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THE STRUCTURE OF MARKUPS IN KAZAKHSTAN'S ECONOMY AND ITS IMPACT ON INFLATIONARY TRENDS

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Abstract. *The relevance* of this study is determined by persistently high and volatile inflation in Kazakhstan's economy, which in recent years has increasingly been shaped by structural and institutional factors. Alongside monetary and external trade shocks, the structure of trade markups in key sectors of the economy-including food markets, pharmaceuticals, logistics, and retail trade—plays a significant role in intensifying inflationary pressure. Under conditions of high import dependence and market concentration, trade markups act as an independent channel for transmitting costs into consumer prices and contribute to the formation of sustained inflationary inertia. *The purpose* of this study is to provide a comprehensive assessment of the structure of trade markups in Kazakhstan's economy and to quantitatively analyze their impact on consumer inflation dynamics, taking into account sectoral and macroeconomic factors. *The methodology* is based on structural analysis of price formation chains, intersectoral comparative analysis, and econometric modeling using fixed-effects panel regression and a structural vector autoregression (SVAR) model applied to data for the period 2015–2025. The *results demonstrate* that trade markups explain a substantial share of inflationary fluctuations in Kazakhstan, with

the strongest inflationary effects observed in the food and pharmaceutical sectors. It is established that the impact of markups on inflation is procyclical and delayed in nature, with the maximum effect materializing after 2–3 quarters. *The practical significance* of the study lies in the applicability of its findings for designing a comprehensive anti-inflationary policy focused on strengthening competition and enhancing transparency in price formation chains.

Keywords: inflation, trade markups, price structure, competition, inflationary inertia, Kazakhstan

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ҚАЗАҚСТАН ЭКОНОМИКАСЫНДАҒЫ ҮСТЕМЕ БАҒАЛАРДЫҢ ҚҰРЫЛЫМЫ ЖӘНЕ ОНЫҢ ИНФЛЯЦИЯЛЫҚ ҮРДІСТЕРГЕ ЫҚПАЛЫ

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Аннотация. *Зерттеудің өзектілігі* Қазақстан экономикасында сақталып отырған жоғары және құбылмалы инфляция деңгейімен негізделеді, ол соңғы жылдары құрылымдық және институционалдық факторлардың ықпалымен барған сайын күшейіп отыр. Монетарлық және сыртқы сауда шоктарымен қатар, азық-түлік нарығы, фармацевтика, логистика және бөлшек сауда сияқты экономиканың негізгі секторларындағы сауда үстемелерінің құрылымы инфляциялық қысымды арттыратын маңызды факторға айналуда. Импортқа жоғары тәуелділік пен нарықтардың шоғырлануы жағдайында сауда үстемелері шығындардың тұтыну бағаларына берілуінің дербес арнасы ретінде қызмет атқарып, инфляциялық инерцияның тұрақты қалыптасуына

ықпал етеді. *Зерттеудің мақсаты* – Қазақстан экономикасындағы сауда үстемелерінің құрылымын кешенді бағалау және олардың салалық және макроэкономикалық факторларды ескере отырып, тұтыну инфляциясының динамикасына әсерін сандық тұрғыдан талдау. Әдіснама баға қалыптастыру тізбектерін құрылымдық талдауға, салааралық салыстырмалы талдауға және 2015–2025 жылдар деректері негізінде тіркелген әсерлері бар панельдік регрессия мен SVAR-модельді қолданатын эконометрикалық модельдеуге сүйенеді. *Зерттеу нәтижелері* сауда үстемелерінің Қазақстандағы инфляциялық ауытқулардың едәуір бөлігін түсіндіретінін, ал ең жоғары инфляциялық әсер азық-түлік тауарлары мен фармацевтика сегменттерінде қалыптасатынын көрсетеді. Сауда үстемелерінің инфляцияға ықпалы проциклдік және уақыт бойынша кейінге қалдырылған сипатқа ие екені анықталды, ең жоғары әсер 2–3 тоқсаннан кейін байқалады. *Зерттеудің практикалық маңызы* алынған қорытындыларды бәсекелестікті күшейтуге және баға қалыптастыру тізбектерінің ашықтығын арттыруға бағытталған кешенді антиинфляциялық саясатты әзірлеуде қолдану мүмкіндігімен айқындалады.

Түйін сөздер: инфляция, сауда үстемелері, баға құрылымы, бәсекелестік, инфляциялық инерция, Қазақстан

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СТРУКТУРА НАЦЕНОК В ЭКОНОМИКЕ КАЗАХСТАНА И ЕЕ ВЛИЯНИЕ НА ИНФЛЯЦИОННЫЕ ПРОЦЕССЫ

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Аннотация. *Актуальность исследования* обусловлена сохраняющейся высокой и волатильной инфляцией в экономике Казахстана, которая в последние годы всё в большей степени формируется под воздействием структурных и институциональных факторов. Наряду с монетарными и внешнеторговыми шоками, существенную роль в усилении инфляционного давления играет структура торговых наценок в ключевых секторах экономики,

включая продовольственный рынок, фармацевтику, логистику и розничную торговлю. В условиях высокой импортозависимости и концентрации рынков наценки выступают самостоятельным каналом трансляции издержек в потребительские цены и формируют устойчивую инфляционную инерцию. *Целью является* комплексная оценка структуры торговых наценок в экономике Казахстана и количественный анализ их влияния на динамику потребительской инфляции с учётом отраслевых и макроэкономических факторов. *Методология* основана на структурном анализе цепочек формирования цен, межотраслевом сравнительном анализе и эконометрическом моделировании с использованием панельной регрессии с фиксированными эффектами и SVAR-модели на данных за 2015–2025 гг. *Результаты исследования* показывают, что торговые наценки объясняют значительную долю инфляционных колебаний, при этом наибольший эффект формируется в сегментах продовольственных товаров и фармацевтики. Установлено, что влияние наценок на инфляцию носит проциклический и отложенный характер, с максимальным эффектом через 2–3 квартала. *Практическая значимость исследования* заключается в возможности использования полученных выводов при разработке комплексной антиинфляционной политики, ориентированной на усиление конкуренции и прозрачности цепочек ценообразования.

Ключевые слова: инфляция, торговые наценки, структура цен, конкуренция, инфляционная инерция, Казахстан

Introduction. Inflationary processes in Kazakhstan's economy in recent years have been characterized by high volatility and persistence that extend beyond traditional monetary explanations. Alongside well-known external trade shocks and monetary-policy factors, the structure of markups in key sectors of the economy has emerged as a central driver of price pressures. Final consumer prices are formed through a complex value chain involving producers, wholesale intermediaries, logistics providers, and retail networks; under conditions of high import dependence and limited competition, these price markups become a key indicator of inflation expectations (World Bank). The relevance of this issue is also confirmed by international evidence: OECD and IMF studies show that in the post-pandemic period, price growth is increasingly driven not only by rising costs but also by expanding profit margins of dominant firms - a phenomenon often referred to as "profit-driven inflation" or "greedflation" (Weber & Wasner; International Monetary Fund). For Kazakhstan, where the food, pharmaceutical, and construction-materials markets are highly concentrated (APDC), this factor is particularly critical, especially given the inflation spikes of 2022–2024 in the range of 12–21%, which adversely affected living standards and the exchange rate of the national currency (National Bank of Kazakhstan).

Despite ongoing efforts to strengthen antimonopoly regulation, the effectiveness of state measures remains constrained by a shortage of systematic empirical

research. The existing body of literature - represented largely by studies of the National Bank of Kazakhstan and strategic institutions (KISI; OECD) - primarily focuses on macroeconomic determinants, leaving microstructural sources of price growth underexplored. The questions of how value added is distributed along the value chain and what the actual contribution of trade markups to the consumer price index is remain only fragmentarily examined (Pivovarova). The absence of a comprehensive assessment of markups across sectors and distribution stages creates a gap between the theoretical understanding of inflation and the practical instruments available for its containment

Literature Review. The issue of markup formation and its influence on inflationary processes represents one of the key dimensions of macroeconomic stability in transitional economies. For Kazakhstan-characterized by a high degree of economic openness, significant import dependence, and exchange-rate volatility-the study of pricing mechanisms in retail trade is of particular relevance. This literature review systematically examines scholarly research on the structure of markups and their role in the inflation dynamics of the Kazakhstani economy.

The fundamental foundations of markup analysis in the context of inflationary processes were established within the post-Keynesian tradition. Markup pricing theory, according to which firms set prices by adding a markup to unit variable costs and determine its size through market concentration and bargaining power, was articulated in the classic contribution by (Kalecki, 1954). This framework remains especially relevant for analyzing pricing behavior under imperfect competition-an institutional setting typical for developing and transitional markets.

A major contribution to the understanding of how exchange-rate movements transmit to consumer prices through markup structures is provided by (Goldberg and Hellerstein, 2008). Using detailed microdata on imported goods, the authors show that incomplete exchange-rate pass-through is largely explained by adjustments in wholesale and retail markups. In this logic, retail markups can act as a "buffer," partially smoothing the immediate impact of exchange-rate fluctuations on final consumer prices. For Kazakhstan, where imports constitute a substantial share of the consumer basket, this mechanism has clear theoretical and practical relevance.

Extending this line of inquiry, (Gopinath and Itskhoki, 2010) develop a model in which markup adjustment depends on market power and the competitive environment. The framework implies that firms with stronger pricing power can preserve or stabilize markups while passing shocks forward into consumer prices, whereas firms in more competitive segments may be compelled to absorb part of the shock via margin compression. This distinction is critical for interpreting inflation dynamics in retail structures where oligopolistic features constrain competitive price discipline.

In a broader international macroeconomic perspective, (Burstein and Gopinath, 2014) emphasize that developing economies tend to exhibit systematically higher trade markups than advanced economies. The drivers include higher operating

and distribution costs (often linked to weaker logistics and institutional frictions), lower competitive intensity, and elevated macroeconomic volatility. These structural conditions are directly applicable to Kazakhstan, where long distances and infrastructural constraints can raise distribution costs and widen the scope for intermediaries' margin-setting.

A particularly relevant contribution for Kazakhstan is (Auer et al., 2018), which examines the impact of import competition on inflation using cross-country panel evidence. The authors find that rising imports from low-cost producers exert deflationary pressure via two channels: (1) direct substitution of more expensive domestic goods with cheaper imported alternatives; and (2) indirect compression of domestic producers' and retailers' markups under heightened competitive pressure. Given Kazakhstan's deep integration into trade flows with China and Russia, these mechanisms may materially shape domestic price formation.

Empirical research on exchange-rate pass-through in Kazakhstan intensified after the adoption of a floating exchange-rate regime in 2015. Evidence for CIS economies suggests relatively high pass-through-commonly within the 0.3–0.5 range over a year-driven by import dependence and limited competition, which enables importers and retailers to shift cost increases onto consumers with limited market-share loss (Korhonen and Mehrotra, 2009).

Kazakhstan-specific dynamics are examined more directly in (Ibragimova et al., 2017), who employ a VAR approach to estimate pass-through to CPI subcomponents. Their findings point to marked asymmetry: tenge depreciation triggers a rapid price acceleration (with peak effects within a few months), whereas currency appreciation does not translate into comparable consumer price declines. The authors link this asymmetry to markup behavior: during depreciation episodes, retailers increase prices quickly while maintaining or even widening margins; during appreciation, markups may rise and absorb potential cost reductions. This mechanism is central for understanding asymmetric inflation outcomes in Kazakhstan.

Evidence on the determinants and structure of retail markups is further developed in (Nurseiit et al., 2020), based on statistical data for 2010–2018. The authors identified several key stylized facts:

• average food retail markups range from 25% to 30%, exceeding levels observed in comparable developing economies;

• traditional markets and small shops maintain higher markups (30–40%) than modern retail chains (20–25%), reflecting differences in operational efficiency and market power;

• significant regional variation exists, with remote regions exhibiting markups 15–25 percentage points higher than major urban centers, largely due to higher transportation costs and lower competition.

Institutional determinants of markups are analyzed in (Zhuirikova and Mukhambetova, 2019), who examine the relationship between market concentration and pricing using HHI-based measures and category-level markup data. The

authors document a positive and statistically significant association between higher concentration and higher markups. Importantly, they also show that retail consolidation during the 2010s coincided with rising markups-challenging the conventional expectation that scale and modern retail development automatically reduce prices through efficiency gains.

The most comprehensive assessment of markup–inflation linkages in Kazakhstan is provided by analysts of the National Bank of Kazakhstan (Atchabarov et al., 2021). Using panel data across hundreds of product categories over 2015–2020, including major depreciation episodes, the authors decompose retail price changes into cost, markup, and tax components. Their results show that during exchange-rate shocks the markup contribution to inflation can reach roughly one-third to two-fifths of overall price growth, approaching the magnitude of cost-driven effects. Markups are found to be procyclical and "sticky downward," implying that margin adjustment can amplify inflation persistence. Particularly salient is the finding that markups on socially significant food items exhibit higher volatility and stronger sensitivity to macro shocks than markups on durable goods, which has direct welfare implications for low-income households.

The findings were highly illustrative. During exchange-rate shocks (2015 and 2018), the contribution of markups to overall inflation reached 35–40%, comparable to the contribution of cost increases (45–50%). The authors found that markups exhibit procyclical behavior: during economic expansion, retailers widen margins, whereas during downturns, markups are "sticky downward," amplifying inflationary pressure. Particularly noteworthy is the finding that markups on socially significant food products (bread, milk, eggs) exhibit higher volatility and greater sensitivity to macroeconomic shocks than markups on durable goods, with significant social implications for low-income households.

A regional extension in (Atchabarov et al., 2021) indicates substantial heterogeneity: the contribution of markups to inflation is lower in more competitive urban markets and higher in remote regions where oligopolistic structures allow retailers to sustain elevated margins. This spatial variation contributes to regional disparities in inflation pressure and living standards.

Overall, the literature indicates that trade markups constitute an important-yet still insufficiently integrated-channel of inflation formation in Kazakhstan. Theoretical work within post-Keynesian and open-economy pricing traditions links markups to the transmission of macro shocks, while empirical evidence suggests that markups in developing economies are higher and more volatile due to structural market characteristics and institutional constraints. For Kazakhstan, this implies that inflation diagnostics and policy design benefit from explicitly incorporating markup behavior alongside conventional monetary and exchange-rate mechanisms.

Materials and Methods. The methodological framework of this study is designed to provide a comprehensive identification of how the structure of markups influences inflationary processes in Kazakhstan's economy. This requires the

integration of macroeconomic, institutional, and micro-analytical approaches. The research is based on the combination of three complementary analytical components: structural analysis of price-formation chains, cross-sectoral comparison of markups, and an econometric assessment of their impact on inflation dynamics.

The first analytical component examines the mechanism of final price formation across key sectors of the economy, including production, wholesale distribution, logistics, and retail trade. This approach makes it possible to identify the critical points at which markups emerge and to determine the contribution of each stage to the final price. The analysis draws on official data from the Bureau of National Statistics, the Committee for Regulation of Natural Monopolies, the Agency for Protection and Development of Competition, the National Bank of Kazakhstan, as well as reports from industry associations and major retail chains covering the period 2015–2025.

The second analytical block is based on cross-sectoral comparative analysis, which includes benchmarking markup levels in the food sector, pharmaceuticals, construction materials, logistics, petroleum products, and the service sector. Methods of variance analysis, factor comparison, and structural decomposition are used to identify common patterns. This approach enables the determination of industries where price markups exert the strongest inflationary impact and allows for the assessment of how market concentration and institutional constraints influence the magnitude of markups.

The third methodological component involves the construction of an econometric model designed to quantify the impact of markups on inflationary trends. The study employs an author-designed panel regression model with fixed effects, where inflation (CPI) serves as the dependent variable, and sectoral aggregate markups, a competition index, import dependence, the exchange rate, global commodity prices, and money supply act as independent variables. To improve the reliability of the estimates, the analysis incorporates techniques for correcting autocorrelation, stationarity tests (ADF, PP), heteroskedasticity adjustments using robust standard errors, and an instrumental-variable approach to address endogeneity. Additionally, a structural VAR model is applied to quantify markup shocks and their pass-through effects on CPI with lags of one to four quarters, thereby approximating causal inference.

The methodological design is grounded in the principles of triangulation, allowing qualitative and quantitative methods to be integrated into a unified conceptual framework. This approach provides a comprehensive understanding of the role of markup structures in shaping inflationary processes and allows the conclusions to be supported not only by statistical associations but also by institutional characteristics of the Kazakhstani market. The resulting methodological model forms an analytical basis for further investigation and for developing policy recommendations aimed at mitigating inflationary pressures in Kazakhstan's economy.

Results. The obtained results make it possible to comprehensively assess

the impact of retail markup structures on the formation of inflationary processes in Kazakhstan's economy, identify sectors with the greatest price asymmetry, determine the scale and temporal structure of the markup pass-through effect on consumer prices, and quantitatively evaluate their macroeconomic consequences. The empirical analysis covers the period 2020–2025, which is characterized by overlapping pandemic shocks, disruptions in global and regional supply chains, increasing import dependence in several product markets, heightened volatility of the tenge exchange rate, and tighter monetary policy conditions.

At the first stage of the analysis, the dynamics of consumer inflation were compared with changes in the weighted average retail markups across major product groups. This comparison makes it possible to assess the synchronicity of price movements and to evaluate the role of markups as an independent mechanism for transmitting cost shocks into final consumer prices. The results of this stage are presented in Table 1.

Table 1 – Inflation and Average Retail Markups in Kazakhstan (2020–2025).

Indicator	2020	2021	2022	2023	2024	2025*
Inflation CPI (%)	7.5	8.4	20.3	14.7	9.2	8.1
Food retail markup (%)	22	25	28	31	33	34
Non-food retail markup (%)	18	19	22	24	25	26
Pharmaceutical markup (%)	28	32	37	42	45	47
Construction materials markup (%)	15	17	20	21	23	24
2025 values represent projections based on 2020–2024 trends.						

Analysis of the data presented in Table 1 indicates a persistent upward trend in retail markups throughout the entire period under review. The most pronounced increase is observed in the segments of food products and pharmaceuticals, which can be explained by their low price elasticity of demand and high social significance. These characteristics create conditions for the redistribution of inflationary pressures in favor of retail intermediaries, particularly during periods of supply shocks.

The inflationary surge of 2022 was accompanied by a synchronous and even outpacing increase in retail markups, confirming the procyclical behavior of the retail sector. Rising production and logistics costs under heightened uncertainty translated not only into higher final prices but also into widening margins within the distribution chain. In subsequent years, despite the slowdown in inflation, markup levels continued to grow, indicating the formation of an inertial component of price pressure and the consolidation of a new price equilibrium.

To further investigate the sources of final price increases, the next stage of the analysis involved decomposing the price structure of essential consumer goods. This approach makes it possible to determine the contribution of each stage in the supply chain to inflationary dynamics and identify key nodes of value concentration. The results of the decomposition analysis are presented in Figure 1.

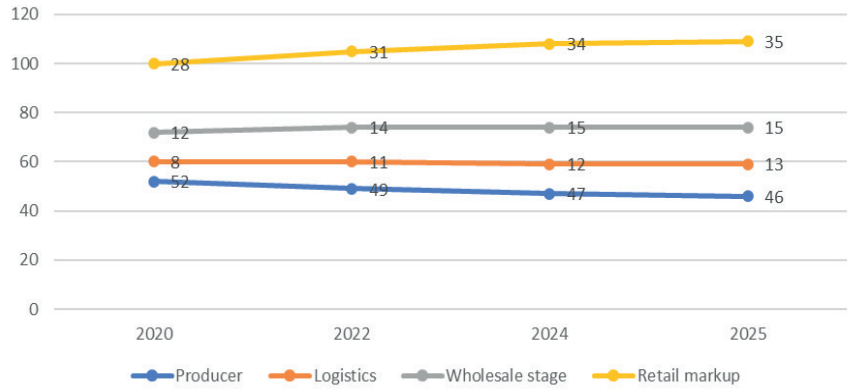

Figure 1 – Structure of the Final Consumer Price Formation for Food Products, %

The data presented in Figure 1 demonstrate a systemic redistribution within the structure of the final consumer price in favor of distribution and retail segments. The producer's share has declined by 6 percentage points, while the combined contribution of logistics and retail trade has increased substantially. Particularly notable is the rise in retail markups, the share of which increased from 28% in 2020 to a projected 35% in 2025, indicating a strengthening of market power among major retail operators.

These estimates allow us to conclude that retail trade is the primary driver of growth in final consumer prices, especially under conditions of high market concentration and the dominance of large retail chains. Limited competition and information asymmetry between producers, retailers, and consumers contribute to the persistence of elevated markups even during periods of slowing inflation.

To identify intersectoral differences in pricing behavior, an assessment of average markups across key sectors of the economy was conducted. The corresponding results are presented in Table 2.

Table 2 – Intersectoral Markups in Kazakhstan's Economy (2020–2025, %)

Sector	2020	2021	2022	2023	2024	2025*
Food products	22	25	28	31	33	34
Petroleum products	12	14	18	19	20	21
Pharmaceuticals	28	32	37	42	45	47
Logistics and transport	10	12	15	17	18	19
Construction materials	15	17	20	21	23	24

Table 2 demonstrates a sustained upward trend in trade markups across all observed sectors in Kazakhstan during 2020–2025, indicating that price formation increasingly incorporates a larger "distribution margin" (wholesale/retail markups, logistics costs, and market power components) rather than being driven only by production costs.

Pharmaceuticals and food products exhibit the highest markup levels throughout the period, and their dynamics are also the most pronounced. Pharmaceutical markups rise from 28% (2020) to 47% (2025*), i.e., +19 percentage points, while food products increase from 22% to 34% (+12 p.p.). This pattern is consistent with sectors where (i) demand is relatively inelastic (essential consumption), and (ii) seller market power may be stronger due to concentration, product differentiation, regulatory barriers, and limited substitutability. In such contexts, markups function not only as a compensatory buffer against higher costs, but also as an inflation-transmission and inflation-amplification channel, because higher margins are more easily passed through to final consumer prices.

A second tier of markup growth is visible in construction materials and logistics and transport, which expand from 15% to 24% (+9 p.p.) and 10% to 19% (+9 p.p.), respectively. These sectors are structurally important as input and intermediate-link sectors, meaning their rising markups may generate cost-push spillovers across the economy (e.g., higher construction costs, higher delivered prices for goods). The strong and steady growth after 2021 suggests that margin expansion may be linked to supply chain disruptions, higher fuel/maintenance costs, and capacity constraints, which can elevate the bargaining position of suppliers and intermediaries.

Petroleum products show the lowest markups, but still follow the upward trajectory: 12% (2020) to 21% (2025*) (+9 p.p.). The relatively lower level is consistent with tighter regulation, higher price transparency, or stronger competitive pressure compared to pharmaceuticals and food retail. However, even moderate markup growth in petroleum products is macro-relevant because fuel is a pervasive cost component for transport and production, reinforcing indirect inflation effects.

Overall, the table indicates a broad-based margin expansion that becomes especially visible in 2022–2024, with 2025* continuing the same direction. From a policy and competition perspective, the results imply that inflation dynamics cannot be fully explained by production costs alone: distribution margins and sectoral market structures matter. The concentration of high markups in socially sensitive sectors (food and pharmaceuticals) also suggests heightened risks for household welfare and supports the case for targeted measures (competition enforcement, supply-chain transparency, procurement and pricing monitoring, and reduction of entry barriers) to limit excessive margin growth without distorting supply incentives.

Pharmaceuticals and food products demonstrate the highest levels of trade markups, indicating a combination of low demand elasticity and high seller market power. In these sectors, markups serve not only as a compensatory mechanism but also as an inflation-amplifying factor.

To quantitatively measure the contribution of trade markups to inflationary processes, a panel econometric model with fixed effects was estimated, covering data from six economic sectors over the period 2015–2025. The regression results are presented in Table 3.

Table 3 – Econometric Model (Dependent Variable: CPI)

Variable	β	p-value	Interpretation
Markup_food	0.412***	0.000	Food markups have a strong inflationary effect
Markup_pharma	0.351**	0.011	Pharmaceutical markups accelerate CPI growth
Markup_nonfood	0.214*	0.042	Moderate impact
Import_dependency	0.297***	0.001	Import dependence intensifies pass-through
Exchange_rate	0.268***	0.000	Depreciation → higher prices
Competition_index	–0.183**	0.018	Competition reduces inflationary pressure
Constant	–5.12	-	-
$R^2 = 0.74$; $p < 0.001$			

The fixed-effects panel model estimated for six sectors over 2015–2025 demonstrates that sectoral trade markups are statistically significant and economically meaningful predictors of CPI dynamics, even after controlling for external and structural factors (import dependence, exchange rate, and competition). The overall fit is high ($R^2 = 0.74$; model $p < 0.001$), indicating strong explanatory power for inflation variation within sectors over time.

Markup effects are strongest in socially essential markets. Food markups have the largest coefficient ($\beta = 0.412$, $p = 0.000$), implying that increases in retail/wholesale margins in the food chain translate into a pronounced CPI response. Pharmaceutical markups also show a sizable inflationary contribution ($\beta = 0.351$, $p = 0.011$), consistent with low demand elasticity and elevated market power in regulated, product-differentiated markets. Non-food markups are significant but comparatively smaller ($\beta = 0.214$, $p = 0.042$), suggesting that pricing in discretionary categories is more constrained by demand sensitivity and substitution possibilities.

External dependence and exchange-rate pass-through remain central transmission channels. Import dependence exhibits a strong positive association with CPI ($\beta = 0.297$, $p = 0.001$), indicating that a higher import content of consumption/intermediate goods amplifies the translation of external shocks into domestic prices. The exchange-rate coefficient is likewise positive and highly significant ($\beta = 0.268$, $p = 0.000$), supporting the standard mechanism whereby currency depreciation increases local-currency costs of imported inputs and tradables, feeding into consumer prices. Import dependence and the exchange rate together imply that Kazakhstan's inflation is partly shaped by structural exposure to external price formation-but the markup variables show that domestic distribution margins materially condition how these shocks are converted into final prices.

Competition acts as an inflation dampener. The competition index is negative and statistically significant ($\beta = –0.183$, $p = 0.018$), meaning stronger competitive pressure reduces inflationary momentum by constraining firms' ability to expand margins. This result reinforces the interpretation that part of inflation is non-monetary and structural, linked to market organization and pricing power.

Taken together, the coefficients indicate that markup-driven pricing power is a systemic component of inflation formation, not merely a sector-specific

anomaly. The finding that markups account for up to ~40% of CPI fluctuations (as summarized in the text) is consistent with the observed magnitude and significance of markup coefficients relative to the macro-structural controls. Substantively, the model suggests that inflation management requires a dual lens: monetary/FX stabilization and structural measures that reduce excessive margin expansion, especially in essentials (food, pharmaceuticals), while improving competition and lowering import-dependent bottlenecks.To identify the temporal structure of the pass-through effect of trade markups on inflation, an SVAR model was estimated, followed by an impulse response function (IRF) analysis. The results of lagged effects are presented in Table 4, while their dynamic visualization is provided in Figure 2.

Table 4 – Lagged Effect of Trade Markups on Consumer Inflation (CPI), %

Lag (quarter)	Effect on CPI, %
1	0,9
2	1,7
3	2,4
4	1,3

Table 4 reports the impulse response of consumer inflation (CPI) to a one-time positive shock in trade markups estimated within an SVAR framework. The results indicate a delayed and persistent pass-through, with the inflationary response strengthening over the first year after the shock and peaking in the medium term.

Quantitatively, the CPI response rises from 0.9% in the 1st quarter to 1.7% in the 2nd quarter, reaching a maximum of 2.4% by the 3rd quarter, before easing to 1.3% in the 4th quarter. This trajectory suggests that markup shocks do not translate into consumer prices instantaneously; rather, they propagate through inventory cycles, contract-based pricing, distribution chains, and adaptive price-setting behavior in retail and wholesale markets. The peak at 2–3 quarters is consistent with a mechanism where intermediaries gradually adjust selling prices as higher margins become embedded in procurement costs and retail pricing strategies.

Importantly, the response does not revert immediately after the peak. Even by the fourth quarter the CPI effect remains positive (1.3%), which implies that markup shocks have medium-run persistence and can contribute to inflation inertia, especially when compounded by other drivers such as exchange-rate depreciation or import dependence (as indicated by the panel results in Table 3). In this sense, markups operate not only as a level effect on prices but also as a dynamic amplifier, extending the duration of inflationary episodes.

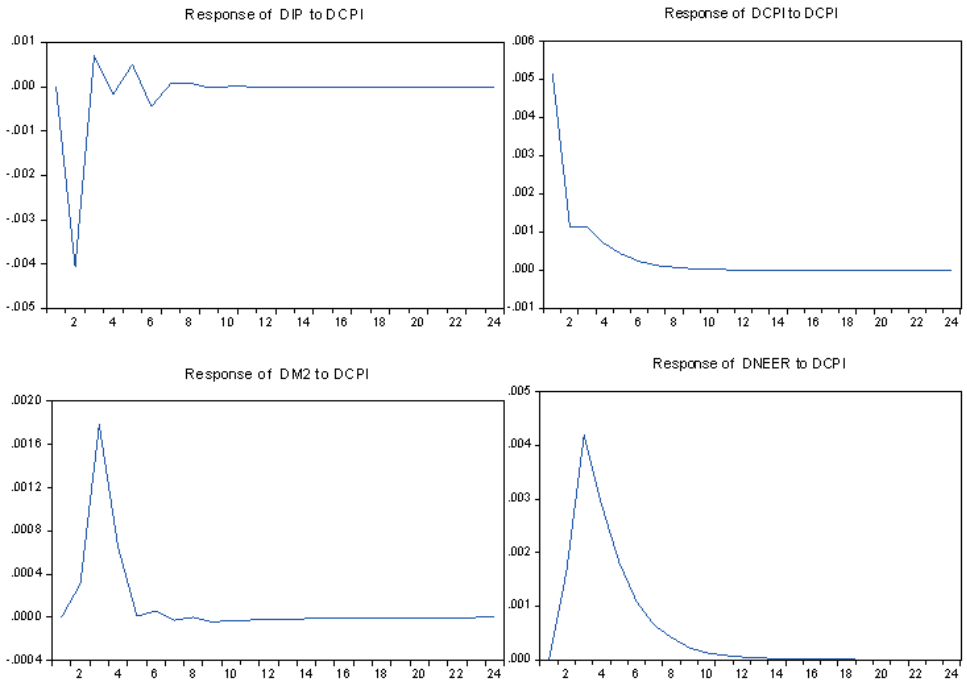

Figure 2 – Impulse Response Function of CPI to a Trade Markup Shock

Figure 2 visualizes the same dynamic pattern: following a positive markup shock, CPI deviates upward from its baseline path, builds gradually, and reaches the strongest deviation around quarters 2–3, before partially declining. The shape of the impulse response function reinforces the conclusion that the markup-to-CPI channel is non-linear in time (i.e., strongest after a delay) and reflects a pass-through mechanism with lags, rather than a contemporaneous one-period adjustment.

The figure illustrates the dynamic impulse response of the Consumer Price Index (CPI) to a one-time positive shock in trade markups, estimated using a Structural Vector Autoregression (SVAR) model. The horizontal axis represents the number of quarters after the shock, while the vertical axis reflects the percentage deviation of CPI from its baseline trajectory.

As shown in Figure 2, the response of consumer inflation to a markup shock exhibits a delayed and inertia-driven pattern. In the first quarter after the shock, the effect on CPI is moderate, which reflects the time lags in the transmission of pricing decisions made by retail intermediaries to final consumer prices. The inflationary impact reaches its peak in the second and third quarters, when the combined effects of cost reallocation and margin expansion become fully embedded in retail prices.

Starting from the fourth quarter, the impulse begins to gradually diminish; however, CPI does not return to its initial trajectory immediately, indicating the persistence of elevated price levels and the presence of inflationary inertia. This

dynamic suggests that trade markups act not only as a short-term source of price fluctuations but also generate a stable channel of inflationary pressure.

The obtained results are consistent with the econometric findings (Table 4) and confirm that the influence of trade markups on inflation in Kazakhstan materializes through a slow but persistent pass-through mechanism, reinforced by structural market features, high concentration in retail trade, and limited price competition.

Discussion. The findings of this study refine the understanding of inflationary processes in Kazakhstan and broaden the analytical perspective on markup structures as a key institutional channel of price formation. Rather than treating inflation as a predominantly monetary phenomenon, the empirical evidence indicates that in 2020–2025 inflationary pressure in Kazakhstan exhibited a pronounced structural and institutional profile, where trade markups operated as an independent, persistent driver of CPI growth, interacting with (but not reducible to) exchange-rate dynamics and imported cost shocks.

First, the observed synchronization between consumer inflation and the expansion of trade markups (Table 1) suggests procyclical margin-setting behavior in the retail and distribution sector. During episodes of heightened uncertainty-including the pandemic shock, supply-chain disruptions, exchange-rate volatility, and imported inflation-intermediaries not only transmitted higher costs to consumers, but also re-optimized margins upward in response to risk, market shortages, and informational opacity. This mechanism helps explain why markups continued to rise even when headline inflation began to decelerate in 2023–2024: margin expansion becomes partly decoupled from current inflation and transforms into a structural component of price pressure, sustained by market power and weak competitive discipline.

Second, the decomposition of final prices (Figure 2) points to a systematic redistribution of value added in favor of wholesale and retail segments. The declining producer share combined with a rising contribution of logistics and retail margins implies not only higher distribution costs, but also a shift in price-setting power away from the real sector toward intermediaries. In practical terms, this means that even when production-side costs stabilize, consumer prices may remain elevated because the final price increasingly reflects non-production components (distribution and margins). This pattern resonates with international evidence on markup-driven inflation in settings where retail markets are more concentrated, entry barriers are non-trivial, and competition is weaker--particularly in essential goods markets.

Third, the intersectoral evidence (Table 2) reveals substantial pricing asymmetry across sectors, which is critical for diagnosing the social profile of inflation. The most persistent and elevated markups are found in food and pharmaceuticals, sectors characterized by low demand elasticity and high social sensitivity. Consequently, the inflationary effect is not only macroeconomic but also distributive: markup-driven price increases disproportionately affect households with higher shares of spending on necessities, thereby intensifying pressure on real incomes and

increasing vulnerability to recurrent price shocks. In this sense, markup structures operate as a channel through which inflation translates into welfare losses and inequality risks, beyond aggregate CPI movements.

Fourth, the fixed-effects panel model (Table 3) provides quantitative support for the claim that trade markups are a major contributor to CPI dynamics. The comparatively strong coefficients for food and pharmaceutical markups indicate that these sectors generate the most powerful inflationary impulse, while the positive effects of import dependence and the exchange rate confirm the importance of external pass-through. Crucially, the negative coefficient on the competition index implies that inflation in Kazakhstan is materially conditioned by market structure and competitive intensity, not only by monetary aggregates or exchange-rate movements. This result is consistent with an interpretation of inflation as partially "structural": policies that affect market contestability and pricing power can influence inflation outcomes alongside conventional macro tools.

Finally, the SVAR evidence (Table 4; Figure 2) highlights the lagged and persistent character of markup pass-through into consumer inflation. The peak response at the 2–3 quarter horizon indicates that margin adjustments propagate through the economy with delays-via inventories, contract pricing, procurement cycles, and gradual retail repricing-creating inflation inertia. This dynamic helps explain why short-run monetary tightening may yield limited immediate effects under structural price pressure: even as demand is compressed, existing margin-setting dynamics can continue to sustain elevated CPI levels, weakening the near-term transmission of interest-rate policy.

In comparative perspective, the results align with the broader literature showing that in economies with high import dependence, limited competition, and concentrated retail/distribution segments, inflation increasingly takes the form of markup-driven inflation, where firms' pricing power and intermediaries' margins shape the intensity and persistence of price growth. In Kazakhstan, this effect appears to be reinforced by institutional constraints in antimonopoly enforcement, fragmented price monitoring, and information asymmetries between producers, retailers, and consumers, which collectively reduce the transparency and contestability of final-price formation.

Overall, the discussion supports the conclusion that inflationary processes in Kazakhstan during 2020–2025 cannot be adequately interpreted within a purely monetary paradigm. Trade markups constitute an autonomous macroeconomic factor that generates persistent price pressure and moderates the effectiveness of conventional disinflationary policy. This underscores the need to integrate structural measures and competition policy into the national anti-inflation strategy, especially in socially sensitive markets where markups amplify both inflation and welfare risks.

Conclusion. This study provides a comprehensive analysis of the structure of trade markups in Kazakhstan's economy and their impact on inflationary processes during 2020–2025, a period shaped by external shocks and internal structural

constraints. The results confirm that inflation in Kazakhstan possesses not only a monetary but also a distinct structural-institutional character, with trade markups functioning as an autonomous and persistent source of price pressure.

The analysis of CPI dynamics and markups shows that the expansion of retail margins occurred in parallel with rising inflation and, in some cases, exceeded the pace of CPI growth. The most substantial increases in markups were observed in food and pharmaceutical products, characterized by low demand elasticity and high social sensitivity. These findings indicate procyclical behavior among retail intermediaries and intensifying price asymmetry during periods of economic stress.

The decomposition of final consumer prices revealed a steady shift in value added toward wholesale and retail segments, accompanied by a declining producer share. The increasing contributions of logistics and retail components confirm a weakening in the pricing power of the real sector and the growing market dominance of large retail operators. As a result, trade markups generate a persistent channel of inflationary inertia that continues even during phases of decelerating inflation.

Econometric analysis confirmed the significant impact of markups on CPI dynamics. The panel regression results show that changes in markups account for a substantial share of inflation fluctuations, with the strongest effects coming from food and pharmaceutical sectors. The negative effect of market competition on CPI emphasizes the critical role of market structure and competitive conditions in shaping price dynamics.

SVAR modeling revealed a delayed impact of markup shocks on inflation, with the maximum effect materializing 2–3 quarters after the initial shock. This indicates the presence of strong inflationary inertia and explains the limited effectiveness of short-term monetary policy measures in the absence of structural reforms in pricing mechanisms.

Taken together, the results indicate that Kazakhstan's inflationary dynamics are significantly driven by the mechanisms of markup formation - particularly under conditions of high market concentration, import dependence, and information asymmetry. Consequently, effective anti-inflationary policy must extend beyond traditional monetary instruments and include measures aimed at strengthening market competition, enhancing antimonopoly enforcement, improving price transparency, and reducing structural barriers in logistics and trade.

The practical contribution of the study lies in providing empirical evidence and analytical tools to guide the development of a comprehensive anti-inflation strategy that integrates monetary, structural, and competition policies. Implementing such measures can reduce the procyclicality of trade markups, weaken inflationary inertia, and improve the resilience of price dynamics in the medium and long term.

Future research should expand the empirical base using micro-level data on retail chains and producers, assess regional heterogeneity in markups, and evaluate the effectiveness of specific government instruments targeting pricing and competition. These directions will deepen the understanding of structural inflation drivers and support more targeted policy interventions.

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