
The Influence of Inflation on the Economic Situation of Households in Poland

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Abstract:

Purpose: After several years of deflation, one should not be surprised by emerging consumer inflation. We are facing this situation in the Polish market from 2017 onwards. In 2022 it even intensified and changed into galloping inflation, i.e., a double-digit number expresses the price increase percentage. The general objective of the article is to present the main causes of inflation and its deepening consequences for society, as well as to indicate the direction of measures to be taken to curb inflation in Poland.

Design/Methodology/Approach: The study is based on primary and secondary sources of information. The secondary information source for this research was the data from Central Statistical Office GUS, Eurostat. The analysis included the years 2015-2022, which enabled capturing the inflation situation and changes in income, expenditure and consumption in Polish households. The source of primary information was the results of our own research. The level of nutritional needs satisfaction of households has been estimated based on econometric analysis methods. The evaluated elasticity factors constituted the factual basis for performing quality and quantity assessment of consumption structure.

Findings: The research results touched on the main causes and directions of measures to curb inflation in Poland. The findings of the presented study point to the fact that there is a significant relationship between the level of inflation and the consumption behaviour of households. The low level of income-poor households determines the level of consumption needs saturation. The decrease in the level of satisfying lower-order food needs in the analysed period is the result of an increase in the income elasticity of demand.

Practical Implications: The paper provides the results of research that help decision-makers and marketers to determine economic policy to curb inflation in Poland.

Originality / Value: The paper presents the original methodological approach for estimating the level of food needs saturation. The assessment of the saturation of food needs in Poland based on the consumption elasticity of demand coefficients constituted a continuation of research conducted by authors in the 90s of the past century. The conducted analysis of changes in food consumption of Polish households in the years 2015-2021 demonstrates the inconsistency with the results from the authors' previous years, where the opposite tendency was shown

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1. Introduction

From an economic standpoint, inflation, considered from a household perspective, signifies a decrease in the purchasing power of money. In the retail market, this implies that, with a constant income, the consumer is able to buy fewer goods or services. Many experts still believe that the current level of inflation is very high. Inflation, defined as an increase in the average price level, plays a significant role in household financial stability.

The inflation rate is one of the main measures of the stability of prices and services. In the last few years, it has risen above the acceptable level recognised by the National Bank of Poland (Narodowy Bank Polski), negatively impacting the Polish population's standard of living. On the one hand, consumption and consumer activity have significantly decreased. On the other hand, it is important to acknowledge also the measures implemented to support the economy, including the financial shield, loans for entrepreneurs, allowances and exemptions.

In a situation of ever-increasing inflation, the behaviour of individual households differs due to the presence of many factors influencing their decisions. The government's actions to date involving the anti-inflation shield, among other things, are slowing down the effects of inflation. Thus, households will likely be affected by an increase in this indicator in the future. One of the primary factors contributing to the continuous rise in inflation and its worsening consequences for society could be attributed to the divergent actions taken by the government and the central bank. The central bank tightens monetary policy, and the government loosens fiscal policy; thus, the dynamics of the inflation rate are not slowed down.

2. Research Objectives and Methodology

The article's main objective is to present the main causes of inflation and its deepening consequences for society, as well as to indicate the direction of measures to curb inflation in Poland. The study is based on primary and secondary sources of information. The secondary information source for this research was the data from Central Statistical Office GUS, Eurostat.

The analysis included the years 2015-2022, which enabled capturing the inflation situation and changes in income, expenditure and consumption in Polish households. The source of primary information was the results of my own research. The level of nutritional needs satisfaction of households has been estimated based on econometric analysis methods. Econometric methods are of quantitative character, making it possible to conduct analyses on a wide spectrum based on assessment indicators.

The indicators consist of parameters estimated based on different demand models as well as income elasticity factors determining the force of reaction of demand to the

change in consumers' income level. The econometric model the most frequently used for estimating the parameters of food consumption function is the log-hyperbolic model in which the estimated A parameter sets the asymptote, constituting in economic interpretation the level of consumption saturation provided that the income is growing without any limits.

Pioneering significance has works by Zielińska (1978). These works were based on empirical analysis of the workers' budgets. The saturation level was determined for ten nutrition groups, and comparative analysis was performed for changes in 1966-1976. As far as the food market is concerned, the regularities formulated by Keynes and Engel, referring to the specific expenditure trends consisting of a change in the general relations in consumption expenditure and savings, as well as the change in the structure of expenditure, have been confirmed many times.

Studies verifying the above-mentioned Engel's law are of interest to many scientists, and this tendency has been reflected in numerous Polish and foreign scientific publications (Chai, Rohde and Silber, 2015; Clements and Si, 2018; Kaus, 2013; Kehlbacher, 2012; Kwasek, 2015; Neagu and Teodoru, 2017; Szwacka-Salmonowicz, 2003; Szwacka-Mokrzycka, 2018).

The presented methodology constituted the basis for further studies based on household budget data. The evaluated elasticity factors constituted a factual basis for performing quality and quantity assessment of consumption structure expressed in a qualitative and quantitative way as well as for assessing the pace of the consumption of different nutrient groups approaching the saturation level.

3. Level and Causes of inflation in Poland

There are different methods of measuring inflation: In Poland, the consumer price index (CPI) and the so-called core inflation are most often used. The CPI (consumer price index) is an indicator of the change in the price of consumer goods and services, which is also the most popular inflation and deflation indicator, calculated based on a weighted average of the prices of goods and services purchased by the average household.

The National Bank of Poland calculates core inflation based on data from the Central Statistical Office (GUS), and the purpose of such a measurement is to show how much of the price increase is due to factors related to the domestic economy, such for example an increase in demand. For this purpose, the prices of goods and services whose changes do not depend on the situation in the economy, but are often caused by external factors, are not considered in the assessment. Examples include food and energy prices.

Measured in this way, core inflation reflects the price movements influenced by economic policies - in contrast to events such as the current war in Ukraine or the

disruption of gas supply by Gazprom in the second half of 2022. Over 2018-2022, we witnessed a persistent increase in the core inflation rate in Poland, excluding the first wave of the pandemic, when a partial economic lockdown occurred.

When we follow the inflation rate in the mentioned above period, we observed increase, from 1.6 in 2018 to 14.4% in 2022. In July 2023, inflation in Poland was 10.8% (changes to the corresponding month of the previous year) (<https://nbp.pl/en/statistic-and-financial-reporting/core-inflation/>). Referring to the data regarding inflation indicators, it can be stated that in February 2023, inflation rose to 18.4% and in April to 14.7%, compared to the corresponding period in 2022.

Starting from April 2023, inflation shows a slight downward trend, resulting 30% drop in the price of oil on the global market. In July 2023, inflation in Poland was 10.8% (changes to the corresponding month of the previous year). Table 1 shows the Consumer Price Index data from 2015 to 2022, and Table 2 shows the data for 2023 by month.

Table 1. Consumer Price Index in Poland 2015-2022

Years	Consumer Price Index (annual average) previous year=100
2015	99.1
2016	99.4
2017	102.0
2018	101.6
2019	102.3
2020	103.4
2021	105.1
2022	114.4

Source: National Bank of Poland calculations based on CSO data. 2023a.

Table 2. Consumer Price Index in Poland in 2023 by month

Month	Consumer Price Index (changes to the corresponding month of the previous year in %)
02-2023	18.4
03-2023	16.1
04-2023	14.7
05-2023	13.0
06-2023	11.5
07-2023	10.8

Source: National Bank of Poland calculations based on CSO data. 2023b.

The causes of inflation can vary. The most significant of these is government monetary policy, but the rate of inflation can also depend on economic factors. Among the factors that affect the inflation rate are in particular:

- an increase in the money supply by the central bank - in Poland, the right to issue money is held by the National Bank of Poland; monetary inflation occurs when there is too much money in circulation that is not covered by the goods and services available on the market;
- an increase in demand - when producers are unable to adjust their production structure to consumer demand for specific goods, this is referred to as structural inflation;
- an unbalanced state budget - an inappropriate monetary policy of spending more than can be covered by budget revenues;
- increase in the cost of production, labour or taxation - inflation can be caused by the supply side; the cause of cost inflation is a significant increase in the cost of production, labour or taxation, resulting in the need to increase prices (Redzik, 2020).

An essential feature of price inflation that has emerged in 2021 is its mixed (supply-demand) nature. This is reflected in the persistence of inflation at high levels, both due to rising producer costs and excessive consumer demand. The costs of producing material goods and services are rising for internal and external reasons. Producers, suppliers and sellers transfer these costs through pricing mechanisms to other producers, service providers and consumers.

According to G. Kolodko, to counteract inflation, it is necessary to maximise the efficiency gains in demand and the increase in voluntary savings (Kolodko, 2021). The effects of inflation are usually negative for the economy and for households. A general increase in the price of goods and services leads to a decrease in the purchasing power of money, which means that less money can be bought for the same amount of money.

Consequently, people on low incomes or pensioners are particularly vulnerable to the effects of inflation because their budgets are limited. Researchers in many countries are addressing the topic of the impact of inflation on households. A number of interesting studies depicting the situation of households in different countries in the face of inflation have been published recently (Kaplan and Schulhofer-Wohl, 2017; Artuc *et al.*, 2022; Bosso *et al.*, 2022; Cordoso *et al.*, 2022; Hoffman *et al.*, 2022; Weber *et al.*, 2022; Weber *et al.*, 2023).

4. Factors Influencing the Reduction of Inflation in Poland

There are two crucial factors influencing the reduction of inflation, which are depended on the actions undertaken by the National Bank of Poland. It can be replaced by controlling consumer demand and stimulating consumers to save. Controlling consumer demand (influencing its reduction) - by raising interest rates slightly – pursuing such a policy, on the one hand, reduces consumer demand and, on the other hand, hampers investment.

In this regard, the policy of both the bank and the government in raising interest rates has been very cautious. Raising interest rates further (in 2023) by the central bank will not reduce inflation significantly. The main beneficiaries of this will be commercial banks, which will raise lending rates.

Consequently, the rise in interest rates will lead to an increase in financing costs for companies, which in turn is likely to impact retail price increases. This does not mean that interest rates should not be raised to slow down inflation. Interest rates should already have been raised - admittedly, this would have slowed economic growth and could have increased unemployment or reduced investment dynamics. However, these are unavoidable costs of fighting inflation.

Such rates, due to their attractiveness to savers, would be conducive to pulling excess, pro-inflationary demand from the market, but they would also significantly increase the cost of consumer loans, including housing loans. For entrepreneurs, on the other hand, they would result in an increase in the cost of working capital and investment loans, leading many companies to production cuts or insolvencies and bankruptcies.

The second factor influencing the reduction of inflation in Poland is connected with stimulating consumers to save – mechanisms need to be created to encourage people to save. Considering expert opinions on the effectiveness of interest rates in stimulating consumer savings, it is widely believed that raising interest rates will not significantly increase the propensity to save. To have such an effect, interest rates would have to be above the inflation rate, i.e. above 14%. If the trend of increased market demand and consumers' associated release of money for increased purchases continues, inflation will be even higher.

5. Inflation Scenarios for Poland

The trend of persistent increases in retail prices continues in the upcoming months of 2023. Inflation shields (which reduce fuel taxes) are short-lived and do not combat inflation but contain it. The current anti-inflation shield involves reducing the VAT rate on food, motor fuels, natural gas, electricity and heat fertilisers, and certain agricultural products. From a business perspective, introducing a reduced VAT rate on gas and energy in 2022 did not extend to companies that do not offer a comprehensive service.

The Anti-Inflation Shield 2.0 does not encompass specific shielding solutions for businesses, which can affect retail price increases. Thus, even the reduction of VAT rates to zero in the case of food from 2022 onwards has not had a satisfactory impact on consumer price perceptions.

Concerns presented by experts indicate that at the time of the withdrawal of the anti-inflation shields, inflation levels could even reach a level of 22-24%. In addition, an

increase in the prices of consumer goods is also a factor stimulating price increases in services.

Thus, external factors partially influence price increases observed in Poland. Forecasts in this respect are concerning, as high inflation in Poland, mainly related to the increase in energy and food prices, affects the economic slowdown. Attention should be drawn to rising food prices on the market; however, inflation is also caused by relatively low-interest rates, promoting easy credit access.

In addition, the country's increased consumption is also influenced by overextended social transfers. As mentioned previously, in February 2023 inflation rose to 18.4% and in April to 14.7%, compared to the corresponding period in 2022. Starting from April 2023, inflation shows a slight downward trend reaching the level of 10.8% in July 2023.

The slight decrease in inflation in last months did not affect the evident reduction in the growth dynamics of consumer goods prices in Poland. Admittedly, from February 2023, the dynamics of food prices declined slightly, but this did not decrease core inflation, which is still at a high level in the first half of 2023. When we follow the data regarding inflation indicators in 2023 in European Union, it can be noticed that inflation is at 6.1% in the eurozone. Poland and the Czech Republic are in second position, and Hungary rank first, with an inflation rate of 22% (www.dw.com.access: 15.07.2023).

Referring to experts' forecasts regarding the development of inflation, it can be concluded that, according to Orłowski (2023), inflation in Poland will increase up to the level of 20% by the end of 2023 (based on an analysis of prices in individual months of 2023, compared to prices in those months in 2022) and will stabilise at a double-digit level for many years (Chlon-Dominczak and Orłowski, 2023).

According to experts inflation in Poland is so high due to a combination of various circumstances and errors (a fairly lax fiscal policy and fairly high spending). To prevent inflation from rising, it is necessary to limit consumption growth. The consumption impulse drives inflation. Poland is in a difficult situation caused by mistakes in fiscal and monetary policy years (Chlon-Dominczak and Orłowski, 2023).

In the first quarter of 2023, there was a decrease in Gross Domestic Product compared to the previous year by 0.3% but in the second quarter of 2023, compared to the same period last year, Gross Domestic Product (GDP) decreased by 0.5% (according to a preliminary estimate by the Statistics Poland CSO.) In previous years, we observed positive GDP growth dynamics, which was a confirmation of the good condition of the Polish economy. Data showing volume growth rate of GDP in 2019-2022 in Poland and contribution to GDP is provided in Table 3.

Table 3. Volume growth rate of GDP in 2019-2022 in Poland and contribution to GDP (%) (constant prices of the previous year)

Specification	2019	2020	2021	2022
Gross domestic product GDP	4.4	-2,0	6.8	4.9
Domestic uses	3.2	-2.6	7.8	5.3
Final consumption expenditure in which:	3.1	-1.1	4.4	1.6
Consumption expenditure of the households sector	2,0	-2,0	3.5	1.7
Gross fixed capital formation	1.2	-0.4	0.4	0.8
Gross value added	3.8	-1.8	5.8	4,0

Source: Gross Domestic Product in 2022. Central Statistical Office (2023).

Such a significant decrease in GDP in 2023 in relation to previous years largely coincides with the European Commission's forecast for 2023. The forecast mentioned above predicts 0.7% of GDP for Poland in 2023, which will be below the result for the entire European Union, i.e. 1%. The EU also forecasts that inflation in Poland will amount to 11.7% in 2023 and will remain at 6% in 2024 (www.dw.com.access: 15.05.2023).

High inflation in the first quarter of 2023 and a decrease in real wages significantly weakened the Polish economy. This situation had a significant impact on the decline in consumption and, thus, the collapse of domestic demand. Hence, there is a high level of expectations regarding improving the economic situation in the second half of 2023 regarding improving consumers' purchasing power and, above all, the stimulation of public investment thanks to the National Reconstruction Plan.

6. Research Results and Discussion

6.1 Changes in Households Income and Expenditure in 2015-2022

Standard of living of inhabitants ups to their purchasing power. In 2015-2022 there was still a relatively large diversity in average monthly income and expenditure between socio-economic groups of households. The highest average monthly available income and expenditure per capita in households of the self-employed outside farming.

The lowest average monthly available income per capita had households of pensioners and farmers. In 2022, 41.3% of households had an average monthly available income per capita below PLN 2000 (50.9% in 2021), 47,5% of households had an income between PLN 2000 and PLN 4000 per capita (41.4% in 2021), 8.1% of households had an income from PLN 4000 to PLN 6000 per capita (5.5% in 2021), and PLN 6000 or more per capita had 3.1% of households (2.2% in 2021).

In 2022, the percentage of households with an average monthly income of at least PLN 2000 per capita amounted to 58.7% (in 2021 – 49.1%) (The situation of households in 2022....., Central Statistical Office 2023).

For a better understanding, it is worth stating that 1 EUR equals 4.5 PLN. When we follow the share of food expenditures in households' overall spending in 2015-2022, the following changes are observed: decreasing in food expenditures in 2015 compared to previous years, stabilisation or slight increase in 2020-2022 but expenditure on food and non-alcoholic beverages, similarly to the earlier years, had the highest share in the structure of expenditure for households in total – 26.7% in 2022 (Table 4). In individual socio-economic groups, it ranged from 23.5% in households of self-employed outside farming to 32.1% in households of farmers.

Table 4. Average monthly income and expenditure per capita in households and the share of expenditure on food and non-alcoholic beverages in Poland for the years 2015-2022 in PLN

Years	Available income in PLN	Expenditure in PLN	The share of expenditure in available income (%)	The share of expenditure on food and non-alcoholic beverages in available income (%)
2015	1386	1091	78.7	24
2016	1475	1132	76.7	24.2
2017	1598	1176	73.6	24.3
2018	1693	1187	70.1	24.8
2019	1819	1252	68.8	25.1
2020	1919	1210	63.0	27.7
2021	2020	1281	63.4	26.5
2022	2250	1475	65.6	26.7

Source: Authors' own study based on *The situation of households in 2022 on the basis of results of the Household Budget Survey*. Central Statistical Office (2023).

When we follow the share of expenditures for food in overall expenditures of households e.g., in 2010-2019 in the European Union, it can be noticed that the group of countries with the lowest share of food expenditures in total expenditures are Austria, Ireland, United Kingdom, Netherlands, Germany, Sweden, Denmark, Luxembourg. Relatively high food expenditures are characterised by developing countries: Romania, Lithuania, Latvia, and Bulgaria.

The countries with a medium share of expenditures on food to total expenditures include Czech Republic, Hungary, Estonia, Slovakia and Poland (Szwacka-Mokrzycka, Rivza, Lemanowicz, Uljanova, 2021). Between 2009 and 2019, the share of total household expenditure on food fell or remained stable in most EU Member States.

The largest decrease was recorded in Lithuania (from 25.4% in 2009 to 20.2% in 2019, followed by Malta (-3.5 pp) and Poland (-3.0 pp). In contrast, household expenditure on food increased in seven EU Member States. The largest increase was recorded in Czechia (from 14.2% in 2009 to 15.5% in 2019, +1.3 pp), followed by Slovakia (+1.1 pp), Hungary (+0.5 pp) and the Netherlands (+0.4 pp). In 2019, households in Romania spent around a fourth of total household consumption expenditure on food and non-alcoholic beverages (26.0%), followed by households in Lithuania (20.2%) and Estonia (19.3%). (Eurostat, 2020).

In 2021, according the data from Eurostat, the highest shares for expenditure on food and non-alcoholic beverages were found in Romania (25.2 %), Lithuania (20.4 %), Bulgaria (20.1 %) and Estonia (19.9 %), while the lowest shares were observed in Ireland (8.3 %), Luxembourg (9.0 %) and Austria (10.9 %) (Eurostat, 2023). As far as Poland is concerned, we observe large differences between the data of the Central Statistical Office in Poland and Eurostat.

6.2 The Level of Food Needs Satisfaction in 2015-2021

Food and non-alcoholic beverages still have a high position in the structure of Polish households' budgets. Therefore, in this part of the study, the level of satisfaction of food needs will be analysed. As far as the tools for measuring the pace of development of food consumption and the changes in its structure are concerned, econometric analysis methods prevail. They are quantitative, and they make it possible to conduct analyses on a wide spectrum based on assessment indicators.

The presented methodology constituted the basis for further studies based on household budget data (Szwacka-Salmonowicz, 2003; Zielińska, 1978; Kwasek, 2012, 2015; Deaton, 1998). The evaluated elasticity factors constituted the factual basis for performing quality and quantity assessment of consumption structure expressed in a qualitative and quantitative way and for assessing the pace of the consumption of different nutrient groups approaching the saturation level.

Moreover, they were used for determining the hierarchy of nutritional needs in different household types in Poland (Szwacka-Mokrzycka, 2017, 2018). The source of information for conducting this research was the data from household budgets by Central Statistical Office GUS. The analysis included the years 2015-2021, which made it possible to capture the dynamics of changes in the structure of nutritional needs of Polish households (Table 5).

Currently, Central Statistical Office GUS makes available information on the diversity of income, expenses and consumption according to quintile groups exclusively for the total of households in Poland, employees and pensioners. The performed analysis concerning the shaping of nutritional needs of Polish households makes it possible to select three basic change directions. This concerns the level of satisfying nutritional products.

Table 5. Food consumption elasticity factors for households in total in 2015-2021

Food products	2015	2019	2020	2021
Bread and cereals	0.06	0.04	0.14	0.16
Cakes and bakery products	0.43	0.51	0.08	0.22
Meat (in total)	0.15	0.05	0.15	0.17
Fish (in total)	0.50	0.91	0.60	0.54
Milk	0.05	0.03	0.07	0.08
Yoghurts and dairy products	0.23	0.73	0.42	0.38
Cheese (in total)	0.43	0.67	0.39	0.31
Oils and other vegetable fats	0.12	0.22	0.14	0.17
Animal fats	0.46	0.84	0.41	0.37
Fruit (in total)	0.54	0.43	0.52	0.48
Vegetables (in total)	0.16	0.07	0.27	0.04
Confectionery	0.30	0.67	0.38	0.38
Juicess (in total)	0.53	0.61	0.46	0.34

Source: Own elaboration based on Central Statistical Office 2015, 2020, 2021.

When we follow the consumption elasticity factors in 2015 – 2021, it is observed slowly decrease of elasticity factors for basic products till 2019. In 2020 and 2021, we observe a dramatical increase of elasticity factors, the group corresponding to satisfying lower-order needs (mainly bread and cereals, meat in total, milk) by about three to four times. In the analysed period, the level of coefficients increased a little for oils and other vegetable fats (from 0.12 to 0.17).

When we follow elasticity factors estimated for basic products (factors above 0.4 – 0.6), we observe their increase in the analysed period (fish in total from 0.50 to 0.54), yoghurts and dairy products (from 0.23 to 0.38). At the same time, it is noticed a dramatic decrease in elasticity factors for cakes and bakery products by about two times in 2021 compared to 2015. The third direction shows the stabilisation of elasticity factors in the analysed period (fruit from 0.54 to 0.48). The scope of increase is diversified by type of household. Relatively most significant increase the factors is observed in households of pensioners. It is the effect of price inflation.

The trend of decreasing income elasticity coefficients until 2015 and their high increase in subsequent years show the pauperization of Polish households in conditions of high inflation. At the same time, a relative increase in the flexibility of consumption of food products indicates a lowering of the level of satisfaction of lower-order food needs and a barrier of demand for products that are relatively

expensive and thus inaccessible to poorer households. At the same time, this shows the inhibition of substitution processes within food products and in relation to other consumer goods.

7. Conclusions

The situation with high, double-digit number inflation can potentially cause socio-economic tensions, weakening incentive systems and inhibiting economic growth. There should be taken the following measures to curb inflation in Poland. From a long perspective, the energy sector should be restructured (a long-term shift to renewable sources should be stimulated), specific inflationary expenditures from the state budget should be reduced, and certain social transfers should be slowed down or discontinued (limited to the group of the poorest households).

Investment should be stimulated, which could be achieved by mobilising funds from the National Reconstruction Programme. The analysis of changes in the nutritional needs of Polish households in the years 2015-2022 demonstrates a relatively large diversity in average monthly income and expenditure between socio-economic groups of households group corresponding to satisfying lower-order needs, showing the effect of price inflation.

The decrease in the level of satisfying lower-order food needs in the analysed period results from increased income elasticity of demand. This is inconsistent with the results from the author's previous years, where the opposite tendency was shown. Thus, persistently high inflation has a decisive impact on lowering the standard of living of households in Poland.

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