

How do borrowers adjust in a household foreign currency debt crisis?



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Keywords: Foreign currency debt, Fisher channel, consumption, marginal propensity to consume, labor supply, flight from quality, home production

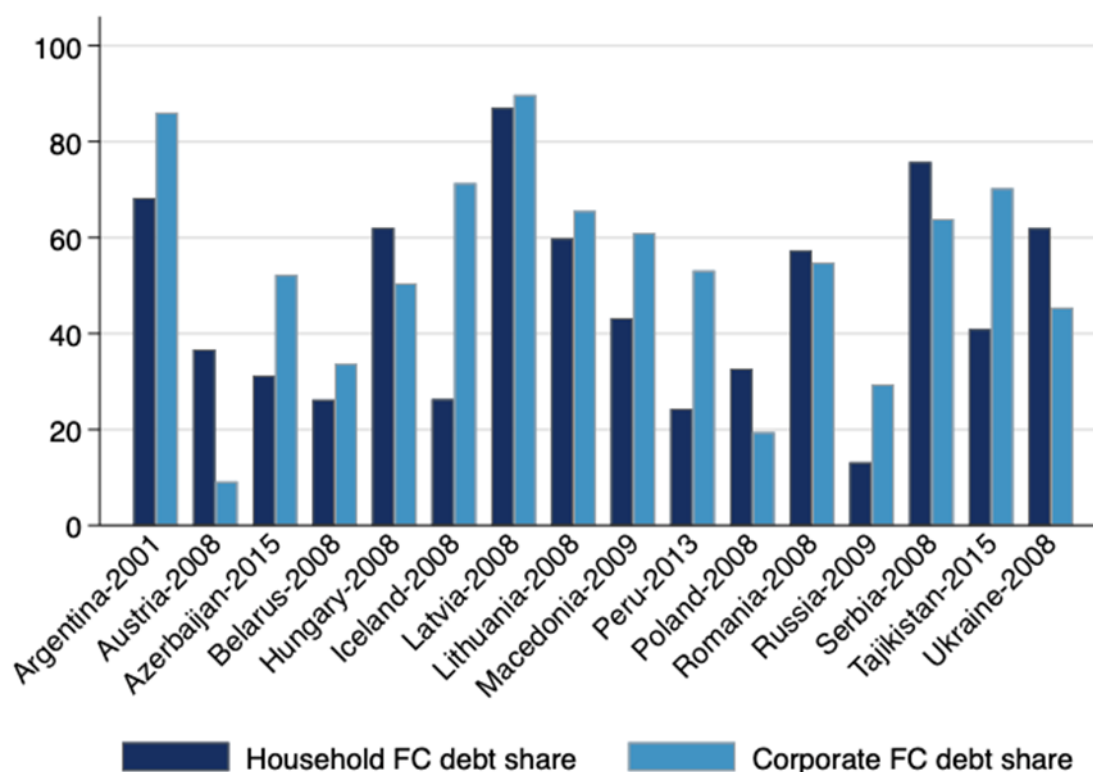
JEL codes: E21, G51, J20

Households in emerging markets often borrow in foreign currency. This policy brief analyzes how households with foreign currency denominated mortgage debt adjust to a large increase in debt payments following an exchange rate depreciation. Using detailed household-level data during Hungary's currency crisis in 2008, we find that affected households reduce non-durable consumption approximately one-for-one with increased debt service. This adjustment is driven by both a fall in quantities consumed and a substitution toward lower quality goods, consistent with a "flight from quality." Foreign currency debt revaluation has no effect on labor market participation, hours or earnings; however, it leads to a substantial increase in home production. Overall, our findings provide evidence of an important role for a "foreign-currency Fisher channel" of exchange rate depreciation in the presence of foreign currency debt.

Impact of foreign currency debt revaluation on consumption

Foreign currency debt often plays a central role in emerging market financial crises. From crises in Asia and Latin America in the 1990s to emerging Europe in 2008, widespread exposure to foreign currency debt combined with a sharp exchange rate depreciation weakened private-sector balance sheets, depressing consumption and investment. This “foreign-currency Fisher channel,” the open economy version of Irving Fisher’s famous debt-deflation channel, can act as a powerful amplification mechanism of emerging market crises. Yet despite the prevalence of foreign currency household debt in emerging markets, little is known about how households respond to foreign currency debt revaluations (**Figure 1**).

Figure 1: Household and corporate foreign currency loan exposure during selected crises



Notes: This figure plots the share of foreign currency loans in total household and non-financial corporate loans during selected episodes. The figure shows that foreign currency debt comprised an important share of household and corporate debt during these episodes. The episodes shown involve major currency and/or banking crises.

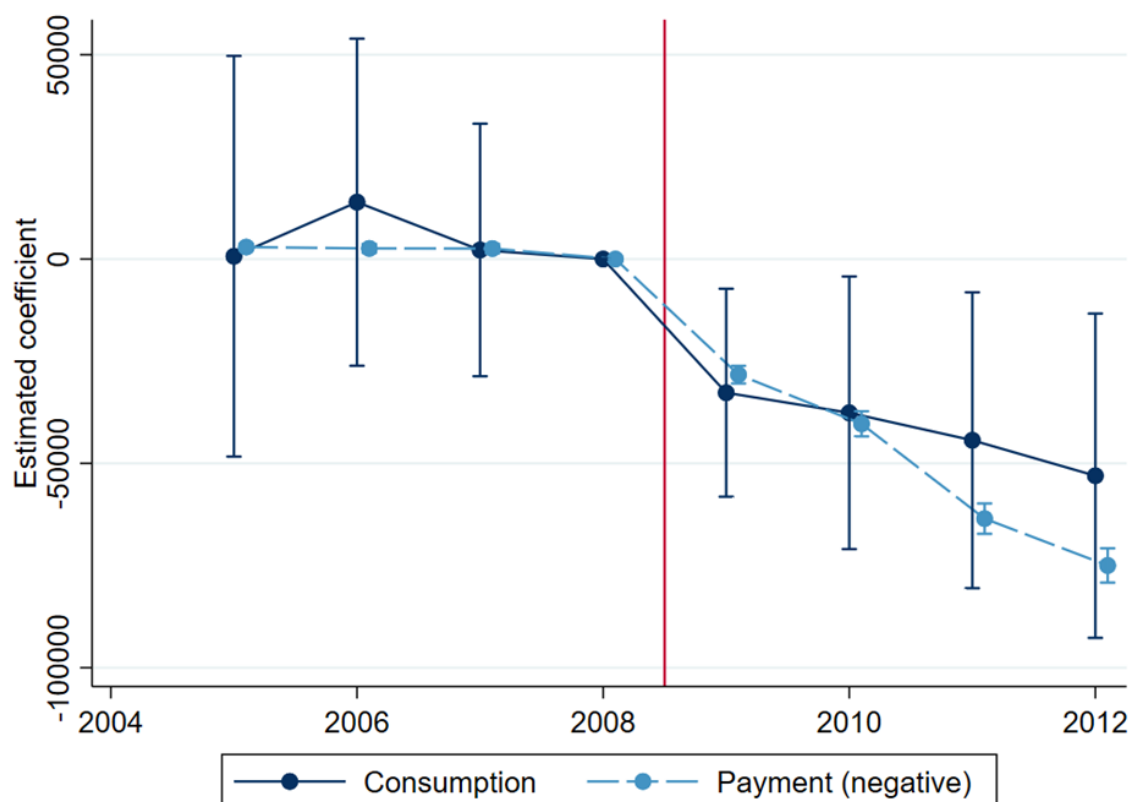
In this policy brief, we provide causal evidence of the consumption response of households experiencing a large, unexpected, and permanent increase in their mortgage payments on foreign currency denominated loans during a currency crisis. We also document various channels of adjustment, including the composition of consumption, labor response, and home production. Our findings also have implications for other shocks to household balance sheets, such as the effect of rising interest rates on adjustable rate mortgage borrowers. Further details are provided in our working paper (Gyöngyösi, Rariga, and Verner 2022).

To quantify the impact of exchange rate shocks on household behavior, we focus on the Hungarian currency crisis in 2008. Prior to the crisis, two-thirds of housing debt was denominated in foreign currency, mainly Swiss franc. The sharp (approximately 30 %) and unexpected depreciation of the domestic currency (Hungarian forint) relative to the Swiss franc starting in October 2008 increased household debt burdens for foreign currency (FC) borrowers, raising total household debt from 30 % to around 40 % of the GDP. At the same time, local currency (LC) borrowers were unaffected. Aggregate data confirms that the crisis led to a sharp and large (10 %) decline in consumption between 2008 to 2012.

We examine how households adjust to this debt revaluation shock using detailed consumption survey data for Hungary. Crucially, the survey contains information on the currency composition of mortgage loans, which is not available in most contexts. In our empirical approach we compare the consumption dynamics of FC borrowers to similar LC borrowers in a difference-in-differences setup. We find that households with FC debt significantly and persistently reduce consumption after the depreciation, relative to households with LC debt. For the period 2009-2012, household non-durable consumption falls by 4.6 % for FC borrowers, relative to LC borrowers. We find a more pronounced impact on durable goods consumption (16 %), consistent with a higher intertemporal elasticity of substitution for durables.

To understand the magnitude of the consumption response to the FC debt revaluation, we relate the change in consumption to the increase in debt service. We find that the marginal propensity to consume non-durables is approximately one, indicating that consumption falls one-for-one with the increase in debt payments (**Figure 2**). The spending response is even more negative if we consider both durable and non-durable consumption. Overall, these findings are consistent with households being liquidity constrained and unable to smooth consumption. Adding housing investment (spending on home maintenance and repair) to the definition of consumption, the response to the increase in debt becomes even stronger. This suggests debt overhang, as highly indebted households would fear not reaping the full benefits of the investment due to the increased risk of foreclosure (Melzer, 2017).

Figure 2: Consumption and debt service cost response to the debt revaluation shock



Notes: The figure plots the coefficients of interest from estimating the impact of foreign currency debt on the level (HUF value) of nondurable consumption and the (negative) debt service cost as the dependent variables. Error bars represent 95 percent confidence intervals.

As additional evidence supporting the adverse balance sheet effects of FC debt exposure, we analyze survey questions about households' debt repayment difficulties and confirm that they are liquidity constrained. FC debtors are significantly more likely to report having difficulties with covering their mortgage payments, living costs, and payments on other credit after the onset of the crisis.

Quantity and quality of expenditures

To better understand the consumption response to the foreign currency debt revaluation shock, we decompose the change in household non-durable expenditures into the intensive margin – changes in spending within product categories between two periods – and the extensive margin – entry and exit from specific product categories. The intensive margin can be further decomposed into the contribution of changes in quantities purchased and average prices paid. On the intensive margin, the expenditure on a given consumption category may decrease between two periods for two reasons. First, a household may purchase a cheaper variety of the same category, but purchase the same amount. Second, the household may purchase a lower quantity of the same variety.

We find that the intensive margin contributes approximately 74 % of the decline in FC debtors' spending, while the extensive margin contributes the remaining 26 %, driven by reduced entry into new product categories. On the intensive margin, the effect of FC debt on consumption is explained by both a decline in quantities purchased and a decline in average prices paid. The reduction in quantities accounts for approximately 70 percent of the decline in spending, while the reduction in prices accounts for the remaining 30 percent. This evidence suggests that households substitute away from higher quality toward cheaper, lower quality products, consistent with the “flight from quality” hypothesis (Burstein, Eichenbaum and Rebelo, 2005).

The reduction in the quality of consumption has several important implications. First, as noted by Burstein, Eichenbaum and Rebelo (2005), failing to adjust for changes in the quality composition of goods within broadly defined consumption categories leads to a downward bias in measured inflation during crises. Second, Jaimovich, Rebelo and Wong (2019) document that lower quality goods are less labor intensive, hence, a shift in spending toward lower quality goods amplifies the decline in labor demand following adverse shocks. Third, as lower quality goods are less likely to be imported (Alchian-Allen conjecture), reducing the quality of consumption increases import compression during debt crises, which reinforces expenditure switching from changes in relative prices (Bems and di Giovanni, 2016). Finally, while proxying for quality with average prices is a common assumption, a related but alternative interpretation of the reduction in average prices paid is that the shock leads households to search more intensively for lower prices of the same good and to consume less leisure (e.g., Aguiar and Hurst, 2005, 2007).

Labor supply

Do households adjust to the debt shock by increasing labor supply to service higher debt payments? We examine household labor supply and find no significant effect for foreign currency debtor households' labor market participation, unemployment, hours worked and household income after the debt shock. These results are most consistent with models with a weak wealth effect on labor supply and suggest that a debt overhang effect on labor supply is not first order for the average FC debtor. Our evidence of a null effect may stem from the fact that we consider a negative wealth shock. For households, it could be easier to reduce labor supply following a positive wealth shock than to increase labor after a negative shock, especially in a crisis with a substantial (3 percentage point) increase in the unemployment rate.

While households did not increase overall labor supply in response to the FC debt shock, we show that FC debt exposure increased the probability of having income from abroad following the depreciation.

A household member working abroad provides access to FC income to service rising FC debt burdens. Although we do not directly observe the currency denomination of foreign income, the UK, Germany, and Austria were the popular destinations for Hungarian households migrating abroad (Hárs, 2016). Because the euro and British pound depreciated less against the Swiss franc than did the forint, income in these currencies could have provided some hedge against the debt revaluation.

Home production

Another potential margin of adjustment for households facing a debt shock is the substitution of money-intensive goods for time-intensive goods through home production. In a recession when jobs are scarce, households can more easily adjust home production than market hours. Home production of food is an especially relevant alternative to purchasing food for rural households. According to our results, the probability of engaging in home production increased for FC debtors, relative to LC debtors.

We also show that FC borrowers cut back on food service spending and increased home production, consistent with a substitution away from expensive food services (e.g., restaurants) and toward home production. While the share of home production in total consumption is relatively small for most households, these results indicate that a subset of households attempt to smooth consumption in response to the shock by boosting home production. The increase in home production implies that the decline in consumption expenditures overstates the decline in household consumption (Aguiar and Hurst, 2005).

Concluding remarks

The significant pass-through of the exchange rate depreciation to consumption through household balance sheets had a sizable impact on aggregate consumption. Abstracting away from general equilibrium effects, the foreign currency debt revaluation reduced on average annual non-durable consumption by 0.77 percent of GDP over 2009-2012. Focusing on total spending including durables, the debt revaluation directly reduced on average annual spending by 0.97 percent of GDP over 2009-12.

These results suggest that indebted households are liquidity constrained and shocks to their disposable income can potentially have large real economic effects. Therefore, macroprudential policies should address these vulnerabilities and limit risky borrowing, especially in foreign currencies. ■

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