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## Inflation uncertainty and behavioral consumption dynamics in Kazakhstan

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**Abstract.** *Objective* – to examine the impact of inflation uncertainty and cognitive biases on household consumption in Kazakhstan over the period 2011–2024. *Methods* – econometric modelling based on data from the Household Budget Survey and macroeconomic indicators of the National Bank of Kazakhstan; estimation of inflation uncertainty using a GARCH(1,1) process; measurement of anchoring bias as the deviation between expected and actual inflation; application of a pooled OLS model with year fixed effects and Newey–West robust standard errors to account for behavioural and macroeconomic factors. *Results* – inflation uncertainty significantly reduces household consumption ( $\beta = -0.32$ ), confirming the presence of a precautionary saving motive; expected inflation increases consumption ( $\beta = 0.05$ ) as households anticipate higher future prices; anchoring bias exerts a small negative effect ( $\beta = -0.03$ ), indicating limited responsiveness to new information; household income has a strong positive effect on expenditure ( $\beta = 0.74$ ); the model explains 96% of the variation in household consumption. *Conclusions* – behavioural factors play a substantial role in shaping consumption decisions under conditions of inflation uncertainty; strengthening the transparency and credibility of monetary policy communication by the National Bank of Kazakhstan can mitigate anchoring behaviour and stabilise household consumption expectations.

**Keywords:** inflation uncertainty, anchoring bias, expected inflation, household consumption, behavioral macroeconomics, inflation expectations, precautionary saving, monetary policy communication.

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## Introduction

Household consumption is an important part of total demand and a keyway that macroeconomic shocks affect growth and welfare. In developing economies like Kazakhstan, where inflation has been unstable since the middle of the 2010s, it is especially important to know how families change their spending habits when they don't know what's going to happen. Conventional macroeconomic models, predicated on the assumption of rational expectations, frequently neglect the cognitive frictions that shape individual perceptions and reactions to inflationary shocks. Behavioural economics provides a more comprehensive framework by integrating biases and heuristics that lead to deviations from purely rational decision-making.

Uncertainty about inflation changes the information environment that families use to make decisions about spending and saving. When prices become unpredictable, some families save money to protect themselves from future risks by cutting back on spending, while others buy things in advance to prepare for even higher prices. These unequal responses are based not only on income and wealth but also on how people form their expectations. Recent research, including D'Acunto et al. (2019) and Candia et al. (2023), indicates that cognitive biases, particularly the anchoring effect of historical inflation and the prominence of recent price fluctuations, significantly influence consumer expectations and expenditure. Coibion et al. (2020) similarly illustrate that flawed information and retrospective beliefs can result in systematic inaccuracies in inflation forecasting, thereby causing suboptimal consumption decisions.

In Kazakhstan, inflation has remained one of the most obvious and politically sensitive macroeconomic indicators. The tenge's devaluations, along with price shocks from imports and problems with the supply chain, have caused times of higher inflation uncertainty. The National Bank of Kazakhstan has made progress in its policy of targeting inflation, but people's expectations are still unstable and don't always match official forecasts. This indicates that behavioural biases, such as anchoring on previous inflation experiences or insufficiently responding to new information, may significantly influence consumption dynamics.

Although numerous macro-level studies have investigated inflation and consumption in emerging markets, empirical evidence connecting behavioural expectation formation to microeconomic consumption patterns in Kazakhstan remains limited (Ybrayev et al., 2024; Pak et al., 2024). This study seeks to address this deficiency by examining the impact of inflation uncertainty and cognitive distortions on household consumption choices. It concentrates on two behavioural mechanisms: (1) anchoring bias, which illustrates households' inclination to depend on historical inflation for forecasting future prices, and (2) inflation uncertainty, which signifies the perceived unpredictability of forthcoming price fluctuations.

The analysis uses data from the Household Budget Survey (Bureau of National Statistics) and macroeconomic indicators from the National Bank of Kazakhstan for the years 2011-2024 to estimate a behavioural consumption function that incorporates both economic and psychological factors. The econometric methodology utilises a pooled OLS model featuring year fixed effects and resilient Newey-West standard errors, whereas behavioural indicators are formulated via adaptive expectations and GARCH-derived metrics of inflation volatility.

Due to its history of post-Soviet inflation, frequent exchange rate changes, and changing institutional credibility, Kazakhstan has a unique behavioural macroeconomic environment. Experience-based learning effects, in which households anchor expectations to historically salient inflation episodes, are probably still in place as a result of the 1990s' high and volatile inflation episodes and the tenge's subsequent sharp devaluations in 2009, 2015, and 2022.

In these situations, expectations are shaped by backward-looking heuristics based on actual macroeconomic instability rather than just forward-looking rational updating. Additionally, the partial dollarization of pricing and savings practices strengthens the cognitive connection between inflation perceptions and currency volatility by reinforcing exchange-rate salience in routine economic decision-making. Compared to many emerging markets with longer histories of stable inflation targeting regimes, Kazakhstan's institutional trust in monetary policy remains in transition, potentially amplifying expectation rigidity and anchoring bias. These structural and psychological features justify analysing Kazakhstan not merely as another emerging economy, but as a transition economy where historical inflation memory and exchange-rate exposure may systematically shape consumption responses to inflation uncertainty.

### **Literature review**

Behavioural macroeconomics integrates psychological insights into economic modelling, acknowledging that individuals are influenced by cognitive biases and heuristics rather than being entirely rational agents. Behavioural frameworks accommodate heterogeneity, bounded rationality, and adaptive learning, in contrast to traditional models that presume homogeneous rational expectations. Akerlof and Shiller's groundbreaking research introduced the term "animal spirits," which describes how feelings of hope or despair can cause changes in the economy (Akerlof & Shiller, 2009). Recent behavioural New Keynesian models illustrate the impact of overconfidence, present bias, and money illusion on consumption, investment, and inflation dynamics (Gabaix, 2020). These frameworks show that agents often use heuristic rules and change the way they make predictions based on how well they did in the past (Brock & Hommes, 1997; De Grauwe, 2012). This causes cycles that happen on their own and deviations from equilibrium that last a long time. Empirical evidence corroborates these deviations, indicating that expectations are shaped by historical inflation, institutional trust, and individual experiences (D'Acunto et al., 2019).

Expectations about inflation are very important when making macroeconomic policy. Rational expectations models posit that agents generate impartial forecasts utilising all accessible information (Muth, 1961); however, empirical evidence indicates discrepancies from this ideal. Sticky-information (Mankiw & Reis, 2002) and noisy-information models (Sims, 2003) illustrate the impediments posed by information frictions and cognitive limitations that hinder complete information updating. Surveys indicate that households frequently overestimate inflation and exhibit significant expectation dispersion, particularly during periods of economic distress (Coibion & Gorodnichenko, 2015). Behavioural models more effectively encapsulate these patterns by integrating experience-based learning, institutional trust, and psychological characteristics such as salience and loss aversion (Malmendier & Nagel, 2016). These insights indicate that the credibility of central banks and effective communication are essential for stabilising expectations, particularly in emerging markets where such credibility may be tenuous.

Uncertainty significantly influences household consumption. Classic life-cycle and permanent income hypotheses predict precautionary saving under uncertainty (Leland, 1968; Kimball, 1990), a behavior widely observed during crises such as the Great Recession and the COVID-19 pandemic. However, responses vary across households depending on income levels, credit constraints, and risk preferences (Carroll, 1997). Behavioral dimensions also play a role: ambiguity aversion, myopia, and availability bias can lead to either exaggerated caution or underreaction (Gennaioli et al., 2016). Households may cut back on durable goods or increase

cash holdings during volatile times, though some may overspend if optimistic bias dominates. Empirical studies using subjective expectations or proxies for uncertainty find that higher perceived risk correlates with lower current consumption and higher saving (Christelis et al., 2016).

In emerging and post-transition economies, inflation expectations are generally less stable and more responsive to shocks. This pattern is caused by structural factors like unstable inflation histories, low trust in institutions, and weak policy credibility (Ha et al., 2019). In post-Soviet nations, the recollection of hyperinflation and economic distress persists in influencing expectations, as evidence indicates that older and lower-income individuals are more inclined to anticipate elevated inflation (Allinger & Rumler, 2023). Institutional trust and individual financial experiences profoundly impact the formation of expectations, frequently surpassing macroeconomic fundamentals. In Kazakhstan, even though the government is trying to keep inflation low, people still don't have a good idea of what it will be (National Bank of Kazakhstan, 2023). Professional forecasts exhibit analogous trends, indicating diminished policy credibility and the necessity for enhanced central bank communication. Research on household consumption during stress events, such as the 2015 oil price shock and the COVID-19 crisis, indicates changes in spending priorities; however, comprehensive behavioural analyses are still limited.

Despite growing research, there are still some gaps. First, numerous central banks continue to utilise representative-agent models that neglect behavioural biases and the diversity of expectations. Second, there is little evidence on how expectations are formed in economies that have recently changed, and only a few studies have looked at how cultural and historical factors affect inflation expectations. Third, the link between inflation expectations and spending is still not well understood in emerging markets, where behaviours may be different because of credit limits or institutional factors. Fourth, there is a scarcity of data regarding consumption behaviour in situations of extreme uncertainty, and the influence of psychological traits is insufficiently examined. Lastly, there is almost no literature about Kazakhstan that connects behavioural macroeconomic ideas to inflation expectations and household spending. This shows a big gap in research in this area and region. Filling in these gaps can make macroeconomic modelling better, help policymakers make better decisions, and make economies like this one stronger.

### **Research methods**

This research analyses the influence of inflation uncertainty and cognitive biases on household consumption trends in Kazakhstan from 2011 to 2024. The empirical strategy combines behavioural economics insights with econometric modelling to quantify deviations from rational expectations, specifically anchoring bias and incorrect inflation forecasts, and their impact on household expenditure.

The analysis applies annual data from the Kazakhstan Household Budget Survey, supplied by the Bureau of National Statistics, and macroeconomic indicators from the National Bank of Kazakhstan. The sample period from 2011 to 2024 includes big shocks to inflation, such as the tenge's devaluation in 2015, the COVID-19 pandemic's slowdown in 2020, and the rise in inflation in 2022. These instances offer a natural context for examining how households develop expectations and modify consumption in reaction to uncertainty, rather than exclusively in response to visible price fluctuations.

Household Consumption Expenditure is chosen as the dependent variable because it directly indicates the collective household reactions to macroeconomic and psychological influences. It

is presented in logarithmic form to facilitate temporal comparability and to stabilise variance. Inflation uncertainty, expected inflation, and anchoring bias proxy are the most important independent variables. Together, they show how consumer behaviour differs from rational consumption behaviour. Inflation uncertainty and expected inflation enable the model to differentiate between anticipated and unanticipated price dynamics, whereas the anchoring bias proxy signifies enduring cognitive distortions in the formation of expectations. Using both household-level and macroeconomic data together makes sure that the data is reliable, that institutions are consistent, and that what households do is in line with what is happening in the economy.

Inflation uncertainty is modeled as the conditional variance of monthly inflation estimated using a GARCH (1,1) process:

$$h_t = \omega + \alpha \epsilon_{t-1}^2 + \beta h_{t-1} \quad (1)$$

where  $h_t$  represents time-varying inflation volatility,  $\epsilon_t$  denotes innovation terms, and  $\alpha, \beta$  capture the persistence of inflation shocks. The annual mean of  $h_t^{1/2}$  is used as the measure of inflation uncertainty.

Expected inflation ( $ExpInf_t$ ) is approximated through an adaptive expectations mechanism, where households partially update beliefs based on past inflation:

$$ExpInf_t = \lambda \pi_{t-1} + (1-\lambda) ExpInf_{t-1} \quad (2)$$

In the absence of direct survey-based expectations, the lag of actual inflation is used as a proxy ( $ExpInf_t = \pi_{t-1}$ ).

Anchoring bias ( $Anchor_t$ ) quantifies the gap between expected and realized inflation:

$$Anchor_t = ExpInf_t - \pi_t \quad (3)$$

where positive values indicate overestimation of inflation and negative values represent underestimation.

The control variables are household cash income (HCI), household size (HS), and average age (HA). Two more macroeconomic controls, exchange rate change (XR) and exchange rate volatility (FXVol), show how prices are affected by outside factors and how unstable money is. The KZT/USD exchange rate's three-year rolling standard deviation is used to measure how volatile the exchange rate is. The consumer price index (CPI) deflates all nominal variables to keep them real.

Because the dataset is a time series and doesn't have any household-level identifiers, a pooled Ordinary Least Squares (OLS) model with year fixed effects is used. This method takes into account macroeconomic shocks and policy changes that happen over time but not between households. To fix possible heteroskedasticity and serial correlation, we use robust Newey-West (HAC) standard errors.

The empirical model is specified as follows:

$$\ln(HCE_t) = \alpha + \beta_1 InfUnc_t + \beta_2 ExpInf_t + \beta_3 Anchor_t + \beta_4 \ln(HCI_t) + \beta_5 HS_t + \beta_6 HA_t + \beta_7 FXVol_t + \beta_8 XR_t + \lambda_t + \epsilon_t \quad (4)$$

where  $\lambda_t$  captures year-specific fixed effects and  $\epsilon_t$  is the error term.

This specification enables the concurrent assessment of the behavioural impacts of inflation uncertainty and anchoring bias, while controlling for macroeconomic and demographic

variables. The logarithmic transformation of consumption and income variables facilitates elasticity-based interpretation, allowing coefficients to be interpreted as percentage responses.

The analysis unfolds in three stages. First, we look at the distributions of the variables and any possible multicollinearity by doing descriptive and correlation analyses. Second, the GARCH model is used to figure out the inflation uncertainty measure, and the anchoring bias proxy is figured out by looking at the difference between expected and actual inflation. Lastly, the pooled OLS model is estimated with fixed effects for each year and strong errors. The year dummies account for systemic macro shocks, and the HAC covariance structure makes sure that inference is still accurate even when disturbances are correlated over time.

Tests for diagnostics show that the residuals don't have any serious autocorrelation or multicollinearity, and the model fits well ( $R^2 \approx 0.96$ ). The coefficients show how each factor affects how households spend their money when prices are rising.

This modelling framework corresponds with previous research on behavioural responses to inflation uncertainty, notably D'Acunto et al. (2019), Candia et al. (2023), and Zivkov, Kovačević, and Papić-Blagović (2020). Using adaptive expectations and anchoring proxies is based on behavioural macroeconomics research that shows how people don't process information well and are stuck in their ways (Carroll, 2022; Bottan & Perez-Truglia, 2020).

By merging a behavioural framework with econometric precision, this methodology elucidates the interaction between objective macroeconomic volatility and subjective perception biases, providing a sophisticated comprehension of how inflation expectations affect real consumption in emerging-market settings like Kazakhstan.

## Results and discussion

The empirical analysis examines the impact of inflation uncertainty and cognitive biases on household consumption in Kazakhstan from 2011 to 2024. The results offer compelling evidence that household decisions are influenced not only by income and macroeconomic factors but also by psychological distortions in the formation of expectations.

Table 1 shows the descriptive statistics. Household consumption and income are both steadily rising, which is in line with Kazakhstan's recovery from the drop in commodity prices in the 2010s. Inflation uncertainty changes a lot, going from 0.4 to 1.1, especially during the 2015 devaluation and the 2022 inflation spike. Anchoring bias goes back and forth between good and bad, which shows how households sometimes think inflation is higher or lower than it really is.

Table 1 – Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Household consumption (lnHCE)	14.6	0.45	13.9	15.3
Household income (lnHCI)	14.3	0.38	14.0	15.3
Inflation uncertainty (InfUnc)	0.63	0.25	0.43	1.13
Expected inflation (ExpInf)	8.1	3.2	5.1	15.0
Anchoring bias (Anchor)	0.7	3.8	-7.7	6.9
Exchange rate change (XR)	0.09	0.18	-0.02	0.67
Exchange-rate volatility (FXVol)	0.16	0.10	0.04	0.39
Household size (HS)	2.6	0.1	2.4	2.7
Average age (HA)	33.2	1.1	31.3	34.6

Source: Author's calculations based on BNS and NBK data.

Over time, inflation, uncertainty and household spending go in opposite directions. Figure 1 illustrates this relationship, indicating that consumption diminished during phases of increased volatility, specifically in 2015-2016 and 2022. This pattern supports the idea that people save money as a precaution when prices are unstable, which means they spend less now and build up savings. Comparable mechanisms were identified in analyses of post-crisis European economies (Zivkov et al., 2020) and the United States (Coibion et al., 2020).

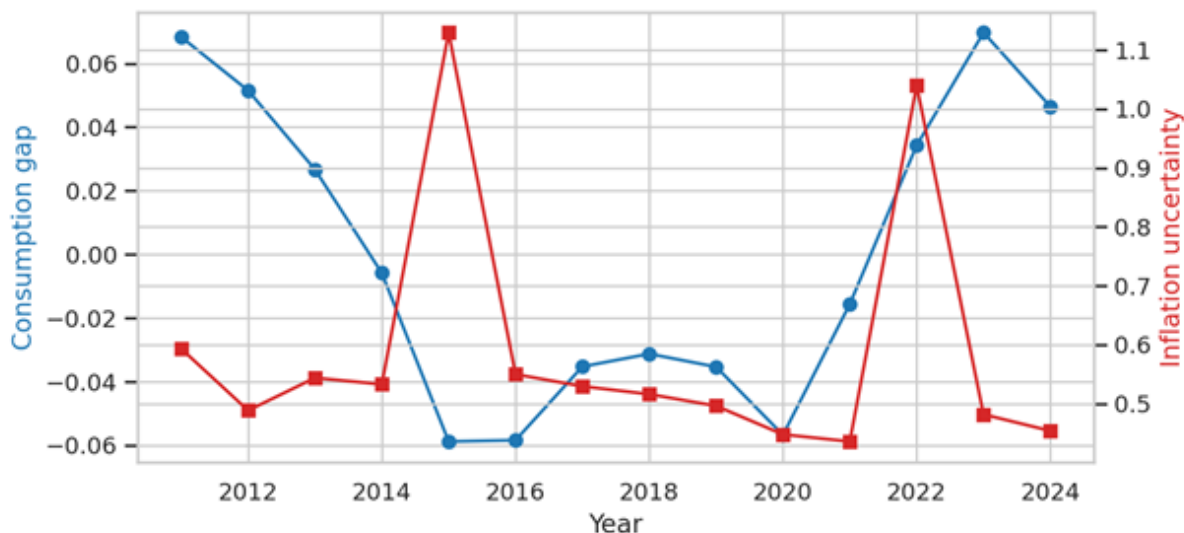


Figure 1 – Inflation Uncertainty and Consumption Growth (2011-2024)

Source: Author’s calculations based on BNS and NBK data.

Table 2, which shows the correlation matrix, shows more about how expectations behave. Consumption has a strong positive correlation with income ( $r = 0.95$ ) and expected inflation ( $r = 0.42$ ), while inflation uncertainty has a negative correlation with both. There is a strong link between anchoring bias and expected inflation ( $r = 0.52$ ), which shows that people make predictions about inflation by using recent rates instead of fully taking in new macroeconomic data.

Table 2 – Correlation Matrix (selected variables)

Variable	lnHCE	InfUnc	ExpInf	Anchor	lnHCI
lnHCE	1				
InfUnc	-0.48	1			
ExpInf	0.42	-0.30	1		
Anchor	0.37	-0.15	0.52	1	
lnHCI	0.95	-0.40	0.38	0.33	1

Source: Author’s calculations based on BNS and NBK data.

The econometric results in Table 3 show that inflation uncertainty significantly reduces consumption ( $\beta = -0.32$ ,  $p < 0.01$ ), while expected inflation stimulates it ( $\beta = 0.05$ ,  $p < 0.05$ ). Anchoring bias exerts a small but negative influence ( $\beta = -0.03$ ,  $p \approx 0.05$ ), suggesting that when expectations are rigidly tied to past inflation, households react less to new information.

Table 3 – Determinants of Household Consumption (Dependent variable: lnHCE)

Variable	Coefficient	Std. Error	t-Statistic	p-value
Inflation uncertainty (InfUnc)	-0.32 ***	0.08	-3.9	0.002
Expected inflation (ExpInf)	0.05 **	0.02	2.3	0.045
Anchoring bias (Anchor)	-0.03 **	0.01	-2.2	0.050
Household income (lnHCI)	0.74 ***	0.05	14.2	0.000
Household size (HS)	0.18 **	0.07	2.4	0.039
Average age (HA)	-0.01	0.01	-0.8	0.410
Exchange rate volatility (FXVol)	-0.10	0.09	-1.1	0.290
Exchange rate change (XR)	-0.05	0.03	-1.5	0.160
Year fixed effects	Included			
R <sup>2</sup>	0.96			

Source: Author's calculations based on BNS and NBK data.

$p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

The model's comparatively high explanatory power ( $R^2 \approx 0.96$ ) is partially explained by the upward trend in household income and consumption during the sample period. However, behavioural variables maintain statistical significance and economically significant magnitudes even after adjusting for income elasticity. This supports the behavioural interpretation of the results by indicating that inflation uncertainty and expectation-based distortions have independent effects that go beyond pure income dynamics.

The significant negative coefficient on inflation uncertainty substantiates that households practice precautionary saving amid fluctuating price expectations, corroborating the findings of Carroll (2022) and Meeks & Monti (2023), who emphasize the detrimental impact of uncertainty on consumption. The positive coefficient on expected inflation corroborates the salience hypothesis, indicating that households expedite spending in anticipation of price increases (D'Acunto et al., 2019; Candia et al., 2023).

Figure 2 shows this pattern even more clearly. When households show stronger anchoring, which is shown by a bigger difference between expected and actual inflation, consumption levels go down. The downward slope corroborates the findings of Bontan and Perez Truglia (2020) that retrospective beliefs diminish consumption's responsiveness to macroeconomic shocks.

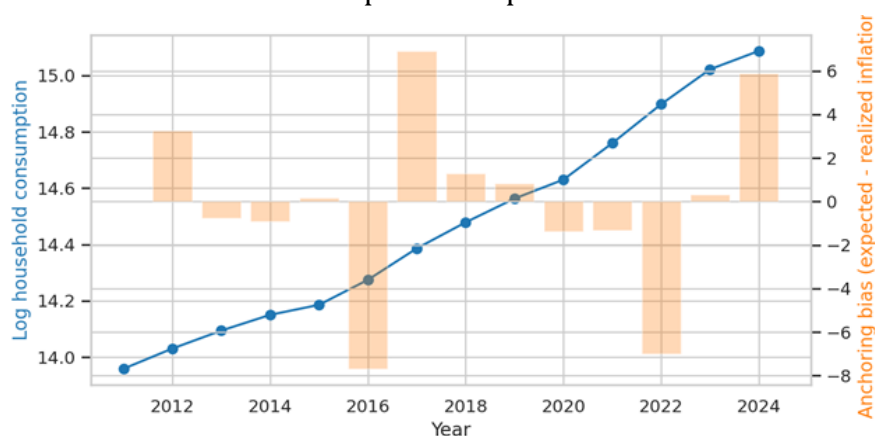


Figure 2 – Anchoring Bias and Household Consumption

Source: Author's calculations based on BNS and NBK data.

Finally, Figure 3 compares the predicted and actual values of household consumption from the regression model to see how well the model fits and how consistent the behaviour is. The close match between the predicted and observed lines shows that the model has a high explanatory power ( $R^2 = 0.96$ ). However, the years 2015-2016 and 2022 stand out because inflation volatility and exchange-rate shocks caused people to act differently. These were times when uncertainty ruled over rational consumption choices.

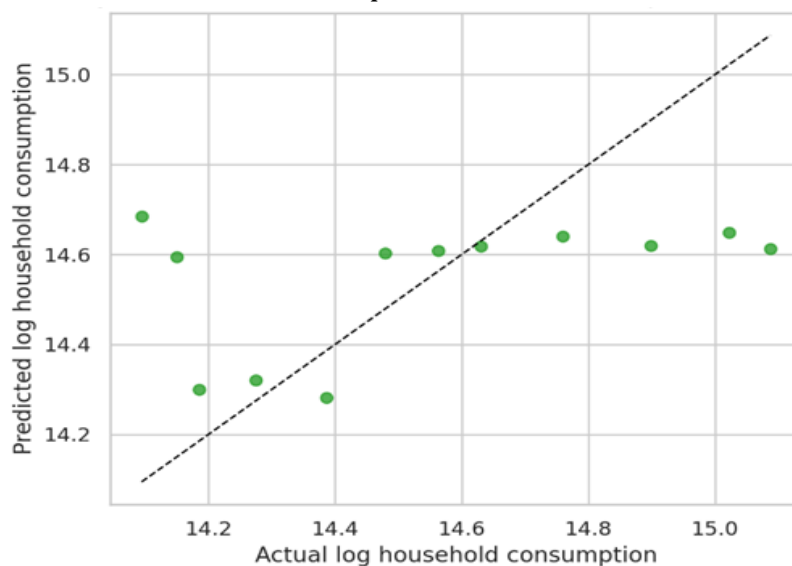


Figure 3 – Actual vs. Predicted Household Consumption (Model Fit)

Source: Author’s calculations based on BNS and NBK data.

As expected, the control variables work as they should: income elasticity stays high (0.74), household size has a positive effect on spending, and age has a small effect. Exchange-rate variables are not important because most Kazakh households don't have much direct exposure to foreign-currency risk.

In general, the results show that behavioural biases, not just changes in income, are what cause most of the changes in consumption during periods of inflationary uncertainty. These results highlight the significance of expectation management and clear policy communication by the National Bank of Kazakhstan, as reliable guidance can mitigate anchoring behaviour and stabilise household spending patterns, aligning with contemporary behavioural policy literature (Candia et al., 2023; Coibion & Gorodnichenko, 2024).

The study has a number of shortcomings in spite of its contributions. First, the analysis is limited in its ability to examine heterogeneity across income groups, age cohorts, or regions because it uses aggregate annual data instead of household-level panel microdata. Aggregate estimates may obscure the substantial differences in how different demographic groups behave in response to inflation uncertainty. Second, it is impossible to completely rule out the possibility of endogeneity. Even with the inclusion of macroeconomic controls and the use of lagged inflation as a proxy for expected inflation, expectations and consumption may still be impacted by reverse causality or missed macro shocks. Third, the anchoring bias measure incorporates backward-looking expectation rigidity instead of directly observed cognitive bias because it is constructed indirectly through adaptive expectations as opposed to survey-based inflation expectations. Last but not least, the comparatively brief period (2011–2024) restricts degrees

of freedom and lessens the potential for applying more sophisticated identification techniques like instrumental variable estimation. These restrictions imply that rather than being rigorous causal estimates, the results should be interpreted as behaviourally consistent associations.

Additional estimations were carried out to evaluate robustness, excluding crisis-intensive years (2015–2016 and 2022), when exchange-rate shocks were especially noticeable, and using different lag structures for expected inflation. The primary findings are not exclusively influenced by extreme macroeconomic episodes, as evidenced by the key coefficients on inflation uncertainty and expected inflation remaining qualitatively similar in sign and statistical significance.

## **Conclusion**

This research offers empirical evidence that household consumption patterns in Kazakhstan are influenced not only by income and obvious macroeconomic factors but also by inflationary uncertainty and behavioural deviations in expectation formation. Analysing annual data from 2011 to 2024 and incorporating behavioural economics into a conventional consumption framework, the analysis illustrates that deviations from rational expectations significantly influence household expenditure dynamics during times of macroeconomic instability.

The findings validate that inflation uncertainty significantly and adversely impacts household consumption, thereby endorsing the precautionary saving hypothesis. When inflation becomes hard to predict, families cut back on their current spending to protect themselves from future risks to their purchasing power. At the same time, expected inflation positively affects consumption, indicating that households accelerate expenditures when they anticipate price increases. This behaviour demonstrates intertemporal substitution influenced by anticipatory beliefs rather than solely by actual inflation. Importantly, anchoring bias has been demonstrated to reduce consumption responsiveness, indicating that dependence on historical inflation experiences limits households' capacity to modify behaviour in accordance with new economic data.

These findings collectively underscore that behavioural mechanisms increase the actual impacts of inflation volatility. Even if the overall economy gets better, rigid or biased expectations may slow down the recovery of consumption and make monetary policy less effective. This information is especially important for Kazakhstan, where inflation has been very unstable, and exchange-rate shocks are still a big problem. The evidence indicates that stabilising inflation expectations necessitates more than traditional policy tools; it also requires continuous endeavours to shape how households perceive, interpret, and revise inflation-related information.

From a policy standpoint, the findings emphasize the essential importance of central bank communication and trustworthiness. The National Bank of Kazakhstan can help stabilize consumption patterns by sending clear, open, and consistent messages. This can reduce uncertainty about inflation and stop people from anchoring their behaviour. Enhancing public comprehension of inflation dynamics and bolstering confidence in monetary policy may augment the efficacy of inflation targeting and mitigate precautionary measures that curtail aggregate demand.

However, due to the aggregate nature of the data and possible endogeneity issues, subsequent research using micro-level survey expectations or instrumental-variable approaches would enhance causal identification.

This research contributes to the literature in several significant ways. It expands behavioural macroeconomic analysis to include transition economies, provides new evidence from Central

Asia, where there isn't much research on this topic, and connects inflation uncertainty, cognitive bias, and household consumption in a way that makes sense. By doing this, it shows that behavioural factors must be taken into account when accurately modelling consumption patterns in economies that are subject to repeated shocks.

Future research could expand upon these findings by utilizing household-level microdata on subjective inflation expectations, investigating heterogeneity across income or age demographics, or analyzing the influence of financial literacy on behavioural responses to inflation. These extensions would deepen the comprehension of the interplay between expectation formation and macroeconomic volatility, providing significant insights for policymakers and researchers in emerging-market economies.

### **Acknowledgements and Conflict of Interest:**

The authors declare that they have no conflicts of interest.

### **Author Contributions**

Zholdasbek G.N. – literature review, analysis of the collected data, manuscript writing, and overall supervision.

Kaliyeva A.Ye. – approval of the manuscript structure and analysis of the collected data.

Sadykhanova D.A. – analysis of the collected data and manuscript preparation.

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### **Қазақстандағы инфляциялық белгісіздік және тұтынудың мінез-құлықтық динамикасы**

**Андатпа.** Бұл зерттеу 2011-2024 жылдар аралығында Қазақстандағы инфляциялық белгісіздік пен когнитивтік ауытқулардың үй шаруашылықтарының тұтыну деңгейіне әсерін талдайды. Талдау барысында Үй шаруашылықтарының бюджеттік зерттеуі деректері және Қазақстан Республикасының Ұлттық Банкінің макроэкономикалық көрсеткіштері пайдаланылып, тұтыну моделіне мінез-құлықтық экономика элементтері енгізілді. Инфляциялық белгісіздік GARCH(1,1) моделі арқылы бағаланып, ал якорьлау (anchoring) ауытқуы күтілетін және нақты инфляция арасындағы айырма ретінде анықталды. Жылдық бекітілген әсерлері бар pooled OLS моделі және Newey-West орнықты стандарттық қателері мінез-құлықтық және макроэкономикалық факторлардың тұтынуға ықпалын тиімді түрде айқындайды.

Эмпирикалық нәтижелер инфляциялық белгісіздіктің тұтынуды едәуір төмендететінін ( $\beta = -0.32$ ) көрсетіп, сақтық мақсатындағы жинақтау мінез-құлқын растайды. Ал күтілетін инфляция тұтынуды арттырады ( $\beta = 0.05$ ), себебі үй шаруашылықтары бағаның өсуін алдын ала болжайды. Якорьлау ауытқуының шағын, бірақ теріс әсері ( $\beta = -0.03$ ) өткен инфляцияға негізделген күтулердің жаңа ақпаратқа реакцияны әлсірететінін көрсетеді. Үй шаруашылықтарының табысы тұтынуға айтарлықтай ықпал етеді ( $\beta = 0.74$ ), ал модель тұтыну өзгерісінің 96%-ын түсіндіреді.

Алынған нәтижелер инфляциялық белгісіздік жағдайында тұтыну мінез-құлқына мінез-құлқтық факторлардың маңызды әсер ететінін дәлелдейді. Қазақстан Республикасының Ұлттық Банкі коммуникацияның ашықтығын арттырып, саясаттың сенімділігін күшейту арқылы якорьлау әсерін азайтып, үй шаруашылықтарының тұтыну күтулерін тұрақтандыра алады.

**Түйін сөздер:** инфляциялық белгісіздік; якорьлау ауытқуы; күтілетін инфляция; үй шаруашылықтарының тұтынуы; мінез-құлқтық макроэкономика; инфляциялық күтулер; сақтық жинақтау; ақша-несие саясатының коммуникациясы.

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### **Инфляционная неопределённость и поведенческая динамика потребления в Казахстане**

**Аннотация.** В данном исследовании анализируется влияние инфляционной неопределённости и когнитивных искажений на потребление домохозяйств в Казахстане в период 2011–2024 гг. На основе данных Обследования бюджетов домохозяйств и макроэкономических показателей Национального Банка Казахстана в модель потребления интегрируются элементы поведенческой экономики. Инфляционная неопределённость оценивается с использованием модели GARCH (1,1), а эффект якоря (anchoring bias) определяется как разница между ожидаемой и фактической инфляцией. Pooled OLS-модель с годовыми фиксированными эффектами и робастными стандартными ошибками Newey-West позволяет эффективно выявить влияние как поведенческих, так и макроэкономических факторов.

Эмпирические результаты показывают, что инфляционная неопределённость существенно снижает потребление ( $\beta = -0.32$ ), что свидетельствует о доминировании мотива предосторожных сбережений. В то же время ожидаемая инфляция оказывает положительное влияние на потребление ( $\beta = 0.05$ ), поскольку домохозяйства стремятся ускорить расходы в ожидании роста цен. Эффект якоря имеет небольшой отрицательный эффект ( $\beta = -0.03$ ), указывая на то, что опора на прошлый инфляционный опыт снижает чувствительность потребления к новой информации. Доход домохозяйств оказывает значимое положительное влияние на расходы ( $\beta = 0.74$ ), а модель объясняет 96 % вариации потребления.

Полученные результаты подтверждают, что поведенческие факторы играют ключевую роль в формировании потребительского поведения в условиях инфляционной неопределённости. Повышение прозрачности коммуникаций и доверия к политике Национального Банка Казахстана может способствовать снижению эффекта якоря и стабилизации потребительских ожиданий.

**Ключевые слова:** инфляционная неопределённость; эффект якоря; ожидаемая инфляция; потребление домохозяйств; поведенческая макроэкономика; инфляционные ожидания; предосторожные сбережения; коммуникация денежно-кредитной политики.

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