

The Impact of Price on Household Debt in Developing Countries

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Abstract: *Present economic uncertainty has led to higher prices, especially for essential goods, and increasing inflation rates, which suggests that households may have lower purchasing power. This has led to greater reliance on credit to cover rising living costs, especially for low-income social classes. Hence, this study examines how prices affect household debt in ten developing countries using the autoregressive distributed lags (ARDL) model. The results show that prices and sub-indicators significantly and positively influence debt for the low-income-wealth social class. Therefore, this study proposes targeted support and market competition as key policy strategies. First, it argues for targeted subsidies, facilitated by a comprehensive database, to identify and support the most affected low-income individuals, which will improve subsidy efficiency and government monitoring. Second, the study recommends promoting competition and strengthening market oversight in critical sectors to reduce costs and expand consumer options.*

Keywords: Household debt; Prices; ARDL; Developing countries; Social class

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1. Introduction

Household debt acts as a catalyst for consumption and investment, and thus stimulates economic growth. As the economy proliferates, income and employment rise significantly, making both households and loan-issuing financial institutions optimistic (Kolios, 2020). Improved access to credit and rising debt lead to higher consumer spending, which increases demand, business investment, and aggregate economic activity. Empirical studies, particularly in advanced economies, demonstrate the positive relationship between debt and economic growth (Cohen, 2007). Many developed economies have a strong consumer culture that encourages spending and consumption. This leads to higher debt as people take out loans to finance their consumption. Consequently, advanced economies rely more on debt management than ever (Johnston et al., 2021).

The financialisation of households is characterised by the rise of citizens as investors, increased debt to maintain living standards, and the growth of lucrative institutions and global financial markets that offer financial services and products. Therefore, credit demand contributes to innovation in the financial market, changes in the financial system, and financial deregulation (Mian et al., 2021). A surge in household optimism about future income and wealth prospects, together with the increased availability of credit, helped fuel the housing (Jarmuzek & Rozenov, 2019) and the stock market booms (Igan et al., 2013). Thus, debt levels have sharply increased in both developed and developing countries, with some developing nations experiencing double-digit growth in debt over the three decades (OECD, 2017; Lombardi et al., 2022; World Bank, 2022).

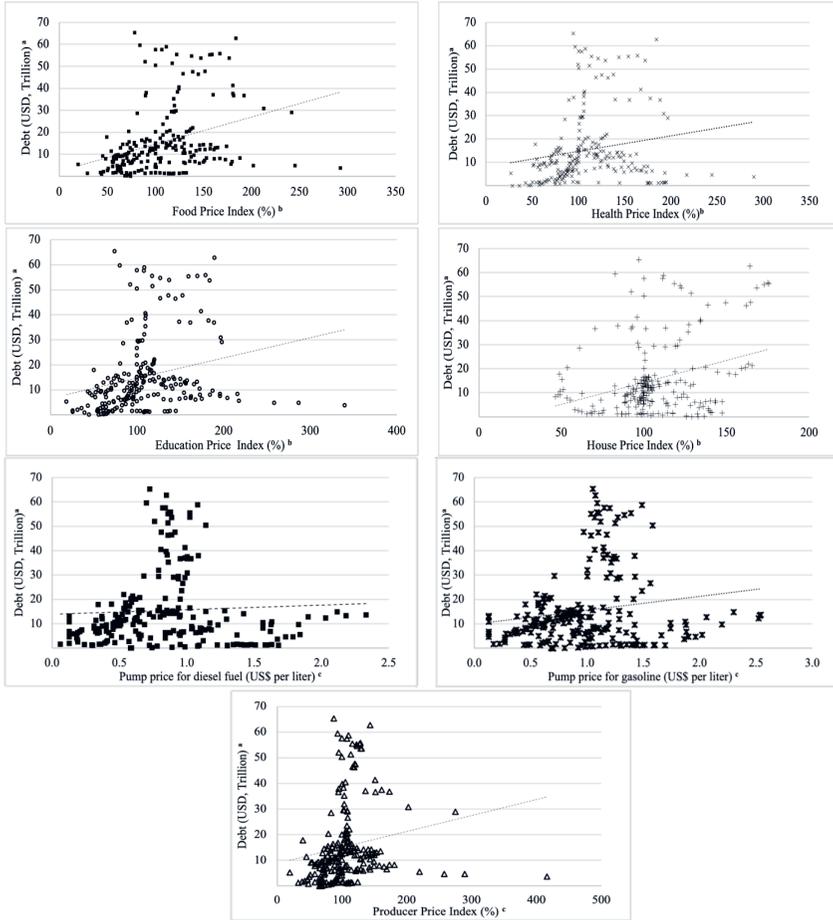
Although debt can finance consumption and investments, as well as spur economic growth, its rapid increase has been linked to resource mismatches and inefficiencies (Li et al., 2022). This excessive indebtedness poses a serious long-term issue that can dampen economic confidence and prospects, potentially slowing growth due to debt repayment efforts. In addition, the impact of growing debt on economic growth is also a significant concern, with literature debating whether it boosts or burdens economic expansion (Lombardi et al., 2022). Previous findings show that high debts will lead to unstable financial sustainability, and in turn, slow economic growth (Zabai, 2017; Lombardi et al., 2022). As a result, international organisations and central banks in many countries have warned about the risks of massive

debts to economic growth and financial stability, with the 2008 financial crisis serving as a wake-up call to the dangers of rapid debt increases. Furthermore, the rising debt of the low and middle classes threatens the achievement of the United Nations' (UN) Sustainable Development Goals (SDGs), with economic shocks, such as the pandemic, exacerbating financial vulnerabilities and potentially undoing development progress, affecting poverty and inequality targets.

Central banks' interest rate decisions can significantly influence individuals' borrowing costs, influencing their investment and spending decisions. When central banks lower interest rates, households can borrow money for less cost, which will encourage consumer spending. However, current economic conditions, unpredictable markets, and uncertain policies have changed interest rates. These changes directly impact borrowing costs, increasing expenses for variable-rate debtors. Supply and demand dynamics, inflation, changes in input costs, technological changes, and preferences influence price fluctuations. A price fall can reduce the financial burden and the need for credit. Therefore, price is a signal tool for the cost of living and essential in defining financial well-being. As the cost of living fluctuates due to changes in inflation, market dynamics, and government regulations, the impact on debt grows more pronounced. Thus, price will provide a critical lens on the relationship between price and indebtedness.

An increase in the average inflation rate of around 20% per year in 2022 indicates a current inflation trend (Ha et al., 2021). Possible explanations could be the economic consequences of the Covid-19 pandemic and the war between Ukraine and Russia disrupting the supply chain on a global scale. Therefore, an increase in the inflation rate might signal that purchasing power is decreasing; hence, the tendency to use credit is high to compensate for the cost of living. Figure 1 shows a preliminary investigation of the price of necessities towards debt in ten selected developing countries from 2000 to 2021.

Figure 1: Prices and household debt (in trillion USD)



Sources: International Monetary Fund (2022); Euromonitor International Database (2022); World Bank (2022)

2. Literature Review

2.1 Theory of interest, spending, and debt

Fisher’s (1930) and Keynes’ (1936) theories of interest explain the role of price in influencing debt behaviour. Fisher (1930) focuses on the concepts of eagerness to spend income and the chance to invest it. The central notion of Fisher’s theory suggests that interest rates are influenced by people’s desire

for present consumption, resulting in a premium for accessing resources or finances. This impatience to spend income influences the interest rate, allowing lenders to defer consumption. As prices rise, households are more likely to borrow to maintain their present consumption levels, as immediate access to resources becomes more appealing than deferring the expenditure. Hence, when purchasing power is diminished due to the increased cost of living, this situation results in a greater reliance on credit to bridge the disparity between income and expenditure. Interest rates incentivise the postponement of consumption. Thus, the cost of postponing consumption may induce households to apply for loans as prices increase (Crossley et al., 2024). Investing in assets becomes essential for maintaining or enhancing living standards, which can lead households to pursue credit due to their incapacity to invest due to high prices.

Keynes's (1936) liquidity preference theory explains interest rates in terms of money demand and money supply. Keynes assumes that the interest rate is determined by the balance between liquidity preference, money demand, and money supply (Appelt, 2016). Keynesian economics assumes that changes in the market for money can lead to changes in interest rates, affecting aggregate activity. This is because interest rates affect the cost of borrowing, influencing consumption and investment decisions. Rising prices may increase demand for money, resulting in higher interest rates and more significant borrowing costs. As a result, households may need help managing their existing debt and are more likely to take out new loans to cover rising expenditures—interest rate changes made by central banks in reaction to inflation impact borrowing patterns. Low interest rates can make borrowing more alluring even as prices rise, leading to households taking on more debt to cover significant costs. Thus, both theories explain low-income (as well as low-wealth) households' rational borrowing behaviour in response to price increases.

Studies show that house prices, healthcare, education, food, and energy costs affect household indebtedness. Increased house prices, driven by lower interest rates, higher demand, and housing shortages, positively correlate with mortgage credit demand (Ryan-Collins, 2022; Kusairi et al., 2023). Healthcare costs elevate debt through unpredictable and substantial out-of-pocket expenses, even for insured individuals with chronic diseases. Hence, multiple studies confirm the substantial impact of healthcare costs on household finances across different countries (Asahngwa et al., 2023; Choi

& Yoo, 2023). Rising education costs contribute to debt through student loans, underscoring its importance for economic and social advancement (Serra, 2023). Additionally, escalating food and energy prices strain budgets, particularly when income fails to match inflation, leading to reduced consumption and increased debt for energy (Faharuddin et al., 2022; Du Caju et al., 2023). Therefore, these findings collectively highlight the substantial impact of these cost factors on indebtedness, emphasising the need for targeted policies to alleviate financial pressures. Thus, this study hypothesises that the price positively and significantly impacts household debt.

2.2 *Social reproduction and debt*

Social reproduction refers to maintaining and reproducing social structures, including the family, education, and healthcare systems (Weiss, 2021). Hence, household expenditures towards social reproduction are essential to smooth this process. The rising cost of living is expected to put households in a vulnerable position, where a large part of household budgets is spent on necessities. Historically, the government has played an essential role in aiding social reproduction, changing its scope and financing across different capitalist epochs (Peter, 2020). However, austerity measures have prompted the privatisation of these essential services, burdening lower to middle-income families with the necessity of accumulating debt to maintain access (Wood, 2020). This dynamic is part of a larger financialisation of daily life, affecting both daily and intergenerational social reproduction.

2.3 *Social class and debt*

Marx, Weber, and Bourdieu's social class hierarchy help explain social inequality. Marx (2015) viewed societal divisions as stemming from one's relationship to the means of production, distinguishing the bourgeoisie and proletariat. Weber adds status and power to social stratification, which affects market status and organisational hierarchy (Turner et al., 1991). In addition, Bourdieu extends cultural capital, arguing that non-economic resources like education and cultural knowledge significantly affect social mobility and status (Gilleard, 2020). Still, they also serve as an essential framework for understanding a society's social and economic divisions, leading to inequality.

Social class influences borrowing behaviours and financial consequences, considerably impacting debt. While higher-income groups may utilise credit to leverage investments and asset accumulation, those in lower social classes are more prone to rely on credit to compensate for a lack of social support and to use debt to meet basic requirements. Studies undertaken in developed countries have highlighted the role of social influences on borrowing behaviour and debt, particularly among persons who perceive themselves as economically disadvantaged (Georgarakos et al., 2014). Studies in emerging nations reveal that low-income families use credit to improve their quality of life and social mobility, creating a “new middle class” (Marambio-Tapia, 2023). These findings demonstrate how social class affects debt and the need for tailored policies to help vulnerable groups in developing countries.

3. Methodology

Household debt is determined by supply and demand, and the overall macroeconomic environment ultimately affects both aspects of the credit market. By analysing factors affecting borrowing, this study identifies potential determinants of debt based on the review of theory and previous studies. The price factor is a proxy for the supply side, where high prices pressure households to borrow while promoting social reproduction, while social class represents the demand side. The following model of debt is suggested:¹

$$HHD_t = f(PRC, SR, SC) \tag{1}$$

where household debt (HHD) is a function of price (PRC), social reproduction (SR), and social class (SC). All variables were transformed into natural logarithms except for social class and yields in equation (2), where μ_t is the stochastic error term:

$$\ln HHD_t = \alpha + \beta_1 \ln PRC_t + \beta_2 \ln SR_t + \beta_3 SC_t + \mu_t \tag{2}$$

$$\ln HHD_t = \alpha + \beta_i \ln PRC_t + \beta_2 \ln SR_t + \beta_3 SC_t + \mu_t \tag{3}$$

In the same fashion, this study investigates the impact of price dimensions on debt by substituting $\ln PRC_t$ to different price sub-indicators such as food,

healthcare, education, house, diesel price, gasoline price, and producer price index (PPI), to yield equation (3). Hence, the study’s hypotheses are:

$$H_1 \quad \beta_1 = \text{Price is positively and significant on debt}$$

$$H_i \quad \beta_i = \text{Sub-price indicator is positive and significant on debt}$$

Meanwhile, SC_t is represented as the bottom income class (IB50) and the bottom 50% wealth class (WB50). To examine the determinants of debt in developing countries, this study employs the autoregressive distributed lag (ARDL) cointegration test with the error correction model (ECM) pioneered by Pesaran et al. (2001). Traditional cointegration methods, such as residual-based (Engle & Granger, 1987) and maximum likelihood-based cointegration (Johansen, 1991), have issues with endogeneity and require all variables to be of the same order of integration (1). In recent years, the ARDL bound testing approach to cointegration (Pesaran et al., 2001) has gained popularity because it does not require the same integrated order for all variables, is autocorrelation-free, and is robust in small sample sizes. In other words, variables can be $I(0)$, $I(1)$, or a mixture of $I(0)$ and $I(1)$ variables.

The augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests are employed to confirm the stationary level. The ARDL method integrates the short-run impact of the given variables with a long-run equilibrium using an error correction term without dropping long-run information (Pesaran et al., 2001). Under the unrestricted error correction model, equation (4) can be expressed as:

$$\begin{aligned} \Delta \ln HHD_t = & \delta_1 \ln HHD_{t-1} + \delta_2 \ln PRC_t + \delta_3 \ln SR_t + \delta_4 SC_t + \sum_{i=1}^p \delta_{5i} \Delta \ln HHD_{t-i} \\ & + \sum_{i=0}^q \delta_{6i} \Delta \ln PRC_{t-i} + \sum_{i=0}^r \delta_{7i} \Delta \ln SR_{t-i} + \sum_{i=0}^s \delta_{8i} \Delta SC_{t-i} + \varepsilon_t \end{aligned} \quad (4)$$

The bound cointegration test is utilised to examine the existence of cointegration or a long-run relationship. Under bound cointegration, the null hypothesis of no cointegration, or $\delta_1 = \delta_2 = \delta_3 = \delta_4 = 0$, is examined against its alternative hypothesis that there is cointegration, or $\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq 0$.

This study’s dataset comprises observations from 10 developing countries: India, Brazil, Indonesia, Mexico, Malaysia, Thailand, Bulgaria, Colombia, South Africa, and Türkiye, covering the period of 2000 to 2021, supported by two justifications. First, the countries listed are emerging

economies with increasing debt, rapid economic growth, high social inequality, rapid urbanisation, and a growing middle class. Second, using 2000–2021 data, key events will show how debt and all independent variables affect household indebtedness in developing countries.

The dependent variable in this study is household debt-to-GDP ratio. The household debt-to-GDP ratio represents the proportion of total loans and debt instruments households own to nominal GDP, as obtained from the Global Debt Database (GDD). GDD ensures consistent debt definition over time by aligning historical data from trusted institutions, ensuring accuracy and reliability over time (Yuan et al., 2024). The independent variables are price, social reproduction, and social class. The price variable is the composite index derived from prices for necessities (food, healthcare, education, housing, diesel, gasoline, and producer).

Meanwhile, the independent variable of social reproduction consists of a composite index derived from household expenditures toward necessities as a means of social reproduction. This study defines the social reproduction variable based on two bundles. Finally, social class is represented by two categories, IB50 and WB50, as a proxy for household income and wealth. All data can be freely accessed except data from the Euromonitor International database. The complete definitions, measurements, and sources are listed in Appendix 1.

4. Result and discussion

Unit root and stationarity tests were conducted to ensure no series are $I(2)$. The ADF test was used for unit roots with constant and trend for each series. The results indicate that in some series for each country, the null hypothesis of the presence of unit root cannot be rejected. However, the null hypothesis can be rejected at the first difference in most cases. Hence, we confirmed that the unit root ADF test for the study consists of a mixed order of stationarity with $I(0)$ and $I(1)$. We also applied the PP unit root test as an alternative way to examine the stationarity of the variables. The PP test results are almost consistent with the ADF test, where most PP values are statistically significant at the first difference. Hence, the null hypothesis of the unit root can be rejected, and the results suggest that the series are integrated in a mixed order (level and first difference). To conserve space, the results are available upon request.

The optimal lag order of each variable in the ARDL model is selected based on the information criteria. Thus, this study prefers to use Schwarz since our sample is short. The calculated F-statistic is compared with the critical value tabulated by Pesaran et al. (2001). If the F-test statistic exceeds the upper critical value, the null hypothesis of no long-run relationship can be rejected regardless of whether the underlying variables' orders of integration are $I(0)$, $I(1)$, or mixed.

Equation (4) estimates the bound test cointegration results for IB50 and WB50. The critical value upper bounds for all levels are 3.20 at 10%, 3.67 at 5%, and 4.66 at a 1% significance level. Hence, there is sufficient evidence to reject the null hypothesis and conclude that a long-run relationship exists between debt, price, social reproduction, and social class. In other words, all the variables move together in the long run. The bound test cointegration result for price sub-indicators reveals the same pattern, indicating a long-term relationship between debt, price sub-indicators, social reproduction, and social class. Complete bound test results are available upon request.

The short-run coefficients estimated using the error correction model (ECM) presented in this study reveal that all the error correction term coefficients are less than 1, are negative and statistically significant at least at the 10% significance levels (ECM results are available upon request). The SC is divided into two categories: IB50 and WB50. The diagnostic test results for IB50 show that the goodness of fit of the specification ranges from 0.71% (Colombia) to 0.98% (Türkiye), which stipulates that all models acceptably explain the changes in debt. Furthermore, all models pass diagnostic tests. In particular, the residuals are normally distributed, serially uncorrelated, and free of any heteroscedasticity issues. In addition, the Ramsey RESET test results show that the model is reliable and correctly specified.

Meanwhile, the WB50 goodness of fit of the specification ranges from 0.73% (Colombia) to 0.97% (Bulgaria), within the acceptable range that explains debt by independent variables (price, social reproduction, and social class) used in the study. Similar results were obtained for diagnostic tests on all models in the study. The residuals are normally distributed, serially uncorrelated, and free of any heteroscedasticity issues. In addition, the Ramsey RESET test results show that the model is reliable and correctly specified. The diagnostic test results are available upon request.

4.1 Long-run relationship of price on debt for the low-income-wealth class

4.1.1 Price and debt for the bottom 50% income class

Due to their susceptibility and reduced purchasing power, the IB50 tends to go into debt when prices rise to smooth their consumption as they spend a higher proportion of their income on essential goods and services. Thus, our study confirms the hypothesis that price has a positive and significant impact on the debt of the IB50 for all countries except for Indonesia, Mexico, and Türkiye.

Table 1 demonstrates that for a 1% increase in price, debt will increase by 15.5%, 1.40%, 3.51%, 0.68%, 3.34%, 0.55%, and 1.06% for India, Brazil, Malaysia, Thailand, Bulgaria, Colombia, and South Africa respectively, at least at a 1010% significance level. In contrast, a 1% increase in price will lower debt by 0.28%, 0.50%, and 2.29% for Indonesia, Mexico, and Türkiye respectively, at least at a 10% significance level.

Table 1: Long-run estimation for price on debt (IB50)

| | India | Thailand |
|--------------|------------------|-----------------|
| Constant | 20.046[0.623] | -4.688[0.616] |
| <i>lnPRC</i> | 15.493[0.090]*** | 0.679[0.081]*** |
| <i>lnSR</i> | -6.900[0.264] | 3.730[0.008]* |
| <i>IB50</i> | 0.129[0.172] | -0.031[0.124] |
| | Brazil | Bulgaria |
| Constant | 4.171[0.208] | 8.406[0.009]* |
| <i>lnPRC</i> | 1.399[0.000]* | 3.344[0.002]* |
| <i>lnSR</i> | -0.490[0.175] | -9.118[0.006]* |
| <i>IB50</i> | -0.002[0.503] | -0.144[0.014]** |
| | Indonesia | Colombia |
| Constant | -7.775[0.000]* | -9.174[0.000]* |
| <i>lnPRC</i> | -0.278[0.030]** | 0.545[0.000]* |
| <i>lnSR</i> | 0.979[0.000]* | 1.078[0.000]* |
| <i>IB50</i> | 0.006[0.004]* | 0.008[0.998] |
| | Mexico | South Africa |
| Constant | 7.952[0.142] | 11.209[0.005]* |
| <i>lnPRC</i> | -0.501[0.054]*** | 1.059[0.047]*** |
| <i>lnSR</i> | 2.330[0.001]* | -1.198[0.027]** |
| <i>IB50</i> | -0.021[0.000]* | 0.008[0.007]* |
| | Malaysia | Türkiye |
| Constant | 25.135[0.000]* | -7.396[0.005]* |
| <i>lnPRC</i> | 3.513[0.000]* | -2.291[0.049]** |
| <i>lnSR</i> | -0.654[0.033]** | 6.685[0.011]** |
| <i>IB50</i> | 0.002[0.983] | 0.151[0.000]* |

Notes: Asterisks *, **, and *** denote significance at 1%, 5% and 10%, respectively. Figures in [] represent *p*-values.

Table 2 presents an analysis of the impact of sub-price indicators on indebtedness for IB50. The domination of five components (healthcare, housing, price of diesel, petroleum, and PPI) contributes to a positive and significant increase in debt in India. However, the components of food and education have a surprisingly negative and significant impact on debt. In addition, Brazilians will incur debt when the price components of food, healthcare, education, diesel, gasoline, and PPI are significantly more prominent, except housing. However, in Malaysia, healthcare and gasoline have no impact on debt. This implies that government subsidies are adequate for this income group to afford healthcare (Mohd Hassan et al., 2022) and fuel (Yen et al., 2024). Thailand also experiences the same manner when all sub-price indicators are positive (except for education and housing).

Table 2: Long run estimation results for price sub-indicators (IB50)

| | FOOD | HEALTH | EDU | HSE | PD | PG | PPI |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| India | | | | | | | |
| Constant | -4.23[0.12] | 10.20[0.05]*** | -14.08[0.01]** | 29.88[0.04]** | -16.48[0.00]* | -18.31[0.00]* | -8.07[0.02]** |
| <i>lnPRC</i> | -6.50[0.03]** | 9.68[0.04]** | -13.71[0.00]* | 5.22[0.09]*** | 0.71[0.06]*** | 6.74[0.00]* | 4.54[0.02]** |
| <i>lnSR</i> | 8.85[0.05]*** | -3.69[0.05]*** | 13.52[0.02]** | -4.21[0.05]*** | 1.40[0.00]* | 1.57[0.00]* | 2.43[0.47] |
| <i>IB50</i> | -0.08[0.10] | -0.19[0.01]** | -0.02[0.62] | -0.02[0.45] | 0.05[0.01]** | 0.05[0.00]* | 0.39[0.02]** |
| Brazil | | | | | | | |
| Constant | 72.76[0.11] | 6.11[0.24] | 5.03[0.49] | -14.44[0.00]* | -7.43[0.00]* | -12.64[0.00]* | -10.48[0.94] |
| <i>lnPRC</i> | 5.12[0.07]*** | 1.34[0.00]* | 1.27[0.02]** | -1.02[0.03]** | 0.63[0.01]** | 0.28[0.03]** | 0.86[0.06]*** |
| <i>lnSR</i> | -9.03[0.10] | -1.07[0.11] | -0.90[0.33] | 1.48[0.00]* | 1.01[0.00]* | 1.38[0.00]* | -0.15[0.85] |
| <i>IB50</i> | 0.07[0.05]*** | 0.03[0.00]* | 0.02[0.01]** | 0.06[0.01]** | -0.01[0.19] | 0.01[0.46] | 0.01[0.06]*** |
| Indonesia | | | | | | | |
| Constant | 1.13[0.60] | 8.35[0.02]** | -1.11[0.43] | -6.92[0.07]*** | -8.49[0.00]* | -6.63[0.02]** | -7.53[0.00]* |
| <i>lnPRC</i> | 0.86[0.00]* | 5.20[0.00]* | 0.76[0.00]* | 0.48[0.22] | -0.20[0.06]*** | -0.13[0.37] | -0.56[0.01]** |
| <i>lnSR</i> | -0.26[0.37] | -2.91[0.01]** | -0.03[0.89] | 0.73[0.01]** | 0.97[0.00]* | 0.82[0.00]* | 1.22[0.00]* |
| <i>IB50</i> | 0.02[0.16] | 0.01[0.01]** | 0.01[0.05]*** | 0.04[0.25] | 0.01[0.12] | 0.05[0.63] | 0.07[0.53] |
| Mexico | | | | | | | |
| Constant | 1.66[0.77] | 6.75[0.14] | 10.59[0.93] | 5.48[0.30] | 9.74[0.03]** | 11.61[0.01]** | 4.24[0.23] |
| <i>lnPRC</i> | -0.63[0.01]** | -0.53[0.01]** | -0.76[0.01]** | -1.93[0.02]** | -0.28[0.07]*** | -0.53[0.06]*** | -0.67[0.00]* |
| <i>lnSR</i> | 3.04[0.00]* | 2.52[0.00]* | 3.19[0.00]* | 3.11[0.00]* | 2.00[0.00]* | 1.91[0.00]* | 2.80[0.00]* |
| <i>IB50</i> | -0.02[0.00]* | -0.02[0.00]* | -0.02[0.00]* | -0.01[0.04]** | -0.02[0.00]* | -0.03[0.00]* | -0.02[0.00]* |
| Malaysia | | | | | | | |
| Constant | 13.78[0.00]* | 2.13[0.14] | -11.57[0.03]** | 1.25[0.01]** | -3.18[0.11] | 2.56[0.00]* | 0.03[0.97] |
| <i>lnPRC</i> | 8.74[0.04]** | -0.18[0.88] | 7.34[0.02]** | 0.67[0.04]** | -0.30[0.04]** | 0.09[0.24] | 0.48[0.02]** |
| <i>lnSR</i> | -3.04[0.14] | 0.19[0.65] | -1.90[0.02]** | 0.01[0.83] | 0.86[0.01]** | 0.05[0.56] | 0.14[0.01]** |
| <i>IB50</i> | -0.05[0.07]*** | 0.01[0.01]** | -0.01[0.28] | 0.03[0.45] | -0.01[0.16] | 0.01[0.00]* | 0.01[0.03]** |

| | FOOD | HEALTH | EDU | HSE | PD | PG | PPI |
|---------------------|----------------|----------------|----------------|----------------|---------------|---------------|----------------|
| Thailand | | | | | | | |
| Constant | 0.19[0.98] | -17.71[0.02]** | 8.66[0.03]** | -4.46[0.31] | 1.55[0.84] | 13.08[0.01]** | -9.07[0.21] |
| <i>lnPRC</i> | 0.75[0.01]** | 8.30[0.08]*** | -3.49[0.00]* | -0.70[0.02]** | 0.31[0.01]** | 0.34[0.00]* | 0.62[0.08]*** |
| <i>lnSR</i> | 3.04[0.01]** | 6.17[0.00]* | 4.16[0.00]* | 4.23[0.00]* | 3.21[0.00]* | 1.75[0.00]* | 4.17[0.00]* |
| <i>IB50</i> | -0.03[0.09]*** | -0.10[0.00]* | -0.02[0.01]** | -0.03[0.03]** | -0.02[0.20] | 0.01[0.46] | -0.04[0.04]** |
| Bulgaria | | | | | | | |
| Constant | 7.26[0.09]*** | 9.50[0.02]** | 9.16[0.40] | 5.21[0.09]*** | 7.39[0.03]** | 4.41[0.12] | 7.03[0.01]** |
| <i>lnPRC</i> | 1.94[0.00]* | 0.92[0.05]*** | -3.82[0.31] | -0.57[0.67] | 1.56[0.01]** | 1.92[0.05]*** | 4.02[0.01]** |
| <i>lnSR</i> | -1.50[0.02]** | -9.92[0.02]** | -1.05[0.79] | -10.69[0.10] | -3.32[0.04]** | -3.72[0.13] | -8.86[0.01]** |
| <i>IB50</i> | -0.01[0.28] | -0.17[0.06]*** | -0.09[0.43] | -0.23[0.10] | -0.08[0.03]** | -0.09[0.12] | -0.14[0.01]** |
| Colombia | | | | | | | |
| Constant | -8.43[0.01]** | 12.15[0.21] | 16.68[0.16] | 2.26[0.77] | -11.29[0.00]* | -10.58[0.00]* | -10.04[0.00]* |
| <i>lnPRC</i> | 0.76[0.06]*** | 3.32[0.08]*** | 2.98[0.02]** | 2.20[0.06]*** | 0.17[0.00]* | 0.32[0.07]*** | 1.30[0.00]* |
| <i>lnSR</i> | 0.81[0.09]*** | -4.68[0.19] | -2.93[0.11] | -0.95[0.46] | 1.49[0.00]* | 1.39[0.00]* | 0.73[0.00]* |
| <i>IB50</i> | 0.02[0.46] | 0.03[0.87] | 0.04[0.67] | -0.01[0.05]*** | 0.01[0.92] | 0.01[0.35] | 0.03[0.56] |
| South Africa | | | | | | | |
| Constant | 9.41[0.08]*** | 6.97[0.03]** | 7.21[0.11] | 6.46[0.03]** | 5.21[0.04]** | 6.11[0.03]** | 2.02[0.84] |
| <i>lnPRC</i> | 2.98[0.14] | -0.22[0.07]*** | -0.27[0.02]** | 0.43[0.04]** | 0.35[0.06]*** | 0.23[0.07]*** | -1.65[0.08]*** |
| <i>lnSR</i> | -1.89[0.44] | -0.22[0.50] | -0.19[0.64] | -0.50[0.14] | -0.20[0.25] | -0.29[0.25] | 3.47[0.00]* |
| <i>IB50</i> | 0.04[0.02]** | 0.01[0.11] | 0.01[0.08]*** | 0.01[0.62] | 0.01[0.01]** | 0.08[0.11] | 0.01[0.28] |
| Türkiye | | | | | | | |
| Constant | 10.73[0.28] | -8.85[0.00]* | -14.08[0.01]** | -1.32[0.91] | -16.48[0.00]* | -18.31[0.00]* | 7.16[0.48] |
| <i>lnPRC</i> | 1.24[0.02]** | -2.77[0.01]** | -3.71[0.04]** | -4.13[0.07]*** | 0.71[0.06]*** | 0.74[0.03]** | -1.04[0.04]** |
| <i>lnSR</i> | -1.67[0.17] | 9.37[0.00]* | 13.52[0.02]** | 2.49[0.00]* | 1.40[0.00]* | 1.57[0.00]* | 2.30[0.08]*** |
| <i>IB50</i> | 0.03[0.02]** | 0.01[0.89] | -0.02[0.62] | -0.02[0.63] | 0.05[0.01]** | 0.05[0.00]* | 0.05[0.03]** |

Notes: Asterisks *, **, and *** denote significance at 1%, 5% and 10%, respectively. Figures in [] represent *p*-values.

As for Bulgaria, all sub-price indicators are positive and significant on debt, except for education and housing, which are not significant. The price increase in education is insignificant as low-income Bulgarians face barriers to education due to limited financial resources and unequal distribution of funds for public schools (UNICEF, 2023). Despite modest progress in living standards, Bulgaria has the lowest per capita income in the European Union and persistently high poverty rates (Guthrie et al., 2022). The economic background leads to an unequal education funding model, with only 13% of public education resources allocated to students from poor households, compared to 25% for wealthiest households (UNICEF, 2023).

Finally, a price increase significantly affects debt in South Africa because housing, diesel, and gasoline are the three major positive sub-components that dominate the outcome. Unexpectedly, health and education costs lower debt, which suggests IB50 is forced to cut back on other discretionary expenses. This may reduce debt as households prioritise vital services over non-essential ones. Table 2 also reveals that housing, diesel, gasoline, and PPI are more negatively dominant in Indonesia. All pricing components in Mexico are harmful and significant for debt. In addition, Türkiye shows that health, education, housing, and PPI negatively affect debt.

To conclude, most countries share a positive and significant impact on indebtedness when the sub-price indicators increase for food (Brazil, Indonesia, Malaysia, Thailand, Bulgaria, Colombia, and Türkiye); diesel (India, Brazil, Thailand, Bulgaria, Colombia, South Africa, Türkiye); and gasoline (India, Brazil, Thailand, Bulgaria, Colombia, South Africa, Türkiye). The increase in indebtedness due to the rise in food prices is consistent with Albacete et al. (2022) and Siu et al. (2023), which suggest that households in these countries are indebted because IB50 smooth their food consumption, given that most low-income expenditure will be allocated to food.

Meanwhile, increases in energy prices, such as diesel and gasoline, are consistent with Li et al. (2022). The second highest component, which is positive and significant on debt, is the price of healthcare and PPI. An increase in the price of healthcare leads to indebtedness, which is consistent with Bickham and Lim (2015) and Mohd Hassan et al. (2022). These studies suggest that high out-of-pocket expenditures due to inadequate health insurance coverage pressure households to take debt to access medical facilities.

4.1.2 Price and debt for the bottom 50% of the wealth class

The study finds that the price increase in all countries is positive and significantly impacts debt for WB50, except for Indonesia and Mexico. Based on Table 3, a 1% increase in price will increase debt by 5.49%, 1.20%, 3.33%, 2.22%, 1.24%, 0.58%, 1.81%, and 0.49% in India, Brazil, Malaysia, Thailand, Bulgaria, Colombia, South Africa, and Türkiye respectively, at least at the 10% significant level. On the contrary, a 1% increase in price in Indonesia and Mexico will decrease debt by 0.8% and 0.5% respectively, at least at a 10% significant level.

Table 3: Long-run estimation for price on debt (*WB50*)

| | India | Thailand |
|--------------|------------------|---------------------|
| Constant | 6.442[0.201] | 15.907[0.016]** |
| <i>lnPRC</i> | 5.488[0.020]** | 2.216[0.053]** |
| <i>lnSR</i> | -6.016[0.186] | 0.834[0.343] |
| <i>WB50</i> | 0.022[0.008]* | -0.002[0.351] |
| | Brazil | Bulgaria |
| Constant | 0.539[0.848] | -4.473[0.506] |
| <i>lnPRC</i> | 1.195[0.000]* | 1.244 [0.012]** |
| <i>lnSR</i> | -0.123[0.698] | 0.024[0.965] |
| <i>WB50</i> | 0.023[0.383] | 0.032[0.311] |
| | Indonesia | Colombia |
| Constant | -9.050[0.058]** | -8.471[0.000]* |
| <i>lnPRC</i> | -0.799[0.021]** | 0.582[0.001]* |
| <i>lnSR</i> | 1.369[0.010]** | 0.990[0.001]* |
| <i>WB50</i> | 0.008[0.991] | 0.009[0.593] |
| | Mexico | South Africa |
| Constant | 21.246[0.003]* | 26.517[0.008]* |
| <i>lnPRC</i> | -0.465[0.097]** | 1.808[0.033]** |
| <i>lnSR</i> | 0.941[0.136] | -2.932[0.020]** |
| <i>WB50</i> | 0.001[0.000]* | 0.001[0.031]** |
| | Malaysia | Türkiye |
| Constant | 24.170[0.000]* | 6.442[0.201] |
| <i>lnPRC</i> | 3.329[0.000]* | 0.488 [0.020]** |
| <i>lnSR</i> | -0.707[0.002]* | -6.016[0.186] |
| <i>WB50</i> | 0.020[0.138] | 0.022[0.008]* |

Notes: Asterisks *, **, and *** denote significance at 1%, 5% and 10%, respectively. Figures in [] represent *p*-values.

Table 4 provides an in-depth analysis, showing that increases in diesel and house sub-price indicators (excluding Thailand and Turkey) are the top two main contributors to positive debt. Higher diesel prices drive up the cost of goods and services, creating inflationary pressure that reduces household purchasing power. Diesel is important to the logistics and transportation sectors. Hence, a rise in its price increases the cost of shipping, which drives up the cost of a wide range of goods (Gohari et al., 2018). Therefore, due to this inflationary domino effect, *WB50* is more likely to experience financial

strain because they allocate a significant percentage of their income and a part of their wealth to fund these necessities. Hence, they are more sensitive to price increases.

Additionally, low-income households that depend on diesel-powered cars for commuting or accessing necessary services bear the direct cost impact on transportation expenses. Public transportation costs may increase if diesel is used, burdening those with access to private vehicles. This series of events highlights how vulnerable low-income households are to changes in the price of diesel, which directly impacts them through higher transportation costs.

An increase in housing prices leads to WB50 being indebted. They may require additional wealth to make more outstanding downpayments or monthly mortgage payments associated with an increase in the price of properties (Ok et al., 2019). WB50 may also fully utilise its borrowing capacity to obtain housing, increasing debt as they are pressured to buy (Caloia, 2024). Thus, rising prices necessitate larger loans, resulting in more outstanding mortgages that offset house equity value. The findings are consistent with Caloia (2024) and Lu and Zhu (2024).

Table 4: Long run estimation results for price sub-indicators (*WB50*)

| | FOOD | HEALTH | EDU | HSE | PD | PG | PPI |
|------------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|
| India | | | | | | | |
| Constant | 6.31[0.76] | -4.15[0.00]* | 2.42[0.10] | -3.23[0.30] | -5.43[0.29] | -9.17[0.05]*** | -3.28[0.09]*** |
| <i>lnPRC</i> | 8.62[0.01]** | -1.93[0.01]** | 4.13[0.07]*** | 5.16[0.04]** | 2.81[0.00]* | 2.83[0.00]* | 1.41[0.01]** |
| <i>lnSR</i> | -4.70[0.11] | 3.29[0.00]* | -1.16[0.10] | 0.47[0.88] | 2.09[0.24] | 3.21[0.03]** | -2.99[0.18] |
| <i>WB50</i> | 0.11[0.00]* | 0.03[0.08]*** | 1.01[0.94] | 0.11[0.07]*** | 0.05[0.15] | 0.04[0.12] | 0.09[0.00]* |
| Brazil | | | | | | | |
| Constant | -8.68[0.00]* | -6.51[0.25] | 5.32[0.05]*** | -14.00[0.00]* | -9.94[0.00]* | -3.15[0.00]* | -9.31[0.00]* |
| <i>lnPRC</i> | -0.96[0.09]*** | 0.89[0.06]*** | 1.52[0.03]** | 0.22[0.03]** | 0.39[0.00]* | 0.38[0.00]* | -0.55[0.07]*** |
| <i>lnSR</i> | 3.27[0.00]* | 0.35[0.58] | -17.49[0.04]** | 1.45[0.00]* | 1.18[0.00]* | 1.45[0.00]* | 2.24[0.00]* |
| <i>WB50</i> | 0.03[0.22] | 0.04[0.22] | 0.02[0.04]** | 0.01[0.02]** | 0.01[0.79] | 0.02[0.15] | 0.03[0.57] |
| Indonesia | | | | | | | |
| Constant | 6.84[0.02]** | 8.09[0.03]** | 6.16[0.00]* | 6.80[0.00]* | 2.53[0.10] | 3.97[0.03]** | 8.27[0.01]** |
| <i>lnPRC</i> | 1.11[0.01]** | 4.24[0.04]** | 0.57[0.00]* | -0.17[0.02]** | -0.08[0.06]*** | -0.05[0.08]*** | -0.25[0.27] |
| <i>lnSR</i> | -0.92[0.05]*** | -2.77[0.06]*** | -0.17[0.02]** | 0.23[0.00]* | 0.43[0.03]** | 0.36[0.01]** | 0.10[0.66] |
| <i>WB50</i> | 0.01[0.69] | -0.06[0.01]** | -0.04[0.00]* | -0.06[0.00]* | -0.05[0.02]** | -0.05[0.00]* | -0.05[0.00]* |

| | FOOD | HEALTH | EDU | HSE | PD | PG | PPI |
|---------------------|----------------|----------------|----------------|----------------|---------------|----------------|----------------|
| Mexico | | | | | | | |
| Constant | 6.78[0.02]** | 3.98[0.00]* | 6.67[0.01]** | 3.67[0.10] | 9.49[0.00]* | 3.78[0.00]* | 8.28[0.00]* |
| <i>lnPRC</i> | -0.50[0.04]** | -0.35[0.09]*** | -0.56[0.02]** | -1.34[0.06]*** | -0.07[0.65] | 0.30[0.09]*** | -0.55[0.00]* |
| <i>lnSR</i> | 1.42[0.05]*** | 0.70[0.27] | 1.45[0.04]** | 2.05[0.05]*** | 0.06[0.90] | -0.31[0.23] | 1.31[0.00]* |
| <i>WBS0</i> | 0.01[0.00]* | 0.03[0.00]* | 0.05[0.00]* | 0.01[0.02]** | 0.04[0.00]* | 0.01[0.00]* | 0.03[0.00]* |
| Malaysia | | | | | | | |
| Constant | -1.64[0.18] | 3.61[0.00]* | 12.67[0.00]* | 3.64[0.03]** | 1.18[0.23] | 1.06[0.90] | 2.82[0.03]** |
| <i>lnPRC</i> | -0.81[0.05]** | -3.65[0.00]* | -8.17[0.00]* | 1.23[0.04]** | 0.21[0.04]** | -0.01[0.93] | -0.23[0.09]*** |
| <i>lnSR</i> | 0.45[0.03]** | 1.29[0.00]* | 2.03[0.00]* | -0.04[0.56] | -0.72[0.03]** | 0.05[0.55] | 0.07[0.09]*** |
| <i>WBS0</i> | 0.04[0.00]* | 0.05[0.00]* | 0.10[0.00]* | -0.05[0.17] | 0.11[0.02]** | 0.04[0.00]* | 0.04[0.00]* |
| Thailand | | | | | | | |
| Constant | 13.04[0.00]* | 5.40[0.02]** | 12.12[0.00]* | 5.73[0.00]* | 11.26[0.00]* | 11.49[0.00]* | 5.22[0.00]* |
| <i>lnPRC</i> | 1.17[0.00]* | -6.61[0.08]*** | -1.55[0.01]** | -1.78[0.00]* | 0.40[0.00]* | 0.39[0.00]* | 1.49[0.00]* |
| <i>lnSR</i> | 1.26[0.00]* | 3.65[0.00]* | 2.64[0.00]* | 3.43[0.00]* | 2.00[0.00]* | 1.97[0.00]* | 1.92[0.00]* |
| <i>WBS0</i> | 0.02[0.22] | 0.01[0.20] | 0.22[0.15] | 0.13[0.33] | 0.50[0.88] | 0.11[0.17] | 0.10[0.21] |
| Bulgaria | | | | | | | |
| Constant | 9.63[0.04]** | 1.37[0.97] | -4.20[0.75] | -13.95[0.37] | -5.06[0.10] | -8.07[0.01]** | 7.67[0.38] |
| <i>lnPRC</i> | 1.95[0.00]* | 0.64[0.08]*** | -3.87[0.09]*** | 1.28[0.01]** | 3.34[0.02]** | 1.94[0.05]*** | 2.50[0.00]* |
| <i>lnSR</i> | -2.33[0.01]** | -0.26[0.75] | 5.13[0.01]** | -0.06[0.95] | 4.34[0.08]*** | 7.79[0.00]* | -1.34[0.13] |
| <i>WBS0</i> | -0.07[0.08]*** | 0.02[0.68] | 0.11[0.22] | 0.12[0.11] | 0.24[0.10] | 0.53[0.00]* | -0.05[0.24] |
| Colombia | | | | | | | |
| Constant | -1.17[0.88] | 11.53[0.44] | 3.04[0.65] | -12.16[0.01]** | -10.27[0.00]* | -11.62[0.00]* | -14.74[0.00]* |
| <i>lnPRC</i> | 1.56[0.08]*** | 1.91[0.07]*** | 1.84[0.01]** | 0.50[0.09]*** | 0.22[0.00]* | 0.27[0.00]* | -0.59[0.06]*** |
| <i>lnSR</i> | -0.36[0.76] | -1.82[0.37] | -0.92[0.37] | 1.34[0.02]** | 1.39[0.00]* | 1.53[0.00]* | 2.15[0.00]* |
| <i>WBS0</i> | 0.01[0.37] | 0.04[0.91] | 0.03[0.05]*** | 0.04[0.01]** | 0.05[0.48] | 0.02[0.23] | 0.01[0.75] |
| South Africa | | | | | | | |
| Constant | 3.57[0.02]** | 7.30[0.00]* | 10.91[0.05]*** | 6.69[0.00]* | 9.79[0.00]* | 11.64[0.00]* | 4.26[0.01]** |
| <i>lnPRC</i> | -0.21[0.03]** | 5.09[0.02]** | 0.45[0.26] | 0.18[0.03]** | 0.28[0.01]** | 0.38[0.00]* | -0.20[0.09]*** |
| <i>lnSR</i> | 0.09[0.60] | -8.61[0.01]* | -0.99[0.18] | -0.41[0.00]* | -0.63[0.00]* | -0.81[0.00]* | 0.02[0.91] |
| <i>WBS0</i> | 0.01[0.04]** | 0.01[0.00]* | 0.01[0.03]** | 0.02[0.05]** | 0.01[0.80] | 0.08[0.56] | 0.01[0.06]*** |
| Türkiye | | | | | | | |
| Constant | 20.03[0.02]** | -7.21[0.00]* | -9.90[0.00]* | -5.89[0.43] | 1.79[0.70] | -10.59[0.01]** | -6.84[0.06]*** |
| <i>lnPRC</i> | 1.26[0.00]* | -2.28[0.00]* | -2.90[0.00]* | -3.62[0.03]** | 1.31[0.00]* | 1.09[0.00] | -1.11[0.09]*** |
| <i>lnSR</i> | -2.28[0.02]** | 7.92[0.00]* | 10.93[0.00]* | 2.57[0.01]** | -0.07[0.88] | 1.15[0.01]** | 3.22[0.06]*** |
| <i>WBS0</i> | 0.01[0.03]** | 0.01[0.29] | 0.04[0.88] | 0.02[0.58] | 0.01[0.03]** | 0.01[0.01]** | 0.02[0.04] |

Notes: Asterisks *, **, and *** denote significance at 1%, 5% and 10%, respectively. Figures in [] represent *p*-values.

Furthermore, the sub-price indicators also show that house prices, diesel, and gasoline hurt debt in Indonesia. Meanwhile, all sub-price components, except fuel prices, negatively impact Mexico's debt. This could indicate that the government's role in supporting WB50 households is effective for these countries by providing subsidies or tax breaks. For example, in Indonesia, the government has implemented housing policies such as the One Million Houses Programme, which aims to construct affordable housing schemes for low-income residents (Lana, 2017; Anita, 2023). In addition, Indonesia has also introduced Savings-Based Housing Financing Assistance, a programme that encourages self-help housing development via savings (Lana, 2017; World Bank, 2017; Anita, 2023). Meanwhile, in Mexico, the PROSPERA programme provides conditional cash support to households with an income below a certain threshold, and focuses on education, healthcare, and nutrition (Núñez, 2023). These examples demonstrate that both countries have implemented policies to mitigate the impact of prices on low-income households.

5. Conclusion and Policy Recommendations

This study confirms the positive and significant relationship between price and debt in most of the sample across the low-income (as well as low-wealth) classes. Therefore, this study can serve as a reference point for policymakers to address the affordability challenges effectively. The summary of results on price impact towards debt is attached in Appendix 2. Based on these results, a multi-pronged approach is required.

First, targeted support is crucial: rather than offering blanket subsidies, support should be focused on those most affected by rising costs through specific programmes. To ensure efficiency, the government should develop a database system involving all citizens to identify and target low-income-wealth groups for subsidies, as suggested by the World Bank (2020), Amaglobeli et al. (2023), and Vărzaru et al. (2023), among others. This will minimise the misuse of subsidies, and ensure that a more effective government monitoring system can be executed if policies are delivered within the fiscal year.

India's Aadhar programme is an excellent example of targeted policies that the government can implement effectively via enabling digital transformation. It provides unique biometric identities to over 1.2 billion

households and ensures that the targeted low-income and vulnerable groups receive government subsidies (World Bank, 2020). This resulted in reduced incidents of fraud and embezzlement. Similarly, Singapore's SkillsFuture programme uses artificial intelligence (AI) and biometrics to identify suspicious transactions so that grants are used for their intended purposes (World Bank, 2020). These examples demonstrate integrating institutional processes with digital tools in government oversight efforts. Hence, the integration aims to optimise efficiency measures and provide targeted assistance to vulnerable households affected by the increase in inflation.

Secondly, it is essential to promote competition and strengthen market supervision. Fostering a competitive landscape in critical sectors, such as healthcare and education, can lead to lower costs and expanded consumer options. At the same time, ensuring fair pricing of essential goods and services is critical to protecting consumers and maintaining fair market practices by developing a system whereby the public can access data from all groceries/producers within a 5 km radius for price comparison, as Choi and Kim (2024) suggest. This accessibility will encourage symmetric information between consumers and suppliers, reducing cost information.

At least two real-life examples supported by empirical studies show that market competition reduces prices. The first example is the rise in competitive leads pressure on the grocery sector in the United States, followed by entry by low-priced retailers like Walmart (Hausman & Leibtag, 2007; Jia, 2008). Past studies have shown that competitors in retail food sectors exert a downward push on prices, helping lower costs for poor households. The second example is the telecommunications sector. Telecommunications markets in many countries used to be dominated by a single state-owned operator, resulting in high charges and limited consumer alternatives. However, liberalisation coupled with new entrants into the sector has heightened competition, leading to reduced prices, enhanced service quality, and a more comprehensive array of products and services.

In conclusion, it is essential to remember that there is no one-size-fits-all solution and that the optimal policy mix depends on each country's specific economic and social context. To address this complex situation, it is crucial to find a balance between addressing affordability issues, managing the debt burden, and promoting long-term sustainable economic growth.

Endnotes

- ¹ Due to its suitability for this study, the social reproduction dimension is segregated into two bundles: a core bundle (e.g., groceries, energy, and healthcare) and an investment bundle (education and home mortgages). See Charron-Chénier (2018).

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Appendices

Appendix 1: Definition of variables and data sources

| Variables | Measurement | Data source |
|---|--|---|
| Household debt (HHD) | Household debt, loans, and debt securities (percentage of GDP) | International Monetary Fund (2022) |
| Price (PRC) | Composite index of prices related to SR dimensions | Own calculation ^{b,c} |
| Food price index (PRC_F) | Food price index | Euromonitor International Database (2022) |
| Health price index (PRC_H) | Health price index | |
| Education price index (PRC_E) | Education price index | |
| Home price index (PRC_{HS}) | Home price index | |
| Price of diesel (PD) | Pump price for diesel fuel (US\$ per litre) | World Bank (2022) |
| Price of gasoline (PG) | Pump price for gasoline (US\$ per litre) | |
| Producer price index (PPI) | Producer price index, manufacturing (2010 = 100) | |
| Social reproduction (SR) | The composite index of social reproduction. | Own calculation ^b |
| Social class (Bottom income 50%, $IB50$) | Index of bottom 50% of income | World Inequality Database (2022) |
| Social class (Bottom wealth 50%, $WB50$) | Index of bottom 50% of wealth | |

Notes: ^a At 2021 constant USD; ^b Based on Euromonitor International Database (2021); ^c World Bank (2022).

Appendix 2a: Summary impact of price towards household indebtedness (IB50)

| | Price | FOOD | HEALTH | EDUCATION | HOUSE | DIESEL | GASOLINE | PRODUCER |
|--------------|-------|------|--------|-----------|-------|--------|----------|----------|
| India | + | - | + | - | + | + | + | + |
| Brazil | + | + | + | + | - | + | + | + |
| Indonesia | - | + | + | + | NS | - | NS | - |
| Mexico | - | - | - | - | - | - | - | - |
| Malaysia | + | + | NS | + | + | - | NS | + |
| Thailand | + | + | + | - | - | + | + | + |
| Bulgaria | + | + | + | NS | NS | + | + | + |
| Colombia | + | + | + | + | + | + | + | + |
| South Africa | + | NS | - | - | + | + | + | - |
| Türkiye | - | + | - | - | - | + | + | - |

Note: NS = not significant

Appendix 2b: Summary impact of price towards household indebtedness (WB50)

| | Price | FOOD | HEALTH | EDUCATION | HOUSE | DIESEL | GASOLINE | PRODUCER |
|--------------|-------|------|--------|-----------|-------|--------|----------|----------|
| India | + | + | - | + | + | + | + | + |
| Brazil | + | - | + | + | + | + | + | - |
| Indonesia | - | + | + | + | - | - | - | NS |
| Mexico | - | - | - | - | - | NS | + | - |
| Malaysia | + | - | - | - | + | + | NS | - |
| Thailand | + | + | - | - | - | + | + | + |
| Bulgaria | + | + | + | - | + | + | + | + |
| Colombia | + | + | + | + | + | + | + | - |
| South Africa | + | - | + | NS | + | + | + | - |
| Türkiye | + | + | - | - | - | + | + | - |

Note: NS = not significant.