



The Impacts of Exchange Rate Movements on Prices and Trade across Sectors: Evidence from Ethiopian Firms

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Movements of the Ethiopian Birr against the USD, the major currency of trade invoicing, matter more for prices and trade volumes than do movements of the Birr against trading partners' currencies. USD prices and trade volumes change much more for manufacturing firms than for firms in other sectors in the wake of Birr movements against the USD.

Introduction

Firms often face unexpected movements of their own or their trading partners' currencies. Given the large fluctuations many emerging market currencies have faced in recent decades, understanding the impact of these movements on prices and trade volumes is vital. Existing studies have generated a wide array of estimates of exchange rate pass-through (ERPT), which measures the sensitivity (elasticity) of border prices to currency fluctuations, and subsequent impacts on firm behaviour. Very few of these studies use microdata, which is data collected at the firm- or industry-level rather than at the regional- or country-level. Even fewer examine impacts in developing countries, and of those that do, the focus is on large emerging markets like China or Brazil. To the best of our knowledge, no studies have examined ERPT impacts in African countries, where reliance on imported inputs tends to be high, few firms import directly, and transactions occur mainly in foreign currencies. To fill this gap, we examine how exchange rate movements impact prices and firm behaviour in Ethiopia from 2006-2014.

Methodology

We use a uniquely detailed dataset provided by the Ethiopian government that contains firm-linked tax, customs, and balance sheet information for the universe of registered firms in Ethiopia¹. We first apply standard ERPT procedures to estimate how much annual movements of the Ethiopian Birr against trading partners' currencies affect import and export prices for Ethiopian firms. These standard procedures comprise a series of regressions that control for the price level of each trading partner, as well as effects that are specific to a given product, country, or firm².

Next, we decompose ERPT into its two components: ERPT that stems from movements of the Birr against the USD (the major invoicing currency), and ERPT that stems from movements of the USD against trading partners' currencies. We perform analyses with this decomposition to understand which of the two components impacts trade prices more. Furthermore, we explore the effects of these decompositions across sectors to examine if the more specialized nature of trading relationships for manufacturing firms leads to different levels of ERPT than for firms in other sectors.

Finally, we investigate whether differential rates of ERPT across sectors are associated with different impacts of exchange rate movements on the volume of goods traded.

¹ The formal economy in Ethiopia is estimated to produce about 60 percent of GDP, which is roughly equal to the Sub-Saharan Africa average.

² This is possible thanks to the panel nature of the data that follow the same case (product, country and firm) over time.

Research Findings

Four main sets of findings emerge from this project. First, we document the level of ERPT when the Ethiopian Birr moves against the currencies of trading partners. For imports, we find that a 10% annual depreciation of the Ethiopian Birr relative to a supplier’s currency leads to a 7.9% increase in Birr prices paid for goods imported. For exports, we find that a 10% annual depreciation of the Birr relative to a buyer’s currency leads to a 6.2% increase in Birr prices received for goods exported. These findings are in line with rates of ERPT observed in other developing countries, and higher than rates typically seen in OECD countries.

Second, focusing on imports, we decompose ERPT into its two components and document impacts across sectors. As shown in Figure 1 below, on average, across all Ethiopian firms, prices paid in Birr rise one-to-one with a depreciation of the Birr against the USD. Birr prices change much less when the USD moves against suppliers’ currencies. Looking across the two largest sectors, we see markedly different ERPT for manufacturers and wholesalers. While wholesalers exhibit similar patterns to the full sample of firms, manufacturers’ Birr prices do not change in the wake of Birr movements against the USD, implying full pass-through into USD prices. Furthermore, in the face of USD movements against suppliers’ currencies, suppliers appear to change the USD prices manufacturers face by a significant amount. It is possible that these inter-sectoral differences arise because manufacturers source customized inputs for production, which leads to longer term relationships with suppliers and different contracting structures.

Figure 1: ERPT into import prices

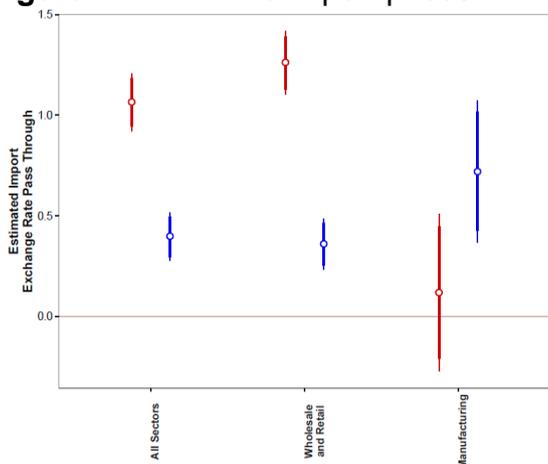
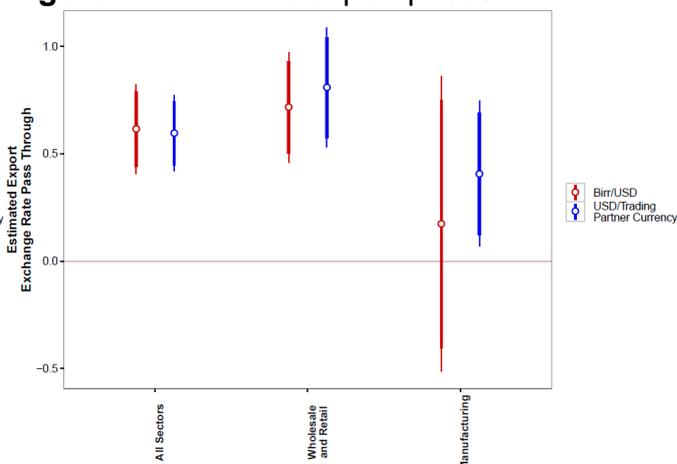


Figure 2: ERPT into export prices



Notes: Estimated ERPT measured as the elasticity of border prices with respect to exchange rate movements. Vertical blue and red lines represent 95% confidence intervals.

Third, we carry out the same analysis for exports. As shown in Figure 2 above, for both Birr movements against the USD, and USD movements against buyers’ currencies, there is roughly two-thirds ERPT into the Birr prices that firms receive. Once again, patterns for wholesalers mirror those for all sectors, while manufacturers have different rates of ERPT. Movements of the Birr against the USD for manufacturers are fully passed through into USD prices. For example, a 10% depreciation of the Birr against the USD leads Ethiopian manufacturing firms to charge their buyers a 10% lower price in USD.

Fourth, we study correlations between rates of ERPT and the volume of trade. We find that, on the import side, the volume of trade is not related to ERPT, which is perhaps a reflection of the need for firms to keep a steady supply of imported inputs, regardless of price, due to the lack of domestic alternatives. For exports, however, a 10% depreciation of the Birr for manufacturing firms is associated with a 10% increase in the volume of exports, which is likely due to their ability to lower USD prices by a similar amount in order to attract buyers. For other sectors, there are no volume impacts, which reflects the fact that firms in other sectors do not alter USD prices in the wake of exchange rate movements.



Private Enterprise Development in Low-Income Countries

Policy Implications

Exchange rate policy is often used in developing countries as a tool to promote structural transformation by shifting economic activity across sectors. Whether these shifts occur depend largely on whether relative prices change across sectors, and relative price changes in the wake of currency movements depend on rates of ERPT. Our work shows that, at least for exports, different rates of ERPT directly translate into differences in the volume of goods exported, which implies that policymakers must take the specifics of the trade relationships of a given sector into account if their aim is to stimulate trade in that sector with exchange rate policy.

Moving Forward...

Our findings point to four important directions for future research. First, given the differences in ERPT we observe between wholesalers and manufacturers, it is not clear that exchange rate movements will have the intended impact on manufacturing growth, as, in many developing countries, the bulk of manufacturing firms purchase imported inputs from wholesalers. Hence, it is vital to understand how wholesalers pass prices on to firms that source from them and sell to them.

Second, it will be important to understand exactly how different types of trading relationships for manufacturing firms, relative to firms in other sectors, result in such different rates of ERPT.

Third, our data does not allow us to differentiate between locally owned firms and multinationals. Since multinationals often source from or sell to their own subsidiaries, ERPT and volume impacts for this subset of firms may be quite different from the average locally owned firms. Future research should aim to investigate this using a more comprehensive dataset.

Finally, most papers that have used firm-level data to study ERPT have only used data from the manufacturing sector. It will be important to test for differences in ERPT across sectors in other countries, to understand whether the differences we document between manufacturing and other sectors are specific to Ethiopia or are a broader phenomenon.