

Inflation and the Purchasing Power of Fixed Incomes in Lebanon**A Descriptive Analysis of Annual Data from 2019 to 2024**

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Abstract:

This study examines how Lebanon's inflation between the 2019 and 2024 annual averages changed the purchasing power of an unchanged nominal income. It combines published consumer-price inflation rates with a reproducible index calculation and illustrative income-adjustment scenarios. Five annual inflation observations for 2020–2024 are taken from the World Bank's World Development Indicators, using the displayed one-decimal precision, with 2019 normalized to 100. The reconstructed price index reaches 5,960.78 in 2024, approximately 59.61 times the baseline. An unchanged nominal income consequently retains 1.68% of its 2019 purchasing power. A hypothetical income increased each year by half that year's inflation retains 20.32%, while full contemporaneous annual indexation preserves the baseline by construction. Although inflation falls from 221.3% in 2023 to 45.2% in 2024, the price level continues to rise. These results demonstrate the importance of compounding and of distinguishing disinflation from a reversal of previous price increases. The analysis is descriptive and conditional: it does not estimate actual household income losses, poverty changes, or causal effects of monetary policy. Its practical contribution is a transparent framework for evaluating nominal income adjustments against cumulative inflation.

Keywords:

Lebanon; inflation; purchasing power; real income; income indexation; consumer price index

Introduction:

An income increase can look large in Lebanese pounds while buying less than before. Understanding this distinction requires comparing nominal income with the price level over the same period. Annual inflation headlines describe the speed of price change, but they do not directly show how successive increases accumulate or how much purchasing power an unchanged income retains. This study addresses that measurement problem for Lebanon using a defined historical window from the 2019 annual average to the 2024 annual average.

The World Bank's displayed inflation series reports rates above 100% in 2021, 2022, and 2023, followed by a lower positive rate in 2024 (World Bank, n.d.). This pattern makes Lebanon a useful case for distinguishing the inflation rate from the level of prices. A lower positive rate means prices increase more slowly. It does not, by itself, restore purchasing power lost during earlier years.

The research question is: How much CPI purchasing power would a fixed nominal Lebanese-pound income retain in 2024 relative to 2019, and how would that outcome change under partial or full annual inflation adjustment? The objectives are to reconstruct a cumulative price index, calculate the corresponding fixed-income purchasing-power index, and compare clearly specified adjustment rules. The contribution is an applied, reproducible calculation rather than a claim to discover a new economic relationship or a previously unexplored national phenomenon.

The topic connects economics, through inflation and real income, with finance, through the interpretation of nominal cash flows. The analysis intentionally separates observed price data from assumed income paths. It does not use a household survey, estimate the average Lebanese salary, or evaluate investment returns. The 2024 endpoint defines the study's scope and is not a claim that more recent observations are unavailable.

Literature Review:

Easterly and Fischer (2001) examine inflation and the circumstances of poorer households using international survey evidence and cross-country indicators. They find that poorer respondents are more likely to regard inflation as a major concern and report negative associations between inflation and several measures of their well-being. Their discussion identifies limited access to protective financial instruments and incomplete indexation as possible sources of vulnerability. This motivates the present study's focus on an unchanged nominal income, but their international evidence does not establish the magnitude of any particular Lebanese household's loss.

Albanesi (2007) develops a political-economy explanation for the positive association between inflation and income inequality. The model links policy outcomes to distributional conflict and differing household vulnerability. Its relevance here is conceptual: the burden of price increases depends on economic position and the ability to respond. It does not imply that aggregate inflation alone can identify a household-level distributional effect. Accordingly, the calculations below illustrate adjustment mechanisms without estimating inequality or assigning households to the simulated income paths.

Doepke and Schneider (2006) study the redistribution of nominal wealth through inflation in the United States. Their analysis shows why the effects of inflation depend on both assets and liabilities, including nominal claims and fixed-rate debt. This adds an important qualification to an income-only approach. A fall in the purchasing power of a fixed cash flow is not a complete

measure of a person's welfare or balance-sheet change. The present study isolates the cash-flow calculation and does not transfer the US study's distributional findings to Lebanon.

For Lebanon, the World Bank (2024) documents household hardship and differences associated with access to dollar income in its discussion of the Poverty and Equity Assessment. Its evidence draws on a survey covering five governorates, rather than a complete census of the country. The report provides a recent empirical context for why income currency and adjustment matter. However, its poverty measures and the present paper's hypothetical fixed-income index answer different questions. The latter cannot be interpreted as a measured change in poverty or in the income of the surveyed population.

In Lebanon, the financial crisis encouraged the use of cryptocurrencies (Aoun et al., 2026), Beainy and Kamel (2026) argue how Bitcoin has become a hedge that assist people to protect their savings, increasing the use of this new asset (El-Chaarani et al., 2025) but this does not compensate the absence of banks during a financial crisis as highlight Mawad and Freiha (2024) nor limit the importance of proper government governance (Athari et al., 2023) and trust as well as currency stability. Studies highlight that a peg with the U.S. Dollar can enhance perceived trust in developing economies (Kamel et al., 2025).

The data sources also support an essential distinction between a declining inflation rate and falling prices. The Central Administration of Statistics (2025) reports annual inflation of 45.24% for 2024, compared with 221.3% in 2023. The World Bank (n.d.) display rounds the 2024 observation to 45.2%. This study uses a consistent one-decimal series for all calculation years and records that choice explicitly. The statistical releases supply observations; the income scenarios are constructed separately.

Together, these sources suggest that an aggregate price series can quantify the erosion of a specified nominal amount, while actual household outcomes require additional information about income changes, consumption patterns, assets, and liabilities. The applied gap addressed here is the conversion of a sequence of annual inflation figures into an auditable cumulative purchasing-power comparison. The study complements the literature with a small, transparent replication exercise rather than a causal model of Lebanon's crisis.

Methodology:

The study uses descriptive secondary-data analysis. The unit of observation is a calendar year. Five annual-average consumer-price inflation rates for Lebanon, 2020–2024, are transcribed from the World Bank's World Development Indicators display, indicator FP.CPI.TOTL.ZG, accessed on 23 September 2026. The 2019 annual average is the normalization period. Its own inflation rate is not applied because that would introduce a comparison with 2018. The selected observations are complete; no interpolation or missing-value replacement is used.

Measurement. The published rates are 84.9%, 154.8%, 171.2%, 221.3%, and 45.2%, respectively. The calculations use these displayed figures, not an unrounded download. The national statistical release provides a cross-check for 2023 and 2024 (Central Administration of Statistics, 2025). Because annual-average rates compare annual-average price levels, the reconstructed index describes annual-average comparisons. It is not a December-to-December series or a literal record of prices on a single day.

Price index. Let p_t denote annual inflation as a decimal and P_t the reconstructed price index. Set $P_{2019} = 100$. For each subsequent year, calculate $P_t = P_{t-1} \times (1 + p_t)$. The cumulative price multiple is $P_t/100$, and cumulative inflation in percent is $100 \times (P_t/100 - 1)$. This multiplication preserves compounding. Adding the five annual rates does not produce cumulative inflation.

Income scenarios. Let N_t be the nominal income index, with $N_{2019} = 100$, and R_t its purchasing-power index. Then $R_t = 100 \times (N_t/P_t)$. For unchanged income, $N_t = 100$ throughout. For an annual adjustment share a , $N_t = N_{t-1} \times (1 + a \times p_t)$. The illustrative cases use $a = 0, 0.5$, and 1 . An adjustment of 0.5 means a nominal increase equal to half of that year's inflation rate, applied each year to the preceding nominal income. It does not mean that half of the original purchasing power is protected.

The scenarios treat annual-average nominal income as adjusting contemporaneously to the stated rule. Full indexation therefore preserves purchasing power by construction. This benchmark assumes accurate inflation matching without a timing lag and is not a claim that an employer or public institution actually followed that rule. Monthly wage timing, employment changes, taxes, remittances, and exchange-rate conversions are outside the model.

Analytical procedure and validation. The analysis first reconstructs prices, then calculates each nominal and real income path, and finally compares the 2024 outcomes. A supporting Excel workbook preserves the sourced rates and calculation formulas, including an editable adjustment share. Independent arithmetic verifies the headline values. Boundary checks confirm that $a = 0$ reproduces the fixed-income result and $a = 1$ preserves an index of 100. Calculations retain intermediate precision; tables round indices to two decimals. No regression, significance test, or causal claim is appropriate for this five-observation accounting exercise.

Results:

Table 1 reports the observed inflation inputs and the derived price and fixed-income indices. The reconstructed price index rises from 100.00 in 2019 to 5,960.78 in 2024. This corresponds to a price multiple of 59.61 and cumulative inflation of approximately 5,860.78%. The fixed-income purchasing-power index falls to 1.68, equivalent to retaining 1.68% of baseline purchasing power and losing 98.32% under the unchanged-income assumption.

Table 1 Inflation and reconstructed purchasing power

Year	Inflation %	Price index	Fixed real income
2019	Base	100.00	100.00
2020	84.9	184.90	54.08
2021	154.8	471.13	21.23
2022	171.2	1,277.69	7.83
2023	221.3	4,105.22	2.44
2024	45.2	5,960.78	1.68

Note. Indices use 2019 = 100. Inflation is annual-average growth, not year-end inflation. Source: World Bank (n.d.) and calculations from displayed rates.

Inflation reaches its highest value in the selected series in 2023 at 221.3%, then declines by 176.1 percentage points to 45.2% in 2024. Nevertheless, the reconstructed price index rises from 4,105.22 to 5,960.78 during that comparison. The fixed-income index falls from 2.44 to 1.68. The 2024 slowdown therefore coincides with an additional purchasing-power decline for unchanged nominal income.

Table 2 compares the three specified income paths. With half of each year's inflation added to nominal income, the nominal index reaches 1,211.28 in 2024, or approximately 12.11 times its baseline. Its real index is only 20.32 because prices increase more rapidly. Full contemporaneous annual indexation produces equal nominal-income and price indices and therefore a real index of 100.00.

Table 2 Illustrative income adjustment outcomes in 2024

Adjustment rule	Nominal index	Real index	Real loss %
Unchanged	100.00	1.68	98.32
Half of each year's inflation	1,211.28	20.32	79.68
Full annual inflation	5,960.78	100.00	0.00

Note. All indices use 2019 = 100. Income paths are assumptions. Full contemporaneous annual matching maintains purchasing power by construction.

For scale, consider an illustrative 2019 monthly income of LBP 1,000,000. Holding that nominal amount unchanged yields purchasing power equivalent to approximately LBP 16,776 at 2019

prices in the 2024 annual-average comparison. Matching the CPI price increase requires approximately LBP 59,607,837 per month. The half-adjustment scenario yields approximately LBP 12,112,840 in nominal income, equivalent to LBP 203,209 at 2019 prices. These amounts scale a mathematical example and are not observed wages.

The sum of the five annual inflation rates is 677.4%, far below the compounded increase of 5,860.78%. The difference arises because each year's price growth applies to the preceding year's already increased level. As a precision check, replacing only the rounded 2024 rate of 45.2% with the national release's 45.24% raises the price multiple to approximately 59.62; the fixed-income retention still rounds to 1.68%. This check concerns rounding only and is not a confidence interval.

Discussion and Conclusion:

The analysis answers the research question with a conditional result: an unchanged nominal Lebanese-pound income would retain approximately 1.68% of its 2019 CPI purchasing power in the 2024 annual-average comparison. An annual adjustment equal to half of each year's inflation improves retention to 20.32%, while full contemporaneous matching preserves the baseline by definition. The main lesson is that nominal increases and lower inflation cannot be evaluated without reference to cumulative price changes.

For household budgeting and financial analysis, the practical implication is to compare income and prices over matching periods and units. An increase in the number of Lebanese pounds received does not necessarily represent an increase in real resources. Employers and institutions considering adjustments can use the workbook to examine alternative coverage shares, but the calculation alone cannot determine affordability, productivity effects, or an optimal wage-setting policy. Full indexation is a measurement benchmark, not an unconditional policy recommendation. The findings are consistent with the literature's emphasis on exposure and adjustment, while preserving its qualifications. Limited protection of nominal income is one channel of vulnerability discussed by Easterly and Fischer (2001). The wealth effects examined by Doepke and Schneider (2006) show why that channel cannot represent a complete welfare assessment. This study makes no claim that inflation affected all households equally or that the fixed-income scenario measures Lebanon's actual average income loss.

Limitations include the short historical window, aggregate CPI coverage, rounded source inputs, and assumed income paths. Individual consumption baskets can differ from the national index, and households can change what they buy. Dollar earnings, transfers, changing employment, savings, debt, and the timing of pay adjustments can alter real outcomes. The reconstructed index approximates the selected annual-average CPI path and does not establish causation between inflation and poverty or identify the policy causes of inflation.

Future research could combine monthly CPI data with documented wage adjustments and household expenditure information. That would allow separate treatment of adjustment delays, income currency, and household-specific price exposure. A longer series could extend the descriptive comparison, while causal questions would require an appropriate identification strategy and additional data. The present contribution is a reproducible starting point that makes its assumptions and calculation limits explicit.

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