

The elasticity of demand and its role in consumer behaviour determination: A comparative analysis of Europe and the USA

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Abstract. Determination of consumer behaviour is relevant for ensuring the effective functioning of both individual companies and the country. Given this, additional research on instruments that describe it, such as demand elasticity, remains important. The study aimed to analyse the elasticity of demand in Europe and the United States of America. As part of the study, a statistical assessment of the price indicators for certain types of products, namely oil (from 1989 to 2023), milk (from 2001 to 2022) and chicken meat (from 1991 to 2022), as well as changes in the level of consumption of these products, was conducted. Based on the calculated and analysed demand elasticity indicators, the study concluded that price is not the only and main factor in changing demand for products. The most striking instance was the situation with chicken, the price and demand for which increased significantly, primarily due to the transition of the population to a more responsible and healthy diet. At the same time, the elasticity of oil demand for the United States of America was stable and close to zero, while for European countries it was negative, due to their significant dependence on energy imports, including oil, which contributes to a faster transition to alternative energy sources. In the case of milk, the elasticity varied depending on where the assessment was conducted: in the United States or Europe. The results will allow for more effective policymaking in this area and create new opportunities for the development of local companies

Keywords: market competition; market structure; oil; essential commodities; price growth

Introduction

In a modern highly competitive environment, the study of variables such as demand elasticity is relevant for the formation of long-term strategies for companies and countries. This metric shows how sensitive consumers are to changes in the price of goods or services. This helps companies and

economists predict the market's reaction to price changes. If the demand for a product is elastic (a price change significantly affects demand), then a price reduction can increase sales, while a price increase can decrease sales. Determination of the elasticity of demand helps companies find

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optimal prices that maximise profits, while governments can use this indicator to assess the impact of taxes on different goods and plan support measures for social groups, accounting for the different responses to price changes for different groups of goods (Mayis *et al.*, 2021). Therefore, a comprehensive assessment of this indicator, including in the context of different countries, is important.

In the context of current research on the elasticity of demand, considerable attention was devoted to the study of long-term relationships and trends in consumer behaviour, as this allows companies to more effectively formulate their long-term sales strategies for the relevant products. As such, J.M. Álvarez *et al.* (2020) studied the relationships between cigarette consumption, price and economic cycles with a focus on Spain. The study showed that cigarette consumption responds asymmetrically to economic changes. In times of economic growth, a 10% increase in GDP leads to a 4.05% increase in cigarette consumption, while a 10% decrease in GDP during a recession leads to a sharp 58.16% decrease in consumption. These results suggest that economic recessions significantly reduce cigarette consumption and that higher cigarette prices are also effective in reducing smoking. Z. Csereklyei (2020), in turn, studied the short- and long-term price and income elasticities of residential and industrial electricity demand in the European Union from 1996 to 2016. The results of the study show that the long-term price elasticity of residential electricity consumption is inelastic, and the short-term elasticity for both sectors is substantially inelastic. The study also shows that population density, temperature and policy measures affect electricity consumption in different sectors. The study examined consumer demand for organic milk in Sweden in the period from 2011 to 2017 by H. Lindström (2022). The results show that the demand for organic milk in the branded segments is more price elastic than for conventional milk, but this is not the case for private labels. Demand for private label products, both organic and conventional, is more elastic than for branded products, due to strong consumer preferences for traditional dairy brands in Sweden. The study shows that despite small organic price premiums, Swedish consumers remain sensitive to the price of organic milk, especially for private label products, suggesting that lowering price premiums could expand organic milk sales.

Another relevant component is a general assessment of consumer behaviour in response to changes in the price of goods, as it is necessary to assess the specifics of human behaviour to define how economic development trends will be shaped in the future. N. Ovsianikova (2020), in turn, studied the determinants of consumer behaviour, in the context of analysing fuel demand. The author highlighted the peculiarities of demand formation for such products and assessed the existence of cross-elasticity. M. Bryukhovych (2022) described how consumers can respond to changes in income and how this affects their consumption behaviour from the perspective of economic theory. T.V. Chernychko *et al.* (2023) studied consumer behaviour in the food market, including in terms of price. The need to

address consumer behaviour peculiarities to ensure effective long-term enterprise development was also highlighted. The above studies estimated the elasticity of demand but did not compare trends across countries, which is also important for assessing the characteristic differences in consumption between regions.

The study aimed to analyse the differences in the price elasticity of demand between European countries and the United States of America. The objectives of the study were to analyse the price elasticity of selected commodities (milk, oil and chicken meat), and to investigate the main reasons for regional differences between countries and assessing the existing long-term trends in these indicators.

Materials and Methods

To estimate the elasticity of demand in the United States of America and European countries, statistical data were analysed. For this purpose, products that can be used most effectively for comparison were selected. Thus, the following was chosen: milk, oil and chicken meat. For greater accuracy, the change in demand was calculated per capita, since with an increase in population, the total demand will increase, while the total need for the product per person may decrease). The valuation with changes in demand was based on the nominal price: an alternative is to use real price changes, i.e. inflation-adjusted valuation. Both approaches can be used, but the first one accounts for the reaction of consumers to the price of goods in absolute terms, while the other one addresses the price of other goods in comparison.

Statistical methods of analysis, including correlation analysis, were used to assess the relationship between changes in the level of prices and demand for products, as well as the standard deviation of the elasticity level. This indicator was calculated for different years (one year and, for greater consistency, three years), and a high level of this indicator would indicate a significant change in the elasticity of demand over time, while a low level would indicate a low level of change in demand. Thus, the price elasticity of demand in the study was estimated both for current period (for 1 and 3 years) and for the entire period (for milk – from 2001 to 2022, for oil – from 1989 to 2022, and for chicken – from 1991 to 2022).

Large amounts of data on the dynamics of demand for products and changes in their nominal value were used in the analysis. Milk prices in the United States of America were analysed based on data from the US Inflation Calculator (2024), and information on per capita dairy consumption in the United States was based on information from Statista (2023). Data on milk consumption in European countries were derived from Destatis (2024), and average milk prices for farmers in European countries were analysed based on CLAL data (EU-28 and EU-27..., 2024). Information on changes in oil consumption in individual countries and regions, in the United States and Europe, was taken from Our World in Data (2022a; 2022b; 2024) resource, and data on the Brent price was taken from the Investing (2024). The change in the price of chicken meat was

estimated based on information from the Federal Reserve Bank (2024). To evaluate these data, statistical analysis methods were used, in particular, regression analysis and correlation methods, which made it possible to conclude on the elasticity of demand for major types of goods in the United States and European countries. This data set was evaluated using statistical data analysis methods, which was used to draw further conclusions on the trends in demand elasticity in the US and Europe, and the similarities and differences between analysed trends.

Results

The elasticity of demand is an indicator that reflects the degree to which demand for a product or service is sensitive to changes in various factors, such as price, consumer income, or prices of related products. The most used term is the price elasticity of demand, which measures how much the quantity of a good purchased will change when its price changes (Vargas-Lopez *et al.*, 2022). If demand is elastic, then a small change in price leads to a significant change in demand. For instance, if the price of a product decreases by 10% and its sales increase by 20%, the demand for this product is considered elastic. In the case of inelastic demand, even significant price changes have little effect on the volume of demand. For instance, necessities such as bread or medicines usually have inelastic demand. Demand elasticity is significant for companies and government agencies as it defines how changes in prices or income can affect consumer behaviour and sales, which in turn helps to inform decisions on pricing, taxation, and marketing strategies (Bajzik *et al.*, 2020). The elasticity of demand can be represented graphically as shown in Figure 1.

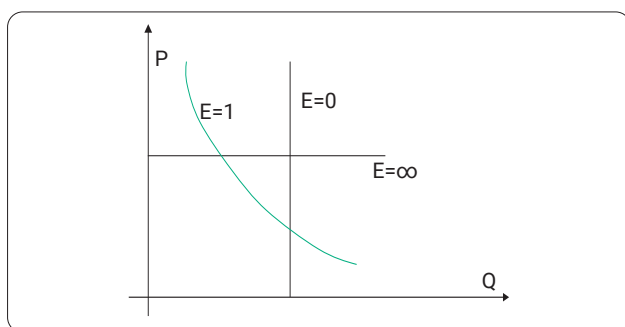


Figure 1. Graphical representation of the concept of demand elasticity

Note: P – price; Q – quantity; E – elasticity

Source: compiled by the author

As can be seen from Figure 1, the elasticity of demand can vary depending on how the demand level changes with price. Accordingly, the location of the demand elasticity curve changes, which may have a different type of slope, but be straight (vertical/horizontal). The horizontal curve indicates that demand is infinitely large (perfectly elastic). This means that even a slight price increase will lead to consumers stopping buying this product altogether.

Absolute elasticity may be characteristic of goods with many substitutes, although in practice such cases are not common (Yadav *et al.*, 2021). In turn, the vertical line indicates that demand is completely inelastic: these are goods for which demand does not change at all, regardless of price changes. Even if their price increases significantly, consumers will still buy them in the same amount. The demand curve for such goods is a vertical line. This is typical for life-saving goods such as medicines or basic foodstuffs that cannot be abandoned despite the price (Andruszkiewicz *et al.*, 2020). The figure also shows the line at $E = 1$, when the elasticity is unity, i.e., when the price increases by 1%, the demand for it will decrease by 1%. If $E > 1$, demand is considered elastic, and if $E < 1$, it is inelastic (Acuna-Agost *et al.*, 2023).

Demand elasticity is significant in the definition of consumer behaviour in both Europe and the US, but its impact is shaped by the different economic, cultural and political conditions in each region (Petricek *et al.*, 2020). The price elasticity of demand measures the extent to which the quantity of a good in demand responds to changes in its price, and is influenced by factors such as consumer preferences, income levels and market structure. In Europe, the elasticity of demand is more sensitive in sectors that are heavily regulated or influenced by social welfare policies. European countries often have more extensive social and consumer protection systems that can reduce the immediate impact of price changes on basic goods such as food and healthcare (Jalilova, 2024). In contrast, discretionary goods such as luxury goods tend to exhibit higher elasticities, as consumers in Europe can significantly reduce consumption when prices rise due to higher taxes or environmental regulations. In addition, European consumers may be more sensitive to environmental and ethical factors, which can affect the elasticity of demand for products that are perceived to be less sustainable (Komilova *et al.*, 2019). At the same time, in the United States, consumer behaviour is shaped by a more market-based economy, and elasticities tend to reflect the stronger role of competition and lower levels of government intervention in certain sectors (Adebayo & Alola, 2023). For instance, the demand for healthcare in the United States is less elastic due to the structure of the insurance system and the need for this service despite its high costs. However, consumer goods and services in more competitive markets, such as technology and entertainment, show higher elasticity. Consumers in the US, who tend to have more disposable income than many European countries, may exhibit different responses to price changes depending on the type of product and the availability of substitutes.

In addition, cultural differences between Europe and the US also affect how elasticity shapes consumer behaviour. Europeans may prioritise savings and long-term stability, while Americans may be more consumption-oriented, making the elasticity of demand in the US more closely related to short-term economic fluctuations and marketing

strategies (Kovalchuk, 2024). In both regions, elasticity helps businesses and policymakers predict how changes in pricing, taxation, or economic conditions will affect consumer spending, although regional economic structures and cultural attitudes lead to different results. The study

estimated the elasticity of some major products, namely milk, oil and chicken, for the United States of America and European countries. Firstly, it is worth analysing the elasticity of milk. Table 1 demonstrates price changes for these products in Europe and the US, as well as consumption.

Table 1. The elasticity of demand for milk in the United States of America and Europe in the period from 2001 to 2022

Year	USA				Countries of Europe			
	Price change	Changing consumption patterns	Elasticity	Average elasticity for 3 years	Price change	Changes in consumption	Elasticity	Average elasticity for 3 years
2001	3.6%	-2.0%	-0.57	x	6.2%	0.8%	0.13	x
2002	-4.2%	-0.5%	0.13	x	-4.5%	-0.1%	0.03	x
2003	0%	-1.6%	0	5.74	-12.2%	0.5%	-0.041	-0.1
2004	14.5%	-1.6%	-0.11	-0.39	2.4%	-0.1%	-0.03	-0.02
2005	0.9%	0%	0	-0.21	0.5%	1.3%	2.489	-0.17
2006	-3.4%	0%	0	-0.14	-1.3%	-0.6%	0.458	0.4
2007	13.6%	-1.1%	-0.08	-0.1	12.5%	0.7%	0.053	0.12
2008	8.6%	-1.1%	-0.13	-0.12	10.5%	1.6%	0.148	0.08
2009	-18.2%	0%	0	-2.24	-23.8%	-0.7%	0.028	-0.28
2010	4.8%	-2.2%	-0.46	0.47	15%	2.3%	0.155	-0.97
2011	9.5%	-2.3%	-0.24	0.73	12.9%	2%	0.153	-3.29
2012	-2.2%	-2.3%	1.03	-0.58	-3.5%	0.6%	-0.168	0.21
2013	-0.9%	-3%	3.44	-1.25	10.5%	0.5%	0.049	0.16
2014	6.6%	-3.7%	-0.55	-2.69	-0.5%	4.6%	-9.511	0.95
2015	-7.3%	-1.9%	0.26	4.22	-18%	2.7%	-0.15	-0.77
2016	-6.4%	-1.3%	0.2	0.89	-5.7%	1.2%	-0.202	-0.34
2017	0.9%	-3.3%	-3.49	0.5	23%	1.5%	0.064	-1.07
2018	-10.2%	-2%	0.2	0.41	-2.5%	0.9%	-0.37	0.28
2019	4.8%	-2.8%	-0.57	1.58	1.4%	0.6%	0.4	0.15
2020	9.2%	0%	0	-1.74	-1.8%	1.6%	-0.884	-1.03
2021	6.9%	-5%	-0.72	-0.37	7.8%	-0.2%	-0.025	0.27
2022	15.2%	-3%	-0.2	-0.26	36.4%	0.1%	0.002	0.04
Medium	1.86%	-1.94%	-1.04	x	2.3%	1%	0.453	x

Source: compiled by the author based on data from the Statista (2023), US Inflation Calculator (2024), Destatis (2024), and CLAL (EU-28 and EU-27..., 2024)

Thus, as shown in Table 1, the average price of milk in the United States of America has gradually increased over time: the average growth rate was 1.86%, while the decline in consumption was -1.94%. This suggests that Americans have been consuming less milk over time, which may also be due to the price increase/decrease factor. At the same time, the standard deviation of the elasticity is quite high, at 1.13 – in other words, although on average it is -1.04 (i.e., the demand for milk decreases as much as the price increases), the values vary over the years. At the same time, the elasticity, which shows the trend over three years, shows an even higher standard deviation of 1.95. The correlation between demand and price is also low, at -0.3. Therefore, changes in demand for milk in the US are only marginally related to changes in price.

The analysis of the data from the table on price and consumption changes in the US and European countries was used to highlight certain patterns and trends in the price elasticity of consumption during 2001-2022. In the United States, the elasticity of consumption is negative in most cases, meaning that there is an inverse relationship between price changes and consumption. For instance, a significant price increase of 14.5% in 2004 resulted in a 1.6% decrease in consumption, with an elasticity of -0.11. A similar trend can be observed in other years, where price increases often lead to a drop in consumption, although there are exceptions when price changes do not affect consumption (for example, in 2003, when the price remained unchanged, but consumption fell by 1.6%). The average elasticity over three years shows that in the US, this

indicator fluctuated between positive and negative values during certain periods, reflecting market volatility. Across Europe, the elasticity also varies, but the overall average elasticity is positive at 0.453, indicating greater stability of consumption even when prices change. In some years, there are significant deviations from the norm, such as in 2014, when a slight decrease in price (-0.5%) resulted in a 4.6% increase in consumption, which gave a negative elasticity of -9.511, which is an anomaly. The average elasticity over three years in Europe shows less fluctuation than in the US, and its values indicate a more predictable market response to price changes. Thus, it is possible to conclude that US markets are more susceptible to fluctuations in

response to price changes, while European markets show greater stability in consumption even in the face of significant changes in prices.

Regarding European countries, they are characterised by rising consumption and prices. The average elasticity of demand is 0.453%, implying that one unit increase in price causes a 0.453% increase in demand. An increase in the price of a good would appear to be illogical, but in reality, it means that demand for the good is increasing for reasons other than the price increase. In this case, the standard deviation is high (1.13) and the correlation between demand and inflation is almost zero. The data in the context of oil demand and prices can be seen in Tables 2 and 3.

Table 2. Elasticity of oil demand in the United States of America in the period from 1989 to 2023

Year	Change in Brent price, %	Change in consumption in the US, %	Elasticity	Elasticity for 3 years
1989	27%	-0.05%	-0.002	x
1990	28%	-2.17%	-0.078	x
1991	-14%	-2.12%	0.147	-0.13
1992	-1%	2.08%	-1.433	-0.3
1993	-11%	0.87%	-0.079	-0.03
1994	-6%	2.57%	-0.397	-0.29
1995	6%	-0.24%	-0.041	-0.26
1996	18%	3.66%	0.201	0.37
1997	-5%	1.33%	-0.278	0.26
1998	-27%	1.67%	-0.062	-0.35
1999	42%	2.78%	0.066	-5.54
2000	41%	1.12%	0.027	0.14
2001	-13%	-0.12%	0.009	0.06
2002	3%	-0.01%	-0.002	0.04
2003	12%	1.55%	0.127	1.04
2004	35%	3.63%	0.105	0.11
2005	46%	0.15%	0.003	0.06
2006	20%	-1.28%	-0.065	0.02
2007	12%	-0.61%	-0.052	-0.02
2008	31%	-6.63%	-0.215	-0.14
2009	-34%	-5.19%	0.151	3
2010	26%	1.55%	0.06	-1.34
2011	39%	-1.97%	-0.05	-0.4
2012	-1%	-2.33%	2.144	-0.05
2013	-2%	1.65%	-0.663	-0.09
2014	-10%	0.67%	-0.067	0
2015	-44%	2.04%	-0.046	-0.07
2016	-15%	0.75%	-0.049	-0.05
2017	21%	0.97%	0.046	-0.07
2018	29%	2.4%	0.084	0.14
2019	-10%	-0.16%	0.016	0.09
2020	-36%	-12.17%	0.342	0.38
2021	72%	9.23%	0.129	19.88
2022	41%	0.62%	0.015	-0.07
2023	-18%	0.3%	-0.017	0.13
Medium	5%	0%	0.025	x

Source: compiled by the author based on data from Our World in Data (2024) and Investing (2024)

Table 3. The elasticity of oil demand in European countries in the period from 1989 to 2023

Year	Change in Brent price, %	Change in consumption in Europe, %	Elasticity	Elasticity for 3 years
1989	27%	0.14%	0.01	x
1990	28%	0.48%	0.02	x
1991	-14%	-0.84%	0.06	-0.01
1992	-1%	-3.67%	2.54	-0.54
1993	-11%	-6.37%	0.58	0.4
1994	-6%	-2.83%	0.44	0.67
1995	6%	-1.18%	-0.2	0.84
1996	18%	-1.44%	-0.08	-0.34
1997	-5%	0.24%	-0.05	-0.13
1998	-27%	0.89%	-0.03	0.02
1999	42%	-0.91%	-0.02	-0.21
2000	41%	-1.39%	-0.03	-0.03
2001	-13%	1.57%	-0.12	-0.01
2002	3%	-0.91%	-0.27	-0.03
2003	12%	0.82%	0.07	1.08
2004	35%	0.59%	0.02	0.01
2005	46%	0.60%	0.01	0.02
2006	20%	0.68%	0.03	0.02
2007	12%	-1.79%	-0.15	-0.01
2008	31%	-0.58%	-0.02	-0.03
2009	-34%	-5.08%	0.15	1.80
2010	26%	0.07%	0	-0.73
2011	39%	-1.15%	-0.03	-0.44
2012	-1%	-2.21%	2.04	-0.05
2013	-2%	-1.94%	0.78	-0.17
2014	-10%	-0.63%	0.06	0.35
2015	-44%	0.63%	-0.01	0.03
2016	-15%	1.66%	-0.11	-0.02
2017	21%	1.74%	0.08	-0.08
2018	29%	-0.26%	-0.01	0.11
2019	-10%	0.03%	0	0.04
2020	-36%	-11.65%	0.33	0.44
2021	72%	5.05%	0.07	34.03
2022	41%	3.03%	0.07	-0.09
2023	-18%	-0.9%	0.05	0.09
Medium	5%	-1%	-0.16	x

Source: compiled by the author based on data from Our World in Data (2024) and Investing (2024)

Following Tables 2 and 3, in general, the elasticity of demand concerning the oil price is either close to zero or negative (which is typical for European countries). This may be typical for European countries, among other things because they are eventually abandoning the use of oil (and other traditional energy sources) in favour of “green” ones. In the United States of America, this process is also underway, but it is less urgent: in this country, the relationship between demand and price is non-existent. It can be concluded that this product is significant to the US, and the country is free to use it, given its available resources. The correlation between the level of consumption in the countries and the price is positive and is at the level

of 0.39 (for the USA). 0.4867 (for Europe), 0.37 (for European countries). It is also worth noting that the standard deviation of the elasticities is also relatively lower, at 0.475, 0.567 and 0.659, respectively.

Notably, the average change in the Brent price over this period is about 5%, while the average change in US consumption is close to zero. This suggests that, in general, oil prices have a limited long-term impact on US consumption, although some years show significant deviations. The elasticities are low in most cases, indicating that changes in Brent oil prices do not have a significant impact on consumption. For instance, in 2000, when prices increased by 41%, consumption grew by only 1.12%, resulting in an

elasticity of 0.027. The situation is similar in 2022. However, there are years when price changes have had a significant impact on consumption: for example, in 2020, oil prices fell by 36% and consumption fell by 12.17%, resulting in an elasticity of 0.342. This is one of the most illustrative examples of the high elasticity when a change in the oil price has a significant impact on consumption. The elasticity over three years was used to assess longer-term trends. In 1999, the elasticity was extremely high (-5.54), which can be explained by the large price fluctuations in that period. In later years, the elasticity stabilised, showing smaller fluctuations. Overall, the average elasticity for the entire period is 0.025, indicating a low overall sensitivity of US consumption to changes in oil prices. However, it is worth noting that in certain periods, stronger relationships between these indicators may emerge, as seen in certain years such as 2020 and 2021.

The average change in the Brent price over this period was 5%, while the average change in European consumption

was close to -1%. This indicates that, unlike the US, oil consumption in Europe declined, even as oil prices rose in some periods. In most years, the elasticity was low or even negative, indicating a weak or negative relationship between price changes and consumption. For example, in 1990, when oil prices increased by 28%, consumption increased by only 0.48%; a similar situation was observed in 2000 when prices increased by 41% and consumption decreased by 1.39% (elasticity -0.03). Another example is 2020, when prices decreased by 36% and consumption fell by 11.65%, yielding an elasticity of 0.33, which also indicates a strong impact of price changes on consumption in that year. Overall, the average elasticity for the entire period is -0.16, indicating a general trend of a weak negative impact of price changes on consumption in Europe. This indicates that the European oil market demonstrates more stable consumption, especially compared to the US. The elasticity of consumption for chicken in the US and Europe can be seen in Table 4.

Table 4. The elasticity of demand and consumption in the US and Europe, as well as changes in the price of chicken in the world, from 1991 to 2022

Years	Price change, %	Consumption in the US, %	Elasticity	Elasticity for three years	Consumption in European countries, %	Elasticity	Elasticity for three years
1991	-2.4%	3.7%	-1.522	x	6.1%	-2.6	x
1992	0.1%	3.2%	25.181	x	3.5%	27.5	x
1993	14%	1%	0.069	0.71	-1%	-0.1	0.77
1994	1.1%	1.6%	1.428	0.39	5.5%	4.9	0.54
1995	0.4%	-1%	-2.817	0.1	2.6%	7.1	0.47
1996	12.3%	2.6%	0.208	0.23	5%	0.4	0.97
1997	-2.1%	0.8%	-0.368	0.23	1.6%	-0.7	0.91
1998	3.6%	0.6%	0.167	0.3	3.9%	1.1	0.79
1999	-5%	5.5%	-1.092	-1.79	-1.6%	0.3	-1
2000	-0.9%	-0.9%	1.075	-1.99	2.7%	-3.1	-1.92
2001	7%	0.3%	0.049	6.45	7.8%	1.1	11.59
2002	-0.9%	3.6%	-4.201	0.58	2.9%	-3.4	2.60
2003	4.9%	0.6%	0.129	0.42	-3.5%	-0.7	0.63
2004	14.4%	4.4%	0.304	0.48	-0.4%	0	-0.06
2005	-2.4%	1.4%	-0.573	0.39	2.9%	-1.2	-0.07
2006	-6.3%	0.6%	-0.097	1.39	-3.8%	0.6	-0.31
2007	12.9%	-0.6%	-0.048	0.42	4.7%	0.4	1.11
2008	8.2%	-2%	-0.248	-0.15	0%	0	0.06
2009	1.2%	-5.5%	-4.471	-0.37	1.7%	1.4	0.29
2010	0.2%	4.5%	21.794	-0.35	1.3%	6.5	0.33
2011	1.8%	1%	0.534	-0.1	0.9%	0.5	1.24
2012	7.9%	-3.8%	-0.48	0.16	2.4%	0.3	0.48
2013	10.1%	0.9%	0.093	-0.1	0.3%	0	0.18
2014	6.0%	1%	0.163	-0.08	3.6%	0.6	0.26
2015	4.2%	6.8%	1.635	0.43	4.2%	1	0.4
2016	-2.8%	1.5%	-0.516	1.28	4.4%	-1.5	1.71
2017	12.7%	0.3%	0.023	0.63	0.9%	0.1	0.7
2018	4.5%	1.9%	0.425	0.27	1%	0.2	0.45

Table 4, Continued

Years	Price change, %	Consumption in the US, %	Elasticity	Elasticity for three years	Consumption in European countries, %	Elasticity	Elasticity for three years
2019	-9.1%	2.5%	-0.275	0.68	1.3%	-0.1	0.47
2020	-17.3%	0.7%	-0.042	-0.22	0.4%	0	-0.12
2021	37.9%	-0.4%	-0.01	0.8	0.1%	0	0.51
2022	38.6%	1.2%	0.03	0.03	0.4%	0	0.02
Medium	0.044	0.012	3.735	x	0.02	2.264	x

Source: compiled by the author based on data from Federal Reserve Bank (2024), and Our Worlds in Data (2024)

Following Table 4, the price elasticity of chicken is high: at 3.73 for the US and 2.263 for Europe. At the same time, the price of this product has been growing along with demand. This is primarily since chicken is a healthy meat, and consumers in most countries are increasingly beginning to prefer it to other types of meat. In this case, the trend towards healthy eating is the main one, which causes both an increase in demand for products and a rise in their prices (Shahini *et al.*, 2023).

In the US, there are significant fluctuations in the elasticity, which in some years shows a strong sensitivity to price changes. For example, in 1992, the oil price increased by only 0.1%, while consumption increased by 3.2%, and the elasticity was 25.181, which is an abnormally high value. The average elasticity value for the US is 3.735, indicating a general tendency for oil consumption to be highly sensitive to changes in market prices. In Europe, the elasticity is generally lower and less volatile than in the US. The average elasticity for Europe is 2.264, indicating a lower market sensitivity, although anomalies have also occurred. For instance, in 1992, with a small price increase of 0.1%, consumption increased by 3.5%, giving one of the highest elasticities at 27.5. However, in other years, for example, in 2019 (-9.1% price change), consumption grew by only 1.3%, and the elasticity was -0.1, indicating that the European market shows a weaker response to price cuts compared to the US. Oil consumption in Europe is less elastic, which indicates a more stable demand structure in this market or greater adaptation to price changes.

Thus, the elasticity of demand determines how sensitive the demand for a product is to changes in factors such as price, consumer income, or the price of related products. Elastic demand means that small changes in prices lead to large changes in demand, while inelastic demand shows little change in demand despite changes in prices, especially for basic goods such as bread or medicine. Elasticity is important for companies and policymakers in making pricing and taxation decisions. This concept is applied differently in Europe and the US due to different economic, cultural and political conditions. Cultural factors have a significant impact on the elasticity, with Americans being more consumption-oriented and Europeans more focused on long-term savings. The study assessed the elasticity of such products as milk, oil and chicken, showing different degrees of sensitivity to price changes in the US and Europe.

For instance, the demand for milk in the US responds only marginally to price increases, while in Europe, factors other than price contribute to increased consumption. Similarly, demand for oil in Europe is declining due to the transition to more environmentally friendly energy, while in the US it remains stable due to the large reserves of this raw material. Poultry showed high price elasticity in both regions, driven by a general trend towards healthier food consumption.

Discussion

The study demonstrated that the elasticity of demand varies depending on the product in question and what preconditions may exist for changes in the price or demand for the product. Elasticity studies for products such as electricity, gas, petrol and coal in Mexico were conducted by A.O. Díaz & K.B. Medlock (2021). They demonstrated that the income elasticity was positive and higher than the price elasticity, with large differences between these groups of households. Steam coal and firewood were distinguished as lower-quality goods with negative income elasticities. The results provide insights into how consumers react to changes in energy prices depending on their economic status and can help policymakers consider the welfare impact of fiscal and energy reforms. Recent studies also demonstrated that the response to changes in product prices is determined not only by the fact of price changes but also by other variables, including product characteristics. J. Gao *et al.* (2021) studied the income and price elasticity of energy demand using a large dataset covering 65 countries from 1960 to 2016. The authors proposed a new model for analysing panel data to address five key issues: endogeneity, temporal heterogeneity, cross-sectional heterogeneity, non-stationarity, and cross-sectional dependence. With its help, the authors showed that the income elasticity of demand ranged from 0.6 to 0.8, while the price elasticity fell from -0.1 to -0.3. Notably, the income elasticity has been declining since the 1990s, coinciding with global efforts to mitigate climate change, suggesting that energy intensity may decline as the economy grows (Karimli *et al.*, 2022). It is worth noting that the current study also found that the price elasticity of oil demand is quite low, which coincides with the findings in the paper above on the income elasticity of energy demand. H. Balarama *et al.* (2020), in turn, described the price elasticity of electricity demand for urban households in Bangladesh based on household data. The study demonstrated

significant heterogeneity in price elasticity, showing that both the lowest and highest consumption groups are price elastic, while the moderate consumption groups are price inelastic. Based on these findings, the modelling shows that incorporating this heterogeneity into pricing policies can help reduce the imbalance between electricity supply and demand and consumption inequality. Although the current study did not evaluate heterogeneity by consumption or income, it is worth noting that this is as important as any other individual characteristic. A particularly striking example in this paper is the price of chicken, which increases over time along with the level of demand, which is primarily due to the transition of the population to the consumption of this type of meat instead of another.

In the current study, the elasticity of oil demand was assessed, which led to the conclusion that consumption of this product does not depend largely on the price. B. Wang *et al.* (2021) investigated the impact on household electricity consumption in the context of electricity price changes in China. The findings showed that electricity prices insignificantly impact consumption, while habits have a significant effect on electricity use. Thus, promoting energy-saving habits may be more effective in reducing electricity consumption than adjusting prices. The study emphasises the importance of addressing internal psychological factors such as habits over external economic factors such as pricing in shaping consumption behaviour. Thus, both studies reached similar conclusions on how oil demand is affected by oil prices, namely an insignificant relationship between the two. S. Thapar (2020), in turn, analysed energy consumption behaviour based on data from urban households in India. The study shows that energy consumption is influenced by seasonal patterns, inefficient appliances and the “rebound effect”, while the impact of price changes was less pronounced. Policy improvements are suggested, such as peak load management, weatherproofing at home and rationalising tariffs. These findings are aimed at influencing household energy behaviour and improving India’s energy efficiency strategies, which are crucial to meeting the country’s climate goals and improving energy security. The researcher also concluded that electricity prices in general do not significantly affect electricity demand, which is due to the high demand for this product by the population. As noted earlier, these findings are in line with those of the current study, which showed that in the US and Europe, the impact of price on oil demand was minimal: although the Indian household behaviour study examined the interaction for electricity as a commodity, the two commodities are comparable given that oil is a major energy resource.

The current study noted that there is a negative elasticity of demand for oil prices for European countries. This, in turn, is associated with a significant dependence on exports of this resource, which is causing a shift to renewable energy sources: the faster the price increase, the more rapid the transition will be (Shahini *et al.*, 2024). The demand for petrol in Turkey in the context of elasticity for fossil energy sources was studied by J.I. Mikayilov *et al.* (2020).

The authors noted that in the long run, petrol demand responds to these factors, with an income elasticity of 0.25, a price elasticity of -0.27, and an inventory elasticity of -0.80. However, in the short run, petrol demand does not respond to changes in these variables. The inelastic nature of gasoline demand in Turkey suggests that raising gasoline taxes could increase government revenues, although the revenue increase may be smaller than expected due to lower consumption. Higher petrol prices may also encourage a switch to alternative fuels. In addition, raising taxes on private car purchases or improving public transport could further reduce demand for petrol. The researchers note that financial and macroeconomic stability, manifested in stable exchange rates and low inflation, is crucial to sustaining petrol demand and meeting tax revenue targets.

Thus, in European countries, the elasticity of demand tends to be more regulated by social welfare policies, while in the US, market competition instruments play a greater role. Overall, the study highlighted differences in elasticities between products and regions.

Conclusions

The elasticity of demand for staples such as milk, oil and chicken provide important insights into consumer behaviour shaped by different economic conditions, market structures and cultural factors. The study demonstrated that while the price elasticity of demand is a key indicator of how sensitive consumers are to price changes, it varies significantly by region and product. In the US, milk consumption has shown a negative elasticity, and price increases have led to a decline in consumption over time. This suggests that consumers are more price sensitive, and milk may increasingly be seen as a discretionary product, affected by changes in dietary preferences or substitutes. In Europe, by contrast, the price elasticity of milk has been positive, with price increases correlating with increased consumption. European markets with more extensive social safety nets may also shield consumers from the direct effects of prices, leading to less elastic demand for staples such as milk.

The elasticity of oil demand showed that on average, demand is either inelastic or close to zero, especially in Europe, where there is a strong push towards greener energy sources, reflecting the ongoing shift away from fossil fuels towards renewable energy, making oil consumption less sensitive to price changes. The United States, with its abundant resources and slower transition to green energy, showed a weaker relationship between price and demand, highlighting the continued importance of oil in the country’s economy. As for chicken, both the US and European markets showed high elasticity, with price increases accompanied by increased demand. This can be explained by the growing global trend towards healthier diets, with chicken meat being considered a healthier and more environmentally friendly meat option than beef or pork. A limitation of the study was the lack of sufficient information to estimate the elasticity of demand for all product groups: this limitation is due to the lack of data in terms of both time

series and product-specific data. A promising area for further research is to study the elasticity of demand in other countries, such as Japan, China, Australia, and India, and to conduct a more thorough comparison of the specifics of demand elasticity between them.

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Conflict of Interest

None.

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Еластичність попиту та її роль у визначенні поведінки споживачів: Порівняльний аналіз Європи та США

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Анотація. Визначення поведінки споживачів є актуальним для забезпечення ефективного функціонування як окремих компаній, так і країни в цілому. З огляду на це, важливим залишається додаткове дослідження інструментів, що її описують, таких як еластичність попиту. Метою дослідження був аналіз еластичності попиту в Європі та Сполучених Штатах Америки. В рамках дослідження було проведено статистичну оцінку цінових показників на окремі види продукції, а саме на олію (з 1989 по 2023 роки), молоко (з 2001 по 2022 роки) та куряче м'ясо (з 1991 по 2022 роки), а також зміни рівня споживання цих продуктів. На основі розрахованих та проаналізованих показників еластичності попиту було зроблено висновок, що ціна не є єдиним і основним фактором зміни попиту на продукцію. Найяскравішим прикладом стала ситуація з курятиною, ціна та попит на яку значно зросли, в першу чергу, через перехід населення до більш відповідального та здорового харчування. При цьому еластичність попиту на олію для Сполучених Штатів Америки була стабільною і близькою до нуля, тоді як для європейських країн вона була від'ємною, що пов'язано з їх значною залежністю від імпорту енергоносіїв, зокрема нафти, що сприяє швидшому переходу на альтернативні джерела енергії. У випадку з молоком еластичність змінювалася залежно від того, де проводилася оцінка: у США чи Європі. У випадку з молоком еластичність відрізнялася залежно від того, де проводилася оцінка: у США чи Європі. Отримані результати дозволять більш ефективно формувати політику в цій сфері та створювати нові можливості для розвитку місцевих компаній

Ключові слова: ринкова конкуренція; структура ринку; олія; товари першої необхідності; зростання цін
