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Short-Run and Long-Run Effects of Inflation on Vietnamese Household Consumption and Implications for Domestic Agricultural Demand

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Abstract: *This study quantifies the effect of inflation on household consumption in Vietnam over the period 1995–2024, using an autoregressive distributed lag model with an error correction specification on annual data. The bounds test confirms a long-run equilibrium relationship linking per capita final household consumption expenditure to income, inflation and the lending rate. Income is the dominant driver, with a long-run elasticity of 0.9437, whereas neither inflation nor the lending rate has a statistically significant long-run effect. In the short run, by contrast, inflation is negative and significant at the 1% level, with a coefficient of −0.0036; the error correction term of −0.6073 indicates that roughly 60.73% of any deviation from equilibrium is absorbed within a single year. Taken together, these results suggest that price shocks in Vietnam affect spending mainly through a short-lived precautionary channel rather than by permanently shifting the consumption path. Because food accounts for the largest share of both the consumer price index basket and household expenditure, the findings imply that stabilizing food prices is central to sustaining the domestic market for agricultural products.*

Keywords: Autoregressive distributed lag model, Domestic agricultural demand, Household consumption, Inflation, Vietnam.

I. INTRODUCTION

Final consumption of households is the largest component of aggregate demand in the Vietnamese economy, and at the same time the channel that directly absorbs most of the agricultural output produced domestically. Over the past three decades, the scale of per capita expenditure has increased continuously, from about 8.88 million VND in 1995 to 33.96 million VND in 2024 at constant 2010 prices. However, this expansion did not proceed smoothly: the economy went through two episodes of sharp price increases in 2008 and 2011, with inflation rates of 23.12% and 18.68% respectively, along with the exogenous shock of the COVID-19 pandemic, which caused average consumption to fall from 28.90 million VND in 2019 to 27.31 million VND in 2020.

The relationship between the price level and spending behaviour has been explained through many different theoretical frameworks. Starting from Keynes's consumption function [1], consumption is viewed as a function of current disposable income; the subsequent intertemporal models of Modigliani and Brumberg [2] and Friedman [3] added the role of expected lifetime income. Pigou's real balance effect [4] holds that inflation erodes the real value of nominal assets and thereby reduces purchasing power. Leland [5] and Deaton [6] added the precautionary saving mechanism, according to which price uncertainty causes households to increase precautionary accumulation and postpone spending. In the opposite direction, the permanent income hypothesis implies that temporary price fluctuations will be smoothed out and have little effect on the long-run consumption path. In the context of a transition economy with a financial market that is not yet fully developed, the analytical framework of Campbell and Mankiw [7] proves the most suitable, as it assumes the

parallel existence of a group of liquidity-constrained households spending according to current income and a group of households optimizing inter-temporally.

In Vietnam, quantitative studies on the macroeconomic consumption function remain rather sparse; most domestic works focus on the relationship between inflation and economic growth rather than on household spending behaviour. Nguyen Minh Sang and Ngo Nu Dieu Khue [8] used panel data for 17 developing economies including Vietnam over the period 2000–2012 and identified an inflation threshold in the range of 11–12%, whereby inflation only has a clearly negative effect on growth when it exceeds this threshold, while below the threshold the effect is unclear. Three gaps emerge from this line of research. First, the 2019–2024 period, with the COVID-19 pandemic and the global wave of cost-push inflation, has not yet been quantified in consumption function models for Vietnam. Second, the threshold approach answers the question of at what level inflation becomes harmful, but does not yet answer the dynamic question: after a price shock, how long does it take households to return to the equilibrium spending path? Third, previous studies usually treat inflation as a homogeneous variable, ignoring the difference between demand-pull and cost-push inflation, while Vietnam in this period was under pressure mainly from imported cost-push inflation [9].

The third gap has direct practical significance for the agricultural sector. Ha et al. [10] show that in developing economies, inflation operates as a kind of regressive tax, and the dominant transmission mechanism to household life is the food price channel: when the prices of essential goods escalate, households are forced to cut spending on education, health care and durable goods to secure their daily food needs. Easterly and Fischer [11] also show that this burden falls most heavily on low-income groups, who devote the largest share of their income to essential living costs. This characteristic is clearly evident in Vietnam. The basket of goods used to compute the consumer price index for the 2020–2025 period comprises 752 items arranged into 11 main groups, in which the weight of each main group is the corresponding expenditure share of resident households, determined from the Household Living Standards Survey and the Consumer Price Index Weight Survey of 2018 [12]. In this structure, the food and catering services group accounts for the largest weight, at 33.56%, and this share is even higher for rural households. Therefore, the response of aggregate consumption demand to price fluctuations is not only a matter of macroeconomic management but also directly determines the size and stability of the domestic market for agricultural products. If a price shock causes only a temporary contraction in purchasing power, the appropriate policy is short-run stabilization measures; conversely, if it durably shifts the level of consumption, the agricultural commodity sector will have to adjust its product structure in a long-run direction.

On this basis, this study simultaneously estimates the short-run and long-run effects of inflation on Vietnamese household consumption over the period 1995–2024 using an autoregressive distributed lag model combined with an error correction mechanism, thereby determining the speed of self-adjustment of consumption after price shocks and drawing implications for domestic agricultural demand.

II. RESEARCH METHODOLOGY

2.1. DATA AND VARIABLES

The study uses annual time-series data for the period 1995–2024, corresponding to 30 observations, compiled from the National Statistics Office [13] and the World Bank [14]. After the lagged variables are included in the model, the actual number of observations used in estimation is 29, corresponding to the period 1996–2024. The dependent variable is the natural logarithm of per capita household final consumption expenditure at constant 2010 prices. A detailed description of the variables is presented in Table 1. The three explanatory variables are the natural logarithm of per capita gross domestic product at constant 2010 prices, the annual inflation rate measured by the percentage change in the consumer price index, and the annual average lending rate.

TABLE 1. Description of the variables in the model

Variable	Standing for	Measurement	Expected sign
Household consumption	LNTC	Natural logarithm of per capita household final consumption expenditure, constant 2010 prices	Dependent variable
Income	LNTN	Natural logarithm of per capita gross domestic product, constant 2010 prices	+
Inflation	LP	Percentage change in the consumer price index (%/year)	−
Interest rate	LSDN	Annual average lending rate (%)	−

Source: Compiled by the author.

2.2. RESEARCH MODEL

The autoregressive distributed lag model proposed by Pesaran et al. [15] was chosen for three reasons suited to the characteristics of the data. First, this method can be applied to a set of variables with a mixed order of integration between I(0) and I(1), avoiding bias due to over-differencing. Second, the estimates remain robust with a small sample size. Third, the analytical framework allows short-run dynamics to be separated from the long-run equilibrium relationship within the same equation. The unrestricted error correction form of the model is written as follows:

$$\Delta LNTC_t = a_0 + \Sigma\beta_i \Delta LNTC_{t-i} + \Sigma\gamma_i \Delta LNTN_{t-i} + \Sigma\delta_i \Delta LP_{t-i} + \Sigma\theta_i \Delta LSDN_{t-i} + \lambda_1 LNTC_{t-1} + \lambda_2 LNTN_{t-1} + \lambda_3 LP_{t-1} + \lambda_4 LSDN_{t-1} + \varepsilon_t \quad (1)$$

where Δ is the first-difference operator, the coefficients β, γ, δ, θ reflect the short-run dynamics, the coefficients λ reflect the long-run relationship, and ε is the random error term.

2.3. ESTIMATION PROCEDURE

The procedure consists of four steps. First, the stationarity of each series is examined using the Augmented Dickey-Fuller unit root test in order to rule out the possibility of variables integrated of order two, I(2), which would invalidate the bounds test. Next, the optimal lag structure is determined according to the Akaike information criterion with a maximum lag of two; this criterion is preferred over the Schwarz criterion in order to limit the risk of dropping significant lagged variables under conditions of limited sample size. The third step is the bounds test to confirm the existence of a cointegrating relationship, by comparing the empirical F-statistic with the two critical values for the lower bound and the upper bound. Because the sample includes only 29 observations, the study uses the finite-sample critical values corresponding to a sample size of n = 30 from Narayan [16] instead of the asymptotic values, in order to ensure caution in the conclusion on cointegration. Finally, the error correction model is estimated to measure the short-run effects and the speed of convergence to the equilibrium state. The reliability of the model is verified through tests for autocorrelation, heteroskedasticity and parameter stability. All calculations were performed using the EViews software.

III. RESULTS AND DISCUSSION

3.1. STATISTICAL CHARACTERISTICS OF THE VARIABLES

Table 2 shows a clear contrast between two groups of variables. Consumption and income, having been log-transformed, have low dispersion, with standard deviations of 0.4175 and 0.4377 respectively, reflecting a steady growth path over three decades. In contrast, the two price variables fluctuate strongly. Inflation has a mean of 5.8475% but a standard deviation of as much as 5.1630, approximately equal to the mean itself, with a range from deflation of −1.7103% in 2000 to a peak of 23.1154% in 2008. The lending rate ranges from 6.96% to 21.60%, reflecting successive cycles of monetary tightening and easing.

TABLE 2. Descriptive statistics of the variables in the model

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
LNTC	30	16.6686	0.4175	15.9994	17.3406
LNTN	30	17.2292	0.4377	16.4781	17.9439
LP (%)	30	5.8475	5.1630	−1.7103	23.1154
LSDN (%)	30	10.9333	3.8243	6.9600	21.6000

Source: Author's calculations.

3.2. STATIONARITY AND COINTEGRATION TESTS

The unit root test results in Table 3 show that the consumption series is stationary at level, while the three explanatory variables become stationary only after first differencing. The inflation variable alone rejects the unit root hypothesis at the 10% significance level but not at the 5% level; to ensure caution, the study classifies this variable in the I(1) group. The key point is that no variable is integrated of order two, thereby satisfying the necessary condition for applying the bounds test. The simultaneous presence of I(0) and I(1) variables is also precisely the reason why traditional cointegration methods become less suitable than the autoregressive distributed lag approach.

TABLE 3. Stationarity test results

Variable	Level – t-statistic	Level – p-value	First difference – t-statistic	First difference – p-value	Order of integration
LNTC	−3.9110	0.0245	–	–	I(0)
LNTN	−2.9175	0.1719	−4.7284	0.0008	I(1)
LP	−3.4157	0.0688	−6.9949	0.0000	I(1)
LSDN	−3.0175	0.1448	−5.4790	0.0001	I(1)

Source: Author's calculations.

The bounds test results are presented in Table 4, performed on the optimal lag structure ARDL(1,1,1,0) with a restricted constant and no trend. The empirical F-statistic is 5.684, exceeding the upper-bound critical value at the 5% significance level of 4.306 but not yet exceeding the 1% threshold. This result provides sufficient grounds to reject the hypothesis of no cointegration and to affirm that consumption, income, inflation and the interest rate move together according to a stable long-run equilibrium relationship.

TABLE 4. Bounds test results (F-statistic = 5.684)

Significance level	Lower-bound critical value I(0)	Upper-bound critical value I(1)	Conclusion
1%	4.614	5.966	Insufficient grounds to reject
5%	3.272	4.306	Reject the hypothesis of no cointegration
10%	2.676	3.586	Reject the hypothesis of no cointegration

Source: Author's calculations. Finite-sample critical values according to [16], case of restricted constant with no trend, k = 3, n = 30.

3.3. LONG-RUN AND SHORT-RUN ESTIMATION RESULTS

Table 5 presents both the long-run equilibrium coefficients and the short-run dynamics. In the long run, income plays the dominant role with a coefficient of 0.9437 and a significance level of 1%, implying that a 1% increase in average income leads to an increase in consumption of about 0.94%. This near-unit elasticity is consistent with the characteristics of a developing economy, where most additional income is quickly converted into spending rather than accumulated. In contrast, the coefficients of inflation and the interest rate are both very small and do not reach statistical significance at any conventional threshold, with p-values of 0.9737 and 0.2165 respectively.

TABLE 5. Estimation results of the long-run coefficients and the error correction model

Variable	Coefficient	Standard error	t-statistic	p-value
Long-run coefficients				
LNTN	0.9437***	0.0247	38.2775	0.0000
LP	0.0001	0.0028	0.0333	0.9737
LSDN	−0.0061	0.0048	−1.2679	0.2165
Constant	0.4016	0.4511	0.8903	0.3818
Short-run coefficients				
ΔLNTN	1.7475***	0.1608	10.8683	0.0000
ΔLP	−0.0036***	0.0008	−4.6859	0.0000
ECT(−1)	−0.6073***	0.1048	−5.7954	0.0000

Source: Author's calculations. The symbol (***) denotes the 1% significance level. Selected model: ARDL(1,1,1,0). The LSDN variable does not appear in the short-run part because the optimal lag of this variable is zero.

The picture changes completely in the short run. The coefficient of differenced inflation is negative and significant at the 1% level, showing that households react immediately to price fluctuations by narrowing the growth rate of spending. The coefficient of differenced income is 1.7475, considerably higher than the long-run coefficient, reflecting a very high sensitivity of spending to immediate changes in income. The error correction coefficient takes the value −0.6073, satisfying the stability condition and significant at the 1% level, implying that about 60.73% of the deviation from the equilibrium state arising in the previous year is absorbed within the current year.

3.4. DIAGNOSTIC AND STABILITY TESTS

Table 6 summarizes the diagnostic tests. The Breusch-Godfrey test detects no autocorrelation in the residuals, the Breusch-Pagan-Godfrey test detects no heteroskedasticity, and the coefficient of determination shows that the model explains 80.08% of the variation in the dependent variable. The overall F-test rejects the hypothesis that all regression coefficients are simultaneously equal to zero.

TABLE 6. Diagnostic test results

Test	Statistic	p-value	Conclusion
Autocorrelation (Breusch-Godfrey)	F = 0.3293	0.7233	No autocorrelation
Heteroskedasticity (Breusch-Pagan-Godfrey)	F = 0.3139	0.9228	Homoskedasticity
Overall goodness of fit	F = 52.2594	0.0000	The model is significant
Coefficient of determination	R^2 = 0.8008	–	Adjusted: 0.7855

Source: Author's calculations.

Parameter stability is verified through the two plots of the cumulative sum of recursive residuals and the cumulative sum of squares of recursive residuals following the method of Brown et al. [17]. As shown in Figure 1, both statistic lines lie entirely within the critical band at the 5% significance level, indicating that the estimated relationship remained consistent throughout the study period, including through the global financial crisis, the high inflation episode of 2011 and the COVID-19 pandemic.

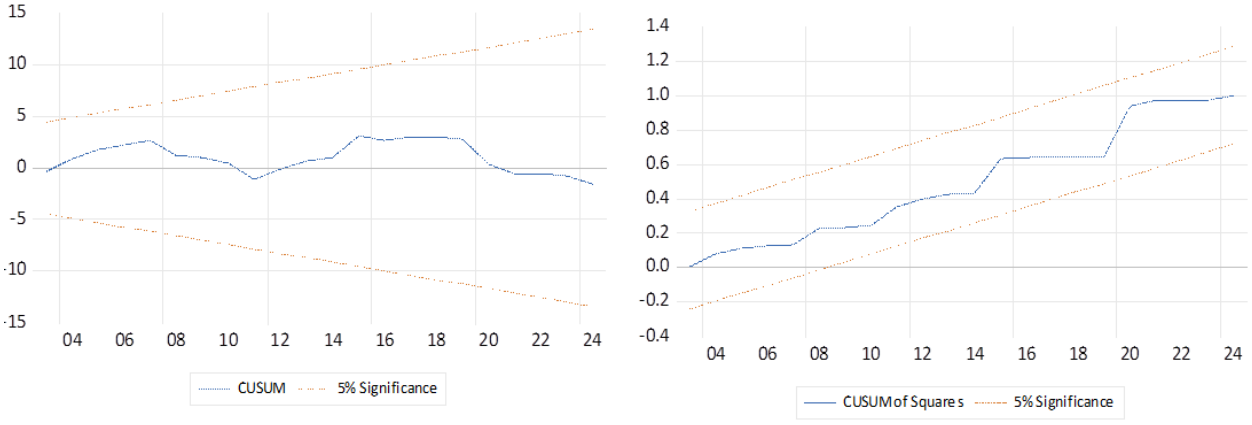


FIGURE 1. Results of the cumulative sum of recursive residuals and cumulative sum of squares of recursive residuals tests

3.5. DISCUSSION

The structure of the results shows that inflation affects consumption through a purely short-run mechanism. The immediate negative reaction is consistent with Pigou's real balance effect [4] and Leland's precautionary saving motive [5]: when the price level rises suddenly, the real value of cash and savings is eroded, while increased uncertainty causes households to temporarily postpone non-essential expenditures. However, the fact that the long-run coefficient is not statistically significant implies that this defensive reaction does not accumulate into a durable shift in the consumption path. This interpretation is consistent with Friedman's permanent income hypothesis [3], according to which temporary price fluctuations are smoothed out over time.

The high error correction coefficient provides an empirical explanation for the developments of the 2020–2024 period without the need to introduce structural break dummy variables into the model. The pandemic shock pushed consumption far below the long-run trend line, but with an absorption speed of about 60.73% per year, spending recovered in a V shape as soon as social distancing measures were lifted, reaching its highest level in the observed period, 33.96 million VND, in 2024. In other words, the pandemic affected consumption behaviour in Vietnam as a transitory shock rather than a long-lasting structural change.

Regarding the nature of the price shock, the 2019–2024 period was under pressure mainly from imported cost-push inflation rather than from the demand side [9]. This characteristic helps explain the structure of the estimation results: a cost-push shock hits the price level of essential goods abruptly, triggering an immediate defensive reaction by households, but is not accompanied by a lasting decline in real income and therefore does not shift the long-run consumption path. This is also why the food price channel – the group of goods most sensitive to imported input costs – becomes the most noteworthy transmission link for domestic purchasing power over agricultural products.

Placed alongside the observation of Ha et al. [10] on the dominant role of the food price channel in inflation transmission in developing economies, the estimation results show that this channel affects purchasing power in a transitory rather than lasting manner. From this, for the agricultural sector, the research results carry two implications. First, because domestic purchasing power is capable of recovering quickly on its own, declines in agricultural product consumption associated with price shocks are likely to be short-lived; the appropriate policy response is temporary stabilisation measures and liquidity support for the distribution stage, rather than restructuring production in a contractionary direction. Second, because the dominant transmission channel is income rather than prices, the room for expanding the domestic agricultural market depends first and foremost on the growth of households' real income, especially in rural areas where agricultural products are both a source of income and a major item of expenditure.

IV. CONCLUSION

Using an autoregressive distributed lag model combined with an error correction mechanism on data for 1995–2024, the study confirms the existence of a long-run equilibrium relationship between household consumption and income, inflation and the interest rate in Vietnam. Income is the dominant factor with a long-run elasticity of 0.9437, while inflation and the interest rate show no statistically significant long-run effect. In contrast, inflation has a clearly negative effect in the short run, and the speed of absorption of disequilibrium reaches 60.73% per year. The results imply that price shocks affect spending mainly through a temporary defensive psychological channel. For the agricultural sector, this suggests prioritising short-run stabilisation tools for the food and foodstuff group, while placing the long-run focus on raising households' real income as the foundation for expanding the domestic market for agricultural products.

The study uses per capita gross domestic product as a proxy for income. Because household final consumption is a component of gross domestic product, the estimated elasticity may be affected by the accounting identity between the two variables, and the magnitude of the short-run coefficient exceeding unity should be interpreted with caution on this basis. In addition, the sample of 29 annual observations limits the available degrees of freedom, while the model does not yet incorporate a wealth variable and does not separate inflation by group of goods. Further studies should use household disposable income, extend to quarterly data, and apply the nonlinear autoregressive distributed lag model to test for the possible existence of asymmetric responses between episodes of price increases and decreases, especially for the food and foodstuff group.

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