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**BAKALAVR
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РЭУ.РФ
РОССИЙСКИЙ ЭКОНОМИЧЕСКИЙ УНИВЕРСИТЕТ
ИМЕНИ Г.В. ПЛЕХАНОВА
ТАШКЕНТСКИЙ ФИЛИАЛ



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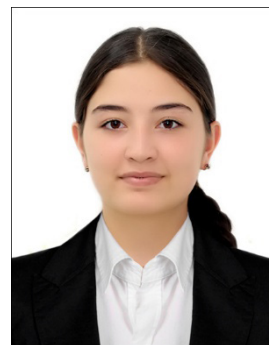
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Abstract: Structural economic reforms, managing inflation is crucial for macroeconomic stability. This article investigates the asymmetric impact of rising prices on the purchasing power of various income groups. Using econometric models and regression analysis, we empirically demonstrate that inflationary shocks disproportionately harm low- and middle-income households, worsening socio-economic disparities. Since traditional monetary tools alone are insufficient, we propose integrating inflation-targeting frameworks with targeted social protection mechanisms to achieve price stability without hindering economic growth.

Keywords: structural transformation, asymmetric impact, purchasing power of the population, econometric modeling, optimal anti-inflationary policy, inflation targeting, social disparity, curbing inflation.

Annotatsiya: Tarkibiy islohotlar sharoitida inflyatsiyani boshqarish makroiqtisodiy barqarorlikning asosiy shartidir. Ushbu maqola narxlar o'sishining turli daromadli guruhlar xarid qobiliyatiga asimmetrik ta'sirini ekonometrik modellar va regressiya tahlili yordamida empirik tadqiq etadi. Tahlillar shuni tasdiqlaydiki, inflyatsion shoklar birinchi navbatda past va o'rtacha daromadli uy xo'jaliklari budjetiga regressiv bosim ko'rsatib, ijtimoiy tabaqalanishni chuqurlashtiradi. Faqatgina klassik monetar vositalarga tayanish yetarli emasligini inobatga olib, maqolada iqtisodiy o'sishni sekinlashtirmasdan narxlar barqarorligiga erishish maqsadida inflyatsion targetlashni manzilli ijtimoiy himoya mexanizmlari bilan integratsiya qilish bo'yicha ilmiy asoslangan tavsiyalar ishlab chiqilgan.

Kalit so'zlar: tarkibiy o'zgarishlar, asimmetrik ta'sir, aholining xarid qobiliyati, ekonometrik modellashtirish, optimal antiinflyatsion siyosat, inflyatsion targetlash, ijtimoiy tabaqalanish, inflyatsiyani jilovlash.

Аннотация: В условиях структурных реформ управление инфляцией критически важно для макроэкономической стабильности. Статья исследует асимметричное влияние роста цен на покупательную способность различных доходных групп. С помощью эконометрических моделей и регрессионного анализа эмпирически доказано, что инфляционные шоки непропорционально сильно бьют по бюджетам домохозяйств с низким и средним достатком, усугубляя социальное расслоение. Поскольку традиционных монетарных инструментов недостаточно, предлагается интегрировать режим инфляционного таргетирования с механизмами адресной социальной защиты для достижения ценовой стабильности без ущерба для экономического роста.

Ключевые слова: структурные преобразования, асимметричное воздействие, покупательная способность населения, эконометрическое моделирование, оптимальная антиинфляционная политика, инфляционное таргетирование, социальное расслоение, сдерживание инфляции.

INTRODUCTION

While moderate inflation is widely recognized as a natural component of economic growth, highly volatile



price dynamics pose a severe threat to macroeconomic stability. The most insidious nature of inflation lies in its "asymmetric impact" on society. It disproportionately erodes the real incomes of low- and middle-class households, who are compelled to spend the majority of their earnings on essential daily commodities. Conversely, affluent groups can hedge against price spikes through asset diversification, meaning sudden inflation effectively acts as a catalyst for widening the socio-economic wealth gap.

This phenomenon requires urgent attention in nations undergoing full-scale transitions to market principles, such as Uzbekistan. Since the initiation of comprehensive structural reforms and market liberalization in 2017, the country has achieved robust economic expansion and poverty reduction. However, the phased deregulation of prices has inevitably triggered transitional inflation. Consequently, this study aims to empirically analyze the asymmetric effects of inflation on different income strata and provide scientifically grounded recommendations for policies that balance price stability with targeted social protection.

REVIEW OF LITERATURE ON THE SUBJECT

The scientific literature on inflation and purchasing power shows that inflation is not a socially neutral macroeconomic phenomenon. Although the consumer price index is usually presented as a general national indicator, households experience inflation differently because their consumption structures, income elasticity, savings capacity and access to financial assets differ substantially. This idea is central to the works of Angus Deaton, who demonstrated that welfare analysis must account for household-level consumption patterns rather than relying only on aggregate price indicators. In this context, inflation affects low-income households more sharply because a larger share of their income is spent on food, utilities, housing and other essential goods whose demand is relatively inelastic.

Michael Grimm, in his research on inflation inequality and pro-poor growth, emphasized that real purchasing power should be measured through group-specific price changes rather than through a single national deflator. His approach is important for studying asymmetric inflation because it shows that nominal income growth may conceal a decline in real welfare among poorer households. Similar conclusions are found in the research of Eswar Prasad, who argued that in emerging markets food and energy prices play a stronger role in shaping inflation expectations and household welfare than in advanced economies. Since low-income groups spend a larger part of their budget on basic goods, even moderate price increases may create a disproportionate welfare loss.

Pierre Monnin's study on inflation and income inequality also provides an important theoretical foundation for the present research. He showed that the relationship between inflation and inequality is non-linear: very low inflation does not always reduce inequality, while high inflation tends to worsen income distribution. This finding is especially relevant for countries undergoing structural transformation, where price liberalization, exchange rate adjustment and tariff reforms may temporarily increase inflationary pressure. In such conditions, the main policy challenge is not only to reduce inflation but also to prevent its regressive impact on vulnerable households.

Recent empirical studies by Clodomiro Ferreira, José Miguel Leiva, Galo Nuño, Álvaro Ortiz, Tomasa Rodrigo and Sirenia Vazquez further developed this approach by identifying several channels through which inflation affects households differently. They distinguish the income channel, the wealth channel and the relative consumption channel. The income channel reflects the erosion of real wages and benefits when nominal incomes adjust slowly. The wealth channel shows how inflation redistributes resources between borrowers and lenders. The relative consumption channel explains why households with different expenditure baskets face different effective inflation rates. These channels are directly applicable to the analysis of purchasing power in transformation economies, including Uzbekistan.

The research of Jaisal Caisl and co-authors for the OECD confirms that inflation during recent global shocks reduced purchasing power unevenly across households. Their findings show that households with higher shares of spending on energy, food and housing experienced stronger welfare pressure. This conclusion is important for anti-inflationary policy because it demonstrates that universal measures may be less effective than targeted instruments. In other words, inflation management should combine monetary stabilization with social protection mechanisms aimed at households most exposed to essential-goods inflation.

Ben Bernanke, Frederic Mishkin and Lars Svensson made major contributions to the theory of inflation targeting. Their studies show that a credible monetary policy framework can reduce inflation expectations and improve macroeconomic stability. However, the experience of emerging economies shows that inflation targeting cannot operate effectively in isolation from fiscal discipline, social policy and structural reforms. In developing and transition economies, inflation is often caused not only by excess demand but also by supply-side shocks, regulated price adjustments, exchange rate depreciation and administrative tariff reforms. Therefore, a narrow monetary response may reduce inflation but also slow economic growth and worsen social



inequality.

Joseph Stiglitz and Olivier Blanchard have also argued that anti-inflationary policy must consider the nature of inflationary shocks. If inflation is mainly supply-driven, aggressive monetary tightening may produce high social costs without fully eliminating price pressure. This view is particularly important in the context of national economic transformation, where price liberalization and the removal of hidden subsidies may be economically necessary but socially sensitive. In such cases, the optimal policy is not a return to price ceilings, but a combination of transparent market pricing, targeted compensation and productivity-enhancing reforms.

Studies on energy subsidy reform, including World Bank and UNDP analyses, are especially relevant for Uzbekistan. These studies show that regulated tariffs and generalized subsidies often create fiscal burdens, inefficient resource use and unequal distributional effects. Wealthier households may receive a larger absolute benefit from underpriced energy because they consume more electricity, gas and fuel. Therefore, replacing broad subsidies with targeted social assistance is considered more economically rational and socially fair. This approach is consistent with modern welfare economics, where state support is directed not to prices themselves, but to households that are genuinely vulnerable to price increases.

Overall, the reviewed literature shows that the asymmetric impact of inflation on purchasing power should be studied through an integrated framework. This framework must include household income groups, consumption structure, wage adjustment speed, social protection coverage, monetary credibility and the nature of inflationary shocks. For Uzbekistan, this means that anti-inflationary policy should not be limited to classical monetary tightening. It should combine inflation targeting, fiscal discipline, tariff transparency, targeted compensation and structural reforms aimed at improving productivity and market efficiency. Such an approach allows price stability to be achieved without weakening economic transformation or deepening social inequality.

RESEARCH METHODOLOGY

Contemporary macroeconomic literature views inflation not merely as a depreciation of currency, but as a complex socio-economic phenomenon. Academic consensus suggests that a moderate and controlled inflation rate—typically around 2 percent in developed nations and 2 to 6 percent in transitional economies—is a natural and indispensable driver of economic growth.¹ It helps sustain aggregate demand, prevents massive layoffs by mitigating “downward nominal wage rigidity,” and provides central banks with the necessary maneuvering room to lower interest rates during recessions.

However, highly volatile inflation is widely criticized in academic studies for its “asymmetric impact” on society. Uncontrolled price growth arbitrarily redistributes wealth and significantly exacerbates income inequality. This occurs because low-income households allocate most of their earnings toward basic necessities (food, utilities), the prices of which surge the fastest during economic instability. In contrast, high-income groups invest in inflation-resistant assets like real estate or foreign currency, often multiplying their net worth through the “wealth effect.” This asymmetric burden is empirically supported by the U.S. Congressional Budget Office, which found that from 2019 to 2023, the cost of a typical consumer basket rose by an average of 4.7 percent annually for the lowest-income households, compared to just 4.4 percent for the highest-income group.²

ANALYSIS AND RESULTS

Statistical analyses reveal a stark disparity between nominal economic indicators and real household purchasing power. In 2023, while general inflation stood at 8.8%, food-specific inflation disproportionately reached 11.6%. This severely impacts low-income demographics, which allocate 60-70% of their budget exclusively to food. Furthermore, with energy tariffs (natural gas and electricity) surging by 71% and 52.5% respectively in late 2024, the cost of living escalated significantly. Consequently, although the national average nominal monthly wage grew by 18.5% (reaching 5,092.2 thousand UZS in 2024), real wage growth was constrained to merely 8.1%. Despite state-mandated 15% increases in pensions and targeted public sector salaries in late 2024, the remuneration for educators and healthcare workers remains below the national average threshold.

Empirical estimations using the Non-linear Autoregressive Distributed Lag (NARDL) model confirm the structural asymmetry of domestic price dynamics, manifesting as the “Rockets and Feathers” effect. The model demonstrates that adverse macroeconomic shocks, such as exchange rate depreciation, trigger an immediate and sharp escalation in retail prices. In contrast, local currency appreciation does not result in an equivalent or rapid downward adjustment by retailers. Furthermore, dynamic multiplier analyses indicate that isolated supply-side shocks, particularly energy tariff hikes, inflict a prolonged hysteresis effect on household budgets.

1 Information and educational website on financial literacy of the Central Bank of the Republic of Uzbekistan, finlit.uz

2 Congressional Budget Office, Nonpartisan Analysis for the U.S. Congress, cbo.gov

The econometric findings dictate that the macroeconomic system requires an average of 10 to 12 quarters (approximately 2.5 to 3 years) to fully absorb these inflationary shocks and revert to a baseline equilibrium.

Since 2017, the Republic of Uzbekistan has been spearheading a sweeping agenda of structural reforms aimed at transitioning from a strictly state-controlled economy to a competitive framework anchored in free-market principles. This monumental shift encompasses the liberalization of the foreign exchange market, the dismantling of cross-border trade barriers, the fundamental transformation of large state-owned enterprises, and the overall enhancement of the entrepreneurial climate. According to World Bank assessments, this intensive reform trajectory has successfully anchored Uzbekistan's annual real Gross Domestic Product (GDP) growth at a steady rate of roughly 6 percent. Consequently, this robust economic expansion has been instrumental in driving the national poverty rate down from 8.9 percent to 5.8 percent.

However, the phased deregulation of various economic sectors and the progressive liberalization of prices have inevitably triggered sharp fluctuations in the general price level, thereby fueling transitional inflation. In conjunction with these macroeconomic dynamics, official data provided by the Central Bank of the Republic of Uzbekistan illustrates the specific trajectory of annual inflation across the 2018-2024 timeframe, shifting over the respective periods as follows (Figure 1):

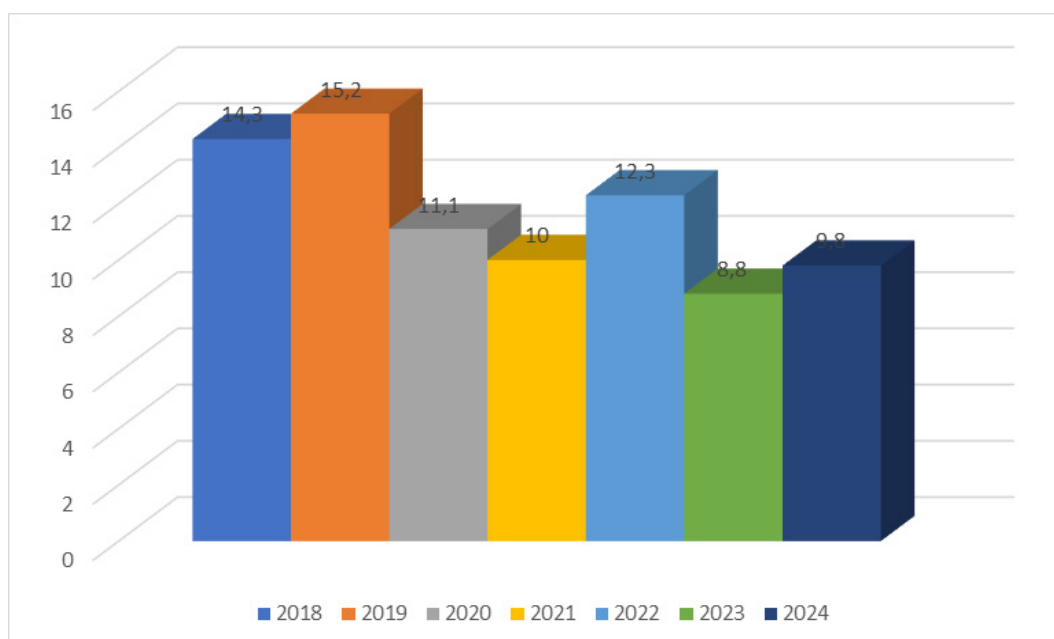


Figure 1. Annual Inflation Rate³

Although the general inflation rate exhibited a downward trend in 2023, its economic repercussions remain highly palpable. Notably, the cost of food products is escalating at a significantly accelerated pace.

According to data from the Central Bank, while overarching inflation stood at 8.8% in 2023, food-specific inflation reached a disproportionate 11.6%.⁴ This discrepancy has inflicted a particularly severe blow on low-income demographics, given that approximately 60 to 70 percent of their total household expenditures are allocated exclusively to food.⁵ The theoretical postulates discussed earlier find absolute corroboration in the actual statistical realities of our nation. Turning to the hard figures, the average nominal monthly wage within the republic was recorded at 4,337.6 thousand UZS in 2023. By 2024, this metric had climbed to 5,092.2 thousand UZS.⁶ While this reflects a nominal year-over-year surge of 18.5%, the actual real wage growth trajectory (adjusted for inflation) stood at merely 8.1%. This distinctly illustrates that the growth in real disposable incomes has been relatively constrained.

Concurrently, the official threshold for minimum consumer expenditure in 2024 was established at 621 thousand UZS per capita monthly.⁷ To put this into perspective, for a standard five-person household, the baseline monthly consumer expenditure equates to approximately 3.105 million UZS. Out of this budget, the 60-70% share consumed purely by essential food requirements amounts to roughly 2.018 million UZS. In

³ Source: Author's compilation.

⁴ Official website of the Central Bank of the Republic of Uzbekistan, cbu.uz

⁵ Official website of Kun.uz

⁶ Official website of Gazeta.uz

⁷ Official website of Kun.uz



recent years, the cost burden of utility services and public transportation has also maintained a steady upward trajectory. As an illustration, toward the latter half of 2024, tariffs for natural gas and electricity were aggressively revised upwards by 71% and 52.5%, respectively.⁸ Naturally, this specific dynamic has severely inflated the cost of living, particularly for urban demographics.

To curb inflationary pressures and refine the domestic monetary framework, the government has been deploying a series of robust countermeasures. A cornerstone of this effort was the enactment of the Presidential Decree No. UP-5877 on November 18, 2019, explicitly titled “On Improving Monetary Policy Through a Phased Transition to an Inflation Targeting Regime”.⁹ Fundamentally, the strategic shift of the Central Bank of the Republic of Uzbekistan toward an inflation-targeting paradigm represents far more than mere compliance with global macroeconomic trends; it acts as a critical structural intervention engineered to rehabilitate the broader economy. The deployment of this regime inherently encapsulates a series of complex, highly interdependent core objectives:

A Phased, Goal-Oriented Transition: The practical execution of this framework officially commenced on January 1, 2020. The overarching ambition was to overhaul existing monetary transmission mechanisms to initially drive inflation down to the 10 percent threshold by 2021. Subsequently, the objective was to institutionalize and sustain a permanent, economically viable inflation target of 5 percent starting from the year 2023.

Transparency and Expectation Management: This entails more than simply decreeing a perpetual inflation target on paper. It mandates the consistent and coherent communication of these monetary objectives to the broader public, the business community, and everyday citizens. Fostering this transparency actively mitigates public panic tied to price hikes and systematically rebuilds socio-economic confidence in the future.

Deployment of Modern Monetary Instruments: To actively regulate money market interest rates and ultimately suppress aggregate price escalation, this pillar necessitates the full-spectrum utilization of all modern, comprehensive monetary tools currently at the Central Bank's disposal.

Neutralizing the “Inflationary Spiral” Threat: This involves designing robust defense mechanisms against one of the most perilous macroeconomic phenomena—sudden, violent price shocks and the subsequent emergence of an inflationary spiral (a vicious, self-perpetuating cycle where surging prices trigger wage hikes, which subsequently ignite further price inflation).

Safeguarding the national currency: Ensuring macroeconomic stability by preserving the purchasing power of the Uzbek som and mitigating the persistent depreciation pressures acting upon the exchange rate.

Cultivating a robust money market: Establishing a fully functional and competitive money market framework. This requires the systematic elimination of legacy bottlenecks that stifle economic development—namely, the artificial fragmentation of the market and the deeply rooted practice of issuing unjustified preferential loans.

Pursuant to a Presidential Decree, baseline pensions and social allowances were adjusted upwards by 15 percent, effective September 1, 2024. Subsequently, starting October 1, the salaries of public sector employees—specifically educators (excluding higher education personnel) and medical professionals—were raised by 15 percent, while the wages of other civil servants saw a 10 percent increment.¹⁰

This trajectory clearly indicates a profound policy pivot toward rigorous inflation targeting, the elevation of household living standards, and the modernization of monetary transmission mechanisms. Looking ahead, these structural efforts are anticipated to yield tangible outcomes in the near future: successfully reining in inflation, propelling the salaries of educators and medical staff to or beyond the national average, and fully institutionalizing an effective monetary policy apparatus.

Having thoroughly examined the asymmetric repercussions of inflation in the preceding sections, the research now transitions into the phase of rigorous econometric modeling. This empirical analysis is anchored in the Non-linear Autoregressive Distributed Lag (NARDL) approach.

In empirical economics, the fundamental premise of the NARDL framework lies in capturing “asymmetric” or fundamentally uneven-relationships between independent and dependent variables. To put it practically, any macroeconomic shock (whether it is an expansion in the money supply, an appreciation of the dollar, or volatility in raw material prices) triggers dual, often contrasting reactions. The model systematically decomposes these explanatory variables into their respective “positive” and “negative” partial sums for precise analysis.

Why is this methodological distinction critical? Conventional economic models operate under the rigid assumption of symmetry, positing that the economy reacts identically whether prices surge or plummet. The NARDL framework, by contrast, offers a far more realistic evaluation of actual market dynamics. When scrutinizing a core target indicator (such as inflation rates or real household disposable income in Uzbekistan),

8 Official website of Gazeta.uz

9 Decree of the President of the Republic of Uzbekistan No. UP-5877 dated 18.11.2019, Appendix 1, lex.uz website.

10 Official website of Daryo.uz

the model independently isolates and measures the exact consequences of an upward shock versus a downward shift in the explanatory factor.

Turning to global empirical practice, the predictive accuracy of the NARDL technique has been validated across a multitude of jurisdictions. Comprehensive studies conducted in China, Greece, Mexico, Ghana, and Nigeria, for instance, have conclusively demonstrated that elevated inflation does not exert a uniform burden across the board; rather, during economic downturns, the wealth gap between the affluent and the impoverished expands in a highly asymmetric fashion.

Applying this exact methodology to Uzbek statistical datasets yields profoundly insightful empirical findings. This asymmetry becomes particularly evident when evaluating exchange rate volatility. Whenever the foreign exchange rate spikes, the cost of imported commodities on the domestic market escalates both directly and instantaneously. Conversely, when the dollar depreciates and the national currency regains strength, local merchants and distributors fail to reduce retail prices with the same urgency; instead, they deliberately delay downward price adjustments for as long as possible.

This very phenomenon constitutes the absence of short-term symmetry within the economy-in other words, pure structural asymmetry. Furthermore, the derivation of dynamic multipliers reveals that a single, isolated hike in energy tariffs continues to ripple through households' inflationary expectations and their underlying family budgets over an extended horizon. For the macroeconomic system to absorb this shock and revert to its baseline equilibrium, it typically requires an average span of 10 to 12 quarters-equivalent to roughly 2.5 to 3 years. Such delayed adjustment mechanisms strongly dictate that policymakers must implement proactive, forward-looking measures to pre-empt macroeconomic crises, rather than relying strictly on reactive interventions after the damage is done.

CONCLUSIONS AND SUGGESTIONS

Through the lens of our NARDL estimations, we observed a rather harsh market reality: a single adverse supply-side shock is enough to propel consumer prices skyward like a "rocket." Conversely, once conditions normalize and input costs decline, retailers and intermediaries naturally resist relinquishing their profit margins, causing downward price adjustments to drift back to equilibrium as slowly and hesitantly as a floating "feather."

Given this landscape, what constitutes the optimal path forward? We can continue strengthening modern market-based mechanisms aimed at sustainably preserving purchasing power and enhancing economic efficiency-a framework that, in practice, supports balanced resource allocation and broad-based welfare improvements across society. The current trajectory adopted by Uzbekistan-specifically the implementation of a differentiated "social norm" and a highly targeted compensation framework executed via the National Agency for Social Protection-represents a well-founded and progressive approach to addressing pricing asymmetry.

To navigate this complex and painful transitional era swiftly and successfully, one absolute prerequisite remains: the Central Bank must hold the line on its tight monetary stance, the government must exercise uncompromising fiscal discipline, and relentless anti-monopoly reforms must be aggressively pursued across the domestic market. Only under these stringent conditions will our macroeconomy successfully anchor at the declared 5 percent inflation target, thereby ensuring that the dividends of future economic growth exert a uniformly positive, symmetric impact on the purchasing power of every social stratum.

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