi.org/10.1002/smi.70050
3. Ando, A., Modigliani, F. (1963). The "Life Cycle" Hypothesis of Saving: Aggregate Implications and Tests. *The American Economic Review*, *Vol. 53, No. 1*, pp. 55-84. http://www.jstor.org/stable/1817129
4. Balla, A. (2024). The four-day work week - an inevitable revolution or a passing fad? *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie*, *Vol. 207*, pp. 9-23. http://dx.doi.org/10.29119/1641-3466.2024.207.1
5. Barembruch, A., Bielawska, K. (2023). Employee Capital Plans performance through the lens of the participant - how to (better) measure and inform about the returns. *Ekonomia - Wroclaw Economic Review*, *Vol. 29*, pp. 9-18. https://doi.org/10.19195/2658-1310.29.1.1

6. Barr, N., Diamond, P. (2006). The Economics of Pensions. *Oxford Review of Economic Policy, Vol. 22, Iss. 1*, pp. 15-39. https://doi.org/10.1093/oxrep/grj002
7. Benito, A. (2006). Does job insecurity affect household consumption? *Oxford Economic Papers, Vol. 58, Iss. 1*, 157-181. https://doi.org/10.1093/oep/gpi043
8. Beverly, S.G., Sherraden, M. (1999). Institutional determinants of saving: Implications for low-income households and public policy. *Journal of Socio-Economics, Vol. 28*, *Iss. 4*, pp. 457-473. https://doi.org/10.1016/S1053-5357(99)00046-3
9. Bielawska, K., Kozłowski, A. (2024). A proposal for retirement risk measurement based on subjective assessment of income: an empirical study. *Social Indicators Research*, *Vol. 172,* pp. 1-28. https://doi.org/10.1007/s11205-023-03295-3
10. Bitkowska, A., Moczydłowska, J., Leszczewska, K., Karasiewicz, K., Sadkowska, J., Żelazko, B. (2022). Young consumers' perceptions of family firms and their purchase intentions - the Polish experience. *Sustainability*, *Vol. 14*, pp. 1-19. https://doi.org/10.3390/su142113879
11. Brounen, D., Koedijk, K.G., Pownall, R.A.J. (2016). Household financial planning and savings behavior. *Journal of International Money and Finance*, *Vol. 69*, pp. 95-107. https://doi.org/10.1016/j.jimonfin.2016.06.011
12. Carroll, C.D., Samwick, A.A. (1997). The nature of precautionary wealth. *Journal of Monetary Economics, Vol. 40, No. 1*, 41-71. https://doi.org/10.1016/S0304-3932(97)00039-9
13. Cronqvist, H., Siegel, S. (2015). The Origins of Savings Behavior. *Journal of Political Economy*, *Vol. 123, No. 1*, pp. 123-169. https://doi.org/10.1086/679284
14. Davidson, R., Mackinnon, J. (1983). Inflation and the Savings Rate. *Applied Economics, Vol. 15, Iss. 6*, pp. 731-743 https://doi.org/10.1080/00036848300000062
15. Deaton, A. (1991). Saving and liquidity constraints. *Econometrica, Vol. 59, No. 5*, pp. 1221-1248. https://doi.org/10.2307/2938366
16. Emara, N. (2025). Threshold effects of financial depth on domestic savings: Evidence from the EMEA region. *Economic Analysis and Policy*, *Vol. 86*, pp. 1987-2000. https://doi.org/10.1016/j.eap.2025.05.038
17. Friedman, M. (1957). *A theory of the consumption function.* Princeton University Press.
18. Gruber, J. (1997). The consumption smoothing benefits of unemployment insurance. *American Economic Review, Vol. 87, No. 1*, 192-205. https://www.jstor.org/stable/2950870
19. Heer, B., Süssmuth, B. (2009). The savings-inflation puzzle. *Applied Economics Letters*, *Vol. 16, Iss. 6*, pp. 615-617. https://doi.org/10.1080/13504850701206510
20. Jing, P., Zhao, S., Wang, M. (2025). From savings to investments: How retirement consumption expectations shape household risky financial asset allocation. *Pacific-Basin Finance Journal*, *Vol. 93*, 102828. https://doi.org/10.1016/j.pacfin.2025.102828

21. Juster, F.T., Wachtel, P. (1972). A Note on Inflation and the Saving Rate. *Brookings Papers on Economic Activity, No. 3*, pp. 765-778. Retrieved from: https://www.brookings.edu/articles/a-note-on-inflation-and-the-saving-rate/
22. Kędzierska-Szczepaniak, A. (2024). Legal changes and the development of the equity crowdfunding market in Poland. *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie*, *Vol. 192,* pp. 489-498. https://doi.org/10.29119/1641-3466.2024.192.30
23. Keynes, J.M. (1936). *The general theory of employment, interest and money.* Macmillan.
24. Korzeniowska, A.M., Ulman, P. (2023). Household saving motives and socio-demographic factors. *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, *Vol. 85, No. 4,* pp. 177-197. https://doi.org/10.14746/rpeis.2023.85.4.09
25. Kozera, A., Stanisławska, J., Głowicka-Wołoszyn, R. (2016). Financial Security of Polish Households. *Journal of Agribusiness and Rural Development*, *Vol. 41, No. 3,* pp. 319-328. https://doi.org/10.17306/JARD.2016.59
26. Krupa, D., Walczak, D., Chojnacka, E. (2013). Saving preferences of households in Poland. *Copernican Journal of Finance & Accounting*, *Vol. 1*, *No. 1*, pp. 111-122. https://doi.org/10.12775/CJFA.2012.008
27. Kulpaka, P. (2016). Structure of Households Financial Savings in Poland in the Years 2000–2014. *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia, Vol. 49*, *No. 4*, pp. 311-318. doi:http://dx.doi.org/10.17951/h.2015.49.4.311
28. Lee, S.R., Jung, E., Jin, S., Wang, Z.A., Brown, P., Polotsky, E. (2025). The association between subjective and objective financial knowledge: Path analysis to savings behavior by age. *Social Sciences & Humanities Open*, *Vol. 11*, 101232. https://doi.org/10.1016/j.ssaho.2024.101232
29. Majerowska, E., Jasik, H. (2024). Demand for electric cars in the context of sustainable development - a model approach for selected markets. *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie, Vol. 205,* pp. 275-295. http://dx.doi.org/10.29119/1641-3466.2024.205.17
30. *Narodowy Bank Polski. Historic NBP interest rates from 1998*. Retrieved from: https://nbp.pl/en/historic-interest-rates/
31. OECD (2021). *Pensions at a Glance: OECD and G20 Indicators*. Paris: OECD Publishing, https://doi.org/10.1787/ca401ebd-en
32. Olszewska, G. (2023). Household savings in Poland – size, structure, and main determinants. *Central European Review of Economics & Finance. Vol. 45, No. 4*, pp. 110-123. https://doi.org/10.24136/ceref.2023.026
33. Płoska, R., Malinowska, E., Szymańska-Brałkowska, M., Chmielewski, M. (2024). The importance of sustainable packaging features of food products in the process of consumers' purchasing decisions. *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie*, *Vol. 205*, pp. 493-513. http://dx.doi.org/10.29119/1641-3466.2024.205.30

34. *Statistics Poland. National accounts*. Retrieved from: https://stat.gov.pl/en/topics/national-accounts/
35. Stepanok, N. (2024). Work-Life Balance and the Individuals' Labour Supply. *Annales Universitatis Mariae Curie-Skłodowska, Sectio H Oeconomia, Vol. 58*, pp. 121-34. https://doi.org/10.17951/h.2024.58.5.121-134
36. Stephens Jr., M. (2004). Job loss expectations, realizations, and household consumption behavior. *Review of Economics and Statistics, Vol. 86, No. 1*, 253-269. https://doi.org/10.1162/003465304323023778
37. Szustak, G.M., Gradoń, W.S., Szewczyk, Ł.M. (2021). Household Financial Situation during the COVID-19 Pandemic with Particular Emphasis on Savings - An Evidence from Poland Compared to Other CEE States. *Risks, Vol. 166, No. 9*, pp. 1-14. https://doi.org/10.3390/risks9090166
38. *World Bank Open Data*. Retrieved from: https://data.worldbank.org/
39. Zawadzka, A., Grzywińska-Rąpca, M. (2021). Financial savings structure—Eurozone and Visegrad Group. *International Journal of Finance & Economics. Vol. 28, Iss. 1*, pp. 699-717. https://doi.org/10.1002/ijfe.2445