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Mateus Maquiadi

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Rua Miguel Lupi, 20
1249-078 LISBOA
Portugal

Telephone: +351 - 213 925 912
E-mail: rem@iseg.ulisboa.pt

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Inflation Responses to FX Demand and Supply Shocks under Exchange Rate Segmentation: Evidence from Angola

Mateus Maquiadi*

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Abstract

We identify FX demand and FX supply shocks using a Bayesian Structural VAR with sign restrictions and employ Local Projections to estimate their dynamic effects on inflation in Angola, comparing results obtained using the official and parallel exchange rates. In addition, State-Dependent Local Projections are used to assess whether the degree of exchange rate segmentation alters the intensity of exchange rate pass-through. The results show that FX demand shocks generate rapid, persistent, and statistically significant inflationary effects, whereas positive FX supply shocks produce weaker disinflationary effects. The findings further suggest that the parallel FX market plays an important role in price formation in some sectors of the economy and that exchange rate segmentation influences the transmission of exchange rate shocks to domestic prices.

JEL Classification: E31; F31; C32
Keywords: Exchange Rate Pass-Through; Inflation Dynamics; FX Demand and Supply Shocks; Exchange Rate Segmentation; Angola

*Head of the Economic Research Department, Banco de Fomento Angola (BFA); Assistant Professor, Faculty of Economics, Catholic University of Angola. E-mail: mateus.manuel.maquiadi@bfa.ao | mateus.maquiadi@ucan.edu | mateusmaquiadi@gmail.com

1 Introduction

Exchange rate fluctuations constitute one of the main channels through which external shocks are transmitted to domestic inflation, particularly in emerging and developing economies. A large body of literature on exchange rate pass-through (ERPT) shows that currency depreciations increase domestic prices by raising the local-currency cost of imported consumption goods, intermediate inputs, and capital goods (Campa and Goldberg (2005)). However, the magnitude and persistence of pass-through vary considerably across countries and over time, reflecting differences in monetary policy credibility, inflation regimes, exchange rate arrangements, trade openness, and structural characteristics of the economy (Taylor (2000); Choudhri and Hakura (2006); Ha et al. (2020)).

While the traditional ERPT literature focuses primarily on the average effects of exchange rate movements on inflation, more recent contributions emphasize that ERPT depends not only on the size of exchange rate changes but also on the underlying shocks that generate those movements. Forbes et al. (2020) show that exchange rate fluctuations associated with monetary, demand, and external shocks produce substantially different inflationary outcomes. Similarly, Carrière-Swallow et al. (2023) demonstrate that the inflationary consequences of exchange rate movements depend critically on the source of the underlying disturbance. These findings have given rise to the concept of shock-dependent exchange rate pass-through, according to which identical exchange rate movements may generate different inflation dynamics depending on the nature of the shock driving the exchange rate.

Despite these advances, relatively limited attention has been paid to a distinction that is particularly relevant for commodity-exporting and foreign exchange (FX) constrained economies: the difference between exchange rate movements driven by shocks to the supply of foreign currency and those generated by shocks to the demand for foreign currency. This distinction is economically important because these shocks reflect fundamentally different mechanisms. On the one hand, FX supply shocks originate from changes in the availability of foreign currency, often associated with fluctuations in export revenues, commodity prices, external financing conditions, or capital inflows. On the other hand, FX demand shocks reflect stronger demand for foreign currency arising from imports, external payments, capital flight, speculative demand, or shifts in expectations. Although both shocks may generate exchange rate depreciation, their transmission to domestic prices need not be identical.

This distinction is particularly relevant in oil-exporting economies, where foreign currency inflows depend heavily on commodity export revenues. In such economies, exchange rate pressures often arise not only from fluctuations in FX supply but also from changes in the demand for foreign currency. Understanding whether inflation responds differently to these two sources of exchange rate pressure is important both for macroeconomic stabilization and for the design of monetary and exchange rate policies. Nevertheless, empirical evidence on this issue remains scarce, particularly for African economies.

Angola provides a particularly suitable laboratory for investigating these questions. The country combines three characteristics that place the FX market at the center of macroeconomic dynamics. First, the economy remains highly dependent on oil exports, which account for the vast majority of export revenues and foreign currency inflows. Second, Angola exhibits a high degree of import dependence, implying that exchange rate movements can be rapidly transmitted to domestic prices. Third, the country has experienced prolonged episodes of foreign currency shortages, exchange controls, and substantial divergences between official and parallel exchange rates.

The collapse in international oil prices after 2014 illustrates the importance of these mechanisms. The sharp decline in oil revenues substantially reduced FX supply, weakened international reserve accumulation, and intensified pressures in the FX market. However, rather than allowing a full adjustment through the official exchange rate, authorities relied heavily on FX rationing, administrative restrictions, and exchange controls. As a result, adjustment increasingly occurred through the parallel market, generating historically large gaps between official and parallel exchange rates. As emphasized by Dornbusch et al. (1983), Agénor (1992), and Kiguel and O'Connell (1995), such environments are characterised by high levels of exchange rate segmentation, whereby official and parallel exchange rates coexist and may convey different information regarding FX market conditions.

The existence of segmented FX markets introduces an additional dimension that has received limited attention in the ERPT literature. In economies where firms and households simultaneously observe official and parallel exchange rates, inflation dynamics may depend not only on the source of exchange rate shocks but also on the degree of segmentation prevailing in the FX market. In this context, the gap between official and parallel exchange rates may serve as an indicator of foreign currency scarcity, market distortions, and restrictions on access to FX. Consequently, the intensity and persistence of exchange rate pass-through may vary across periods characterised by different levels of exchange rate segmentation.

Against this background, this paper seeks to address three main research questions. First, do FX demand shocks generate different inflationary effects from FX supply shocks? Second, do the estimated effects differ when shocks are identified using the official exchange rate rather than the parallel exchange rate? Third, does the degree of exchange rate segmentation influence the magnitude and persistence of exchange rate pass-through to inflation?

To answer these questions, we identify FX supply and demand shocks using a Bayesian Structural Vector Autoregression (BSVAR) identified through sign restrictions. The identified structural shocks are subsequently employed within a Local Projections (LPs) framework to estimate their dynamic effects on headline inflation and the main components of the consumer price index. Furthermore, State-Dependent Local Projections (SDLPs) are used to investigate whether the transmission of exchange rate shocks differs across periods characterised by high and low levels of exchange rate segmentation.

This paper contributes to the literature in three important ways. First, it extends the literature on shock-dependent exchange rate pass-through by explicitly distinguishing between FX demand shocks and FX supply shocks, an issue that has received relatively little attention in the empirical literature. Second, it provides new evidence from an oil-dependent and highly import-dependent African economy where FX shortages and exchange rate pressures play a central role in macroeconomic fluctuations. Third, and most importantly, it contributes to the emerging literature on state-dependent exchange rate pass-through by demonstrating that exchange rate segmentation influences not only the magnitude of pass-through but also its persistence and transmission dynamics. In doing so, the paper highlights how segmented FX markets may alter the way exchange rate shocks are transmitted to domestic prices.

More broadly, Angola offers a unique setting for understanding how FX scarcity, segmented currency markets, and import dependence interact to shape inflation dynamics in developing economies. The findings therefore have implications that extend beyond Angola and contribute to a broader understanding of exchange rate transmission mechanisms in economies characterised by structural FX constraints.

The remainder of the paper is organised as follows. Section 2 presents the institutional background and discusses the evolution of Angola's FX market. Section 3 reviews the relevant literature. Section 4 develops the theoretical framework and testable hypotheses. Section 5

describes the data and empirical strategy. Section 6 presents and discusses the empirical results. Finally, Section 7 concludes and outlines the main policy implications.

2 Institutional Background: Foreign Exchange Market Dynamics in Angola

The Angolan economy exhibits characteristics that make the relationship between exchange rate shocks and inflation particularly relevant. Angola remains heavily dependent on the oil sector, which accounts for approximately 90% of total exports[1], while external financing continues to play an important role in funding the State Budget[2]. At the same time, the economy remains highly dependent on imports for both consumption and productive activity. In 2024, imports represented approximately 19% of GDP[3] . However, the effective degree of dependence is considerably higher due to the large imported component embedded in food products, pharmaceuticals, equipment, and intermediate goods. In this context, exchange rate fluctuations tend to be transmitted relatively quickly to domestic prices, particularly during periods of foreign currency shortages and exchange rate restrictions.

Angola's exchange rate regime has undergone significant changes over the past decades. Until 2018, the country operated largely under a managed exchange rate regime, in which the Central Bank of Angola (BNA) actively intervened in the FX market to maintain relative stability of the Kwanza against the US dollar. Prior to 2013, high oil revenues allowed this regime to be sustained relatively easily, in a context where international reserves exceeded USD 32 billion. However, the oil price shock that began in 2014, combined with declining oil production, significantly reduced the availability of foreign currency in the economy.

Despite the deterioration in external conditions, the official exchange rate remained largely fixed until 2017, as illustrated in Figure 1. As a result, adjustment no longer occurred through the price of foreign currency but instead manifested itself through FX rationing, administrative restrictions, delays in the execution of international payments, and the expansion of the parallel market. Based on our calculations using data from BNA, international reserves declined by approximately 77% during this period, falling from USD 32 billion in 2013 to USD 18.2 billion in 2017, while the gap between the official and parallel exchange rates widened to historically high levels. According to our estimates, the spread between the formal and informal FX markets reached approximately 242% between 2016 and 2017, reflecting severe foreign currency shortages and substantial imbalances between the supply and demand for FX.

This pattern is consistent with the literature on segmented FX markets, which suggests that restrictions on access to foreign currency tend to increase the divergence between official and parallel exchange rates, making the exchange rate premium an important indicator of underlying pressures in the FX market (Dornbusch et al. (1983); Agénor (1992)).

In economies characterised by exchange controls and financial segmentation, significant developments in the FX market may occur even when the official exchange rate appears relatively stable. In such contexts, shocks associated with shortages in the supply of foreign currency tend to manifest themselves through the expansion of the parallel market and a widening exchange

[1] https://www.bna.ao/#/pt/estatisticas/estatisticas-externas/dados-anuais

[2] https://cms.minfin.gov.ao/api/assets/portal-minfin/20bdf524-70b1-4b10-b509-ef79f76e61b3/

[3] https://www.ine.gov.ao/Diretorios/Ver?caminho=CfDJ8MbFyY-I7dRPifOgqdubFJ80kLtue7gRBe3OOWEH7q7nMjcuKeX2I9rHvsw6I7JgGKcydyIQ6AnhaR8VhHu1YApYs4YlLspoW64o3UGrV1lEbI7QEUtJauSrWKPntmHVfHYoMhI1WvckffBfDX8UlF459sHeCAaDtX9EVw103_ZR

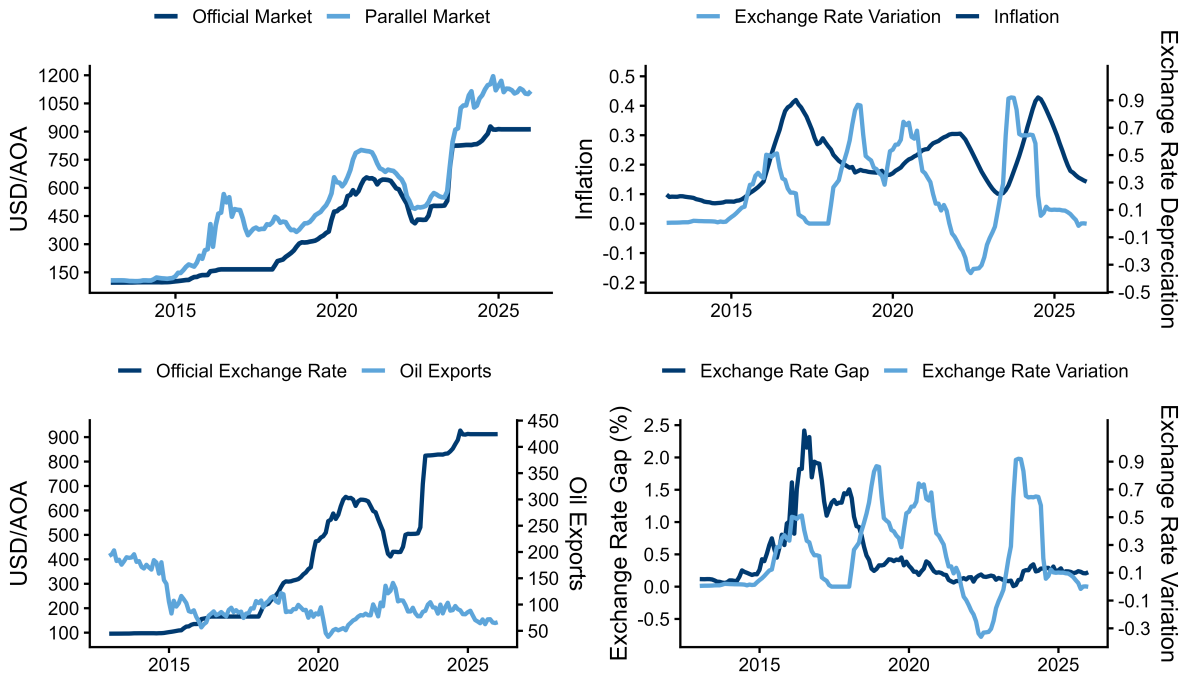

Figure 1: Foreign exchange market dynamics and inflation in Angola

rate gap. Consequently, the parallel market exchange rate often becomes an important indicator of underlying FX pressures within the economy. This interpretation is consistent with the findings of Kiguel and O'Connell (1995).

In 2018, under the IMF Extended Fund Facility programme, Angola initiated a gradual transition towards a more flexible exchange rate regime. Initially, a crawling-band arrangement was adopted, followed in 2019 by a formally more flexible regime. As shown in Figure 1, this transition was accompanied by a sharp depreciation of the Kwanza, with the US dollar appreciating by more than 140% against the domestic currency between 2018 and 2020. Subsequently, following the completion of the IMF programme, the Kwanza appreciated, particularly during 2021 and 2022. Since October 2024, however, the USD/AOA exchange rate has remained broadly stable around 912 Kwanza per US dollar. Despite efforts to maintain a more flexible, predictable, and credible exchange rate regime, market participants continue to perceive the exchange rate system as partially managed and lacking transparency. In this context, the literature emphasises the importance of monetary policy credibility and well-anchored expectations in shaping the transmission of exchange rate movements to domestic prices (Taylor (2000); Ha et al. (2020); Anderl and Caporale (2023)).

This discussion is particularly relevant for Angola, where the credibility of the BNA is frequently questioned. Historically, the Angolan economy has experienced prolonged periods of high inflation, with average annual inflation hovering around 21% over the past two decades. At the same time, significant debate remains regarding whether the exchange rate regime is genuinely flexible or effectively managed, as periods of relative stability of the Kwanza have often coexisted with large gaps between official and parallel exchange rates, strong demand for foreign currency, and the accumulation of substantial FX payment backlogs. In such circumstances, economic agents may perceive periods of exchange rate stability as artificially sustained, potentially contributing to greater inflation persistence and a stronger exchange rate pass-through to domestic prices.

Exchange rate predictability has also become a central issue in Angola's economic debate. In recent years, the Kwanza has experienced relatively long periods of nominal stability followed

by abrupt depreciations. In 2023, for example, the domestic currency depreciated by more than 27% in a single month after a prolonged period of relative stability. More recently, despite the relative stability of the Kwanza since late 2024, a significant gap between the official and parallel FX markets remains, while demand for foreign currency continues to be elevated and FX payment backlogs are estimated at approximately USD 1.2 billion[4].

Part of this dynamic reflects the pro-cyclical nature of the Angolan economy. During periods of rising oil revenues, greater foreign currency availability tends to stimulate import growth, increase private demand for FX, and expand external payments. As a result, positive FX supply shocks do not necessarily translate into a sustained currency appreciation or a significant reduction in exchange rate pressures, since a substantial share of the additional foreign currency supply is absorbed by stronger demand for FX.

In this context, distinguishing between different types of exchange rate shocks becomes particularly important. In Angola, exchange rate movements may result either from shocks affecting the supply of foreign currency (such as changes in oil prices, oil production, export revenues, or external financing conditions) or from shocks affecting the demand for foreign exchange, including higher imports, deteriorating expectations, speculative demand for foreign currency, or changes in domestic monetary conditions. This distinction is especially relevant because different exchange rate shocks may generate different inflationary outcomes. Despite its importance for oil-exporting and highly import-dependent economies such as Angola, the literature still provides limited evidence on how FX supply and demand shocks differentially affect domestic inflation.

3 Literature review

The literature on ERPT extensively documents that exchange rate movements affect domestic prices, although the magnitude of this transmission varies considerably across countries, periods, and sectors. Early studies show that pass-through tends to be incomplete and generally higher for import prices than for final consumer prices. Campa and Goldberg (2005) argue that differences in import structures, distribution costs, markups, and nominal rigidities explain an important share of this heterogeneity. As a result, exchange rate fluctuations tend to be transmitted unevenly along the pricing chain, generating different responses across sectors and expenditure categories.

Subsequent research emphasised that ERPT depends heavily on the macroeconomic environment and the credibility of monetary policy. Taylor (2000) argues that economies characterised by low and stable inflation tend to exhibit lower exchange rate pass-through because economic agents perceive exchange rate fluctuations as temporary. This hypothesis receives strong empirical support from Choudhri and Hakura (2006), who show that countries with higher inflation systematically experience greater pass-through. Similar evidence is provided by Ca' Zorzi et al. (2007) and by Razafimahefa (2012) for Sub-Saharan African countries. Taken together, these studies suggest that higher inflation, lower monetary policy credibility, and greater macroeconomic instability tend to amplify the transmission of exchange rate shocks to domestic prices.

More recent contributions recognise that pass-through is neither constant over time nor linear with respect to exchange rate movements. Caselli and Roitman (2016) show that currency depreciations tend to generate stronger inflationary effects than appreciations. Similarly, Anderl and Caporale (2023) find that unanchored inflation expectations significantly increase both the magnitude and persistence of exchange rate pass-through. These findings suggest that

[4] https://expansao.co.ao/economia/detalhe/defice-de-12-mil-milhoes-usd-na-banca-no-acesso-a-divisas-nao-belisca-o-kwanza-69580.html

inflation responses depend not only on the size of exchange rate changes but also on prevailing macroeconomic conditions and agents' expectations.

Recently, the literature has argued that exchange rate pass-through depends not only on the macroeconomic environment but also on the nature of the shocks driving exchange rate movements. This represents an important departure from the traditional ERPT literature, which generally treated exchange rate fluctuations as a homogeneous phenomenon. Forbes et al. (2020) show that the inflationary impact of a currency depreciation depends critically on the underlying shock. Using a Structural VAR framework, the authors find that monetary shocks generate substantially higher pass-through than domestic demand shocks. In a subsequent study covering both advanced and emerging economies, the same authors demonstrate that identical exchange rate movements may produce markedly different inflationary effects depending on their source.

Carrière-Swallow et al. (2023) extend this discussion by showing that pass-through depends simultaneously on the state of the economy and the nature of exchange rate shocks. Using LPs for a sample of 46 countries, the authors find that exchange rate pass-through increases during periods of high inflation, elevated macroeconomic uncertainty, and lower monetary policy credibility. In addition, they show that exchange rate movements associated with external monetary shocks generate substantially stronger inflationary effects than other types of shocks. This literature has given rise to the concept of shock-dependent exchange rate pass-through, according to which different exchange rate shocks may produce distinct inflationary responses even when they generate similar changes in the exchange rate.

The distinction between different sources of exchange rate pressure is particularly relevant for commodity-exporting economies. In these countries, the availability of foreign currency depends heavily on export revenues and international commodity prices. Chen and Rogoff (2002) and Cashin et al. (2004) show that terms-of-trade shocks constitute important determinants of exchange rate movements in commodity-dependent economies. In the specific case of oil-exporting countries, Habib and Kalamova (2007) and Korhonen and Juurikkala (2009) demonstrate that fluctuations in oil revenues directly affect exchange rate dynamics and foreign currency availability. These studies suggest that shocks affecting the supply of FX may represent an important source of exchange rate pressure in resource-dependent economies.

Despite these advances, relatively few studies explicitly distinguish between exchange rate shocks associated with FX demand and those related to constraints on the supply of foreign currency. In oil-exporting economies, exchange rate movements may result either from declines in export revenues and foreign currency availability or from increases in the demand for FX driven by imports, deteriorating expectations, or changes in domestic monetary conditions. Although both mechanisms may lead to currency depreciation, the literature remains relatively limited in assessing whether these distinct shocks generate different inflationary consequences.

This issue is particularly relevant in the African context. Razafimahefa (2012) shows that Sub-Saharan African countries tend to exhibit relatively high levels of exchange rate pass-through due to exchange rate volatility, import dependence, and institutional weaknesses. Mohammed et al. (2017) find evidence that pass-through in Nigeria declined as inflation and macroeconomic instability were reduced. Similarly, Aisen et al. (2021) show that exchange rate pass-through in Mozambique remains high, rapid, and asymmetric. Taken together, these studies suggest that ERPT continues to play a particularly important role in African economies characterised by high import dependence and limited domestic production capacity.

Beyond the nature of exchange rate shocks, pass-through may also depend on the structure of the FX market itself. In economies characterised by the coexistence of official and parallel FX markets, the exchange rate observed by economic agents may differ substantially from the official rate used by policymakers. Dornbusch et al. (1983), Agénor (1992), and Kiguel and

O'Connell (1995) show that the gap between the official and parallel exchange rates constitutes an observable measure of foreign currency scarcity, restrictions on access to the formal FX market, and the degree of exchange rate segmentation. The authors further argue that, in environments characterised by FX controls, the parallel market often becomes an important reference for price formation, expectations, and economic decision-making.

In the specific case of Angola, empirical evidence remains relatively limited. Lariau et al. (2016) show that exchange rate pass-through is high in the long run, although it declined following the dedollarisation policies implemented after 2010. The authors conclude that the economy's high degree of import dependence and dollarisation are key factors explaining the strong sensitivity of inflation to exchange rate movements. However, their analysis focuses primarily on average pass-through estimates and does not explicitly distinguish between different types of exchange rate shocks or consider the role of exchange rate segmentation.

Despite recent advances in the literature, important gaps remain regarding oil-exporting African economies. In particular, evidence remains limited on how exchange rate shocks associated with FX demand and shocks related to constraints on foreign currency supply affect inflation in economies characterised by high dependence on external revenues, significant dollarisation, and substantial exchange rate segmentation. It is precisely this gap that the present study seeks to address.

4 Theoretical framework and testable hypotheses

Angola has historically been characterised by the coexistence of two distinct FX markets: an official market and a parallel market. This feature suggests that exchange rate movements may affect inflation through different channels and that the intensity of pass-through may depend on the degree of segmentation between the two markets.

We begin by assuming that the exchange rate is determined by the interaction between FX supply and FX demand:

$$E_t = f(S_t, D_t) \tag{1}$$

Where E_t denotes the exchange rate (USD/AOA), S_t represents FX supply, and $D_t$represents FX demand.

An increase in FX supply is expected to generate an appreciation of the domestic currency:

$$\frac{\partial E_t}{\partial S_t} < 0$$

while an increase in FX demand is expected to generate exchange rate depreciation:

$$\frac{\partial E_t}{\partial D_t} > 0$$

Since the exchange rate is defined as USD/AOA, a decline in E_t corresponds to an appreciation of the Kwanza, whereas an increase in E_t corresponds to a depreciation of the domestic currency.

Exchange rate movements affect inflation through the standard exchange rate pass-through mechanism:

$$\pi_t = \alpha + \beta E_t + \varepsilon_t \tag{2}$$

where π_t denotes inflation, β measures the degree of ERPT, and ε_t captures other factors affecting inflation.

The standard ERPT literature implicitly assumes the existence of a single exchange rate. This assumption may not be appropriate in economies characterised by FX market segmentation, such as Angola.

The existence of official and parallel FX markets introduces the concept of exchange rate segmentation. Exchange rate segmentation is defined as the divergence between the official and parallel exchange rates. This divergence reflects the degree of foreign currency scarcity, restrictions on access to the formal FX market, and the importance of the parallel market as an alternative mechanism for foreign currency allocation and price formation in the economy (Dornbusch et al. (1983); Agénor (1992); Kiguel and O'Connell (1995)).

Let E_t^o denote the official exchange rate and E_t^p the parallel exchange rate. Exchange rate segmentation is measured as:

$$SEG_t = \frac{E_t^p}{E_t^o} - 1 \tag{3}$$

where SEG_t measures the degree of exchange rate segmentation. When $SEG_t = 0$, the official and parallel exchange rates coincide. Higher values of SEG_t indicate a larger divergence between the two markets and, consequently, a higher degree of FX market segmentation.

Under exchange rate segmentation, firms and households may use both exchange rates as references when forming expectations and setting prices. Inflation can therefore be represented as:

$$\pi_t = \alpha + \beta_0 E_t^o + \beta_1 E_t^p + \varepsilon_t \tag{4}$$

where β_0 captures the effect of the official exchange rate on inflation and β_1 measures the effect of the parallel exchange rate.

This formulation implies that exchange rate pass-through may depend on the relative importance of the official and parallel FX markets. Consequently, the transmission of exchange rate shocks to inflation may vary across periods characterised by different levels of exchange rate segmentation. More formally:

$$ERPT = f(SEG_t) \tag{5}$$

suggesting that the transmission of exchange rate shocks may vary across periods characterised by different levels of FX market segmentation.

In addition, exchange rate movements may originate from either FX supply shocks or FX demand shocks. While FX supply shocks are generally associated with increased foreign currency availability, FX demand shocks reflect stronger demand for FX. Given their distinct economic nature, the inflationary effects of these shocks need not be identical. Furthermore, Angola's high dependence on imported food products suggests that food inflation may be particularly sensitive to exchange rate shocks.

These arguments lead to the following testable hypotheses:

Hypothesis 1 – FX demand shocks generate stronger inflationary effects than positive FX supply shocks:

$$ERPT_{Demand} > ERPT_{Supply}$$

Hypothesis 2 – Food inflation exhibits greater sensitivity to exchange rate shocks than other CPI components:

$$ERPT_{Food} \geq ERPT_{Other\ Sectors}$$

Hypothesis 3 – The degree of exchange rate segmentation affects the intensity of ERPT:

$$ERPT_{High\ Seg} \neq ERPT_{Low\ Seg}$$

These hypotheses directly motivate the empirical strategy adopted in the paper. First, a Bayesian Structural VAR identified through sign restrictions is used to recover structurally distinct FX supply and FX demand shocks. Second, LPs are employed to estimate the dynamic effects of these shocks on headline and sectoral inflation. Finally, SDLPs are used to assess whether exchange rate pass-through differs across periods of high and low exchange rate segmentation.

5 Empirical Strategy

This section presents the empirical strategy adopted in the paper. We first describe the data and variables used to identify FX demand and FX supply shocks in Angola. We then present the BSVAR framework and the sign-restriction strategy used to identify structurally distinct exchange rate shocks. The identified shocks are subsequently used within a LPs framework to estimate their dynamic effects on headline and sectoral inflation. Finally, we discuss the inference procedures and robustness exercises implemented throughout the analysis.

5.1 The data

The empirical analysis uses monthly data covering the period from January 2012 to December 2025. This sample encompasses a period of major structural transformations in the Angolan economy, including the sharp decline in international oil prices after 2014, the transition towards a more flexible exchange rate regime initiated in 2018, episodes of substantial exchange rate depreciation, the COVID-19 shock, and subsequent macroeconomic stabilization efforts. These developments provide a particularly relevant setting for analysing the interaction between exchange rate shocks and inflation dynamics in an oil-dependent economy.

The monthly GDP series used in this study is a proxy obtained through temporal disaggregation of quarterly GDP, given the absence of a long and consistent industrial production index. To this end, we employ the Chow–Lin method (Chow and Lin (1971)), which allows low-frequency series to be interpolated using a set of higher-frequency indicators correlated with economic activity. Specifically, oil production, imports, exports, deposits and credit are used as auxiliary variables under the assumption that they capture the underlying dynamics of economic activity over time. Estimation is conducted using maximum likelihood, ensuring consistency between the interpolated monthly series and the observed quarterly values. This approach follows standard practice in the empirical literature when high-frequency indicators of economic

activity are unavailable. It is also consistent with the methodology adopted by Bernanke and Gertler (1995), where interpolation techniques are used to construct higher-frequency measures of macroeconomic activity.

Table 3 presents the descriptive statistics of the variables. reports the definitions, descriptions and sources of all variables employed in the empirical analysis. Table 2 presents the descriptive statistics of the main variables used in the study. With the exception of interest rates, all variables are expressed in logarithmic form, consistent with standard practice in the empirical macroeconomic literature.

5.2 The model

Following Uhlig (2005) and Lütkepohl (2005), we write the structural VAR model as:

$$Y_t = c + \sum_{i=1}^{p} A_i Y_{t-i} + B\varepsilon_t \tag{6}$$

Where: Y_t is a $k \times 1$ vector of endogenous variables, c is a vector of constants, A_i denotes the matrices of autoregressive coefficients; p represents the lag length of the VAR, B is the contemporaneous structural impact matrix and ε_t is a $k \times 1$ vector of orthogonal structural shocks, assumed to satisfy $\varepsilon_t \sim N(0, I_k)$.

The reduced-form representation of the model can be written as:

$$Y_t = c + \sum_{i=1}^{p} A_i Y_{t-i} + u_t \tag{7}$$

Where u_t denotes the vector of reduced-form residuals assumed to satisfy $u_t \sim N(0, \Sigma)$. Σ represents the variance-covariance matrix of reduced-form innovations. The relationship between the reduced-form residuals and the structural shocks is given by $u_t = B\varepsilon_t$ such that $\Sigma = BB'$.

Since several structural decompositions satisfy the reduced-form covariance matrix Σ, additional identifying restrictions are required to uniquely recover economically interpretable structural shocks.

5.3 Identification of FX Supply and FX Demand Shocks

The objective is to identify two structurally distinct exchange rate shocks:

- FX supply shocks: associated with unexpected increases in foreign currency inflows into the economy, mainly driven by oil export revenues. These shocks are expected to generate exchange rate appreciation (i.e., a decline in the USD/AOA exchange rate), improve external liquidity conditions, and stimulate economic activity;
- FX demand shocks: associated with unexpected increases in the demand for foreign currency, particularly for imports, external payments, and capital outflows. These shocks are expected to generate exchange rate depreciation (i.e., an increase in the USD/AOA exchange rate), inflationary pressures, and tighter monetary conditions.

Table 1: Identification Restrictions

Variable	FX Demand Shock	FX Supply Shock
FX Supply	.	+
International Reserves	.	+
Imports	+	.
Exchange Rate (USD/AOA)	+	-
CPI	+	.
GDP	.	+
Luibor ON	+	-

Notes: "+" indicates that the response of the variable to the shock is positive; "-" indicates a negative response; and "." indicates that no sign restriction is imposed.

As shown in Table 1, the first column presents the sign restrictions imposed to identify FX demand shocks. The identification assumes that unexpected increases in demand for foreign currency lead to higher imports, exchange rate depreciation, higher inflation, and increases in short-term interest rates. Economically, these shocks capture episodes of exchange rate pressure driven by stronger demand for foreign currency for imports, external payments, or capital flight.

The second column presents the restrictions used to identify FX supply shocks, which are associated with unexpected increases in foreign currency inflows into the economy. The identification assumes that positive FX supply shocks increase FX sales and international reserves, generate exchange rate appreciation, lower short-term interest rates, and stimulate economic activity. Since the exchange rate is defined as USD/AOA, a negative response corresponds to an appreciation of the domestic currency (Kwanza). In the Angolan context, such shocks are likely to be closely associated with periods of stronger oil-export revenues and improved external liquidity conditions. Economically, these shocks capture episodes in which larger foreign currency inflows strengthen the domestic currency, increase reserve accumulation, ease financing constraints, and support economic activity. The impulse response functions further allow us to assess the magnitude, persistence, and transmission of these shocks across inflation, output, and other macroeconomic variables over time.

5.4 Bayesian Specification

The model is estimated within a Bayesian framework using hierarchical Minnesota-type priors, following the literature on Bayesian VAR models with sign restrictions (Uhlig (2005); Bańbura et al. (2010)). The Bayesian approach helps mitigate overparameterization problems commonly found in VAR models and improves estimation efficiency in relatively short samples, a particularly relevant issue in macroeconomic applications with multiple endogenous variables and limited time-series observations (Bańbura et al. (2010)).

Posterior distributions of the VAR coefficients and covariance matrix are obtained by combining the likelihood implied by the data with prior distributions. Estimation is implemented using Bayesian posterior simulation methods with 1,000 posterior draws. For each draw, the algorithm generates a candidate decomposition of the reduced-form covariance matrix and evaluates whether the implied impulse responses satisfy the imposed sign restrictions, following the sign-restriction methodology proposed by Uhlig (2005) and further developed in the Bayesian VAR literature (Rubio-Ramírez et al. (2010); Arias et al. (2018)).

More specifically, for each posterior draw s , the algorithm produces a set of structural shocks and impulse responses consistent with admissible orthogonal rotations satisfying the imposed sign restrictions. Draws violating the identifying restrictions are discarded, while admissible draws are retained for inference. This approach allows the identification procedure to remain relatively agnostic while avoiding the strong contemporaneous zero restrictions commonly imposed in recursive VAR models (Uhlig (2005); Fry and Pagan (2011)).

After estimation, the identified structural shocks are extracted from the posterior distribution. The median across posterior draws is used as the baseline estimate of each structural shock series, as this approach reduces the influence of extreme posterior realizations and provides a robust summary measure of the underlying structural disturbances (Uhlig (2005)).

The resulting shocks are subsequently standardized to have zero mean and unit variance before being used in the LPs. Standardization facilitates interpretation of the impulse responses and allows the estimated effects to be interpreted as responses to a one-standard-deviation structural shock, a common practice in the empirical macroeconomic literature.

The vector of endogenous variables Y_t used in the baseline BSVAR specification is given by:

$$Y_t = [\Delta FXSupply_t,\ \Delta Imports_t,\ \Delta ExchangeRate_t,\ \Delta CPI_t,\ \Delta LuiborON_t]$$

Subsequently, the analysis is re-estimated replacing the official exchange rate with the parallel exchange rate, while keeping all remaining variables and identifying restrictions unchanged. The IRFs obtained from the official and parallel exchange rate specifications are then compared directly through joint graphical representations.

The motivation for this additional specification is that the parallel exchange rate may contain relevant information regarding underlying exchange rate pressures, foreign currency shortages, inflation expectations, and exchange rate misalignments not fully reflected in the official market. This issue is particularly relevant in the Angolan context, where periods of FX scarcity have historically been associated with significant segmentation between the official and informal FX markets.

5.5 Local Projections Specification

5.5.1 Baseline local projections

To estimate IRFs associated with FX demand and FX supply shocks on headline and sectoral inflation, we employ the LPs proposed by Jordà (2005), based on the following specification:

$$y_{t+h} = \alpha_h + \theta_h Shock_t + \gamma_h' X_t + \varepsilon_{t+h}, \quad h = 1, \dots, H \tag{8}$$

where y_t denotes the variable of interest at horizon h (e.g., headline inflation or sectoral inflation); $Shock_t$ represents the identified structural shock (FX demand or FX supply shock); X_t is a vector of control variables including lagged GDP[5], oil prices, the BNA policy rate, and lagged values of the dependent variable; and ε_t is the error term.

[5]The monthly GDP series used in this study is a proxy obtained through temporal disaggregation of quarterly GDP, given the absence of a long and consistent industrial production index. To this end, we employ the Chow–Lin method (Gregory C. Chow and An-loh Lin, 1971), which allows low-frequency series to be interpolated using a set of higher-frequency indicators correlated with economic activity. Specifically, we use oil production, imports, exports, deposits, and credit as auxiliary variables, under the assumption that they capture the underlying dynamics of economic activity over time. Estimation is conducted using maximum likelihood (maxlog), ensuring consistency between the interpolated monthly series and the observed quarterly values.

Each equation is estimated separately by Ordinary Least Squares (OLS) for horizons up to 24 months.

5.5.2 State-Dependent Local Projections

Following the state-dependent Local Projection literature (Ahmed and Cassou (2016); Gonçalves et al. (2024)), we allow the dynamic effects of FX demand and FX supply shocks to vary according to the degree of segmentation in the FX market. More specifically, the economy is divided into two regimes based on the level of the exchange rate gap between the parallel and official exchange rates. The state-dependent LPs specification is given by:

$$\begin{aligned} Y_{t+h} = S_t \left[\alpha_h^H + \theta_h^H shock_t + \gamma_h^{H\prime} X_t\right] + (1 - S_t)\left[\alpha_h^L + \theta_h^L shock_t + \gamma_h^{L\prime} X_t\right] \\ + \varepsilon_{t+h}, \qquad h = 0, 1, \ldots, H \end{aligned} \tag{9}$$

Where Y_{t+h} denotes headline or sectoral inflation at horizon h; $shock_t$ corresponds to the structural FX supply shock or FX demand shock identified through the BSVAR model with sign restrictions; X_t is a vector of control variables including the same lag structure adopted in the baseline LPs estimations described above. θ_h^H and θ_h^L measure the impulse responses under high-gap and low-gap regimes, respectively; ε_{t+h} is the error term.

Following Ahmed and Cassou (2016), the regime indicator variable is defined as:

$$S_t = \begin{cases} 1, & \text{if } FXGap_t > \overline{FXGap} \\ 0, & \text{if } FXGap_t \leq \overline{FXGap} \end{cases} \tag{10}$$

Where $FXGap_t$ corresponds to the difference between the parallel and official exchange rates and $\overline{FXGap}$ denotes the sample median of the exchange rate gap distribution. Thus, periods in which the exchange rate gap exceeds the median are classified as high-gap regimes, while periods below the threshold are classified as low-gap regimes. Economically, high-gap periods are interpreted as episodes of stronger segmentation between official and informal FX markets, greater foreign currency scarcity, and increased distortions in exchange rate formation.

In practice, the LPs equations are estimated separately across the two regimes using OLS method for horizons of up to 12 months.

5.5.3 Inference

To mitigate potential inference problems associated with unit roots, persistence, and serial correlation, both the baseline and the state-dependent Local Projection estimations adopt the Lag-Augmented Local Projections approach proposed by Montiel Olea and Plagborg-Møller (2021). The inclusion of additional lags helps improve the statistical properties of the estimators and strengthens the reliability of inference in persistent macroeconomic environments.

Statistical inference is conducted using Newey-West heteroskedasticity and autocorrelation consistent standard errors. Confidence intervals are constructed using pointwise confidence bands. We rely on pointwise rather than joint confidence bands mainly for computational simplicity.

This approach follows standard practices in the empirical literature when high-frequency data are unavailable. It is also consistent with the methodology adopted by Ben S. Bernanke and Mark Gertler in Inside the Black Box: The Credit Channel of Monetary Policy Transmission, where interpolation techniques are used to construct monthly series for output and prices, enabling a more detailed analysis of economic dynamics at higher frequencies.

The selection of the lag structure is initially based on the estimation of reduced-form VAR models using standard information criteria, namely the Akaike Information Criterion and the Bayesian Information Criterion . The lag orders suggested by these criteria are subsequently used as conservative benchmarks within the LPs framework, following the recommendations of Jordà and Taylor (2024). In practice, the final LPs specifications adopt parsimonious lag structures in order to balance dynamic flexibility, estimation precision, and the relatively limited sample size available for Angola.

5.5.4 Robustness Strategy

Beyond the comparison between official and parallel exchange rate specifications, several additional robustness exercises are performed.

First, we extend the sign restrictions beyond the contemporaneous horizon and re-estimate the models for both the official and parallel exchange rate specifications. The objective of this exercise is to evaluate whether the identified shocks and associated inflation dynamics remain qualitatively consistent when stronger dynamic restrictions are imposed on the IRFs. The resulting impulse responses are reported in Figure 8 and Figure 9.

Second, we estimate IRFs directly from the BSVAR model without relying on LPs. In this case, separate BSVAR models are estimated for headline inflation and for each sectoral inflation category. The objective is to verify whether the qualitative dynamics obtained under the LPs framework remain broadly consistent under an alternative econometric specification. Since the LPs estimations are implemented using variables in levels whereas the BSVAR is estimated using stationary transformations, the magnitudes of the responses are not directly comparable. Consequently, the analysis focuses primarily on the direction, persistence, and overall qualitative behaviour of the impulse responses. The corresponding BSVAR impulse responses are presented in Figure 10 and Figure 11.

6 Results

6.1 Local Projection Results

As illustrated in Figure 2, both headline inflation and food inflation exhibit disinflationary responses following positive FX supply shocks, reaching their largest declines at intermediate horizons before gradually converging back to zero. The responses estimated using the official and parallel exchange rates are broadly similar throughout most of the forecast horizon. Nevertheless, the effects tend to be somewhat stronger and more persistent for food inflation, particularly in the specification based on the official exchange rate, although they remain statistically insignificant.

For clothing and footwear inflation, the responses estimated using the official exchange rate remain close to zero until approximately horizon 14, becoming positive thereafter. In contrast, the specification based on the parallel exchange rate displays more negative and persistent effects, which are more consistent with the expected effects of a positive FX supply shock.

Transport inflation displays more volatile and divergent responses across specifications. While the IRF based on the official exchange rate remains close to zero during the initial horizons, the specification based on the parallel exchange rate reveals stronger and more negative effects. At intermediate horizons, both responses become more volatile, possibly reflecting the influence of administrative price controls in the fuel sector. Overall, the results suggest that transport

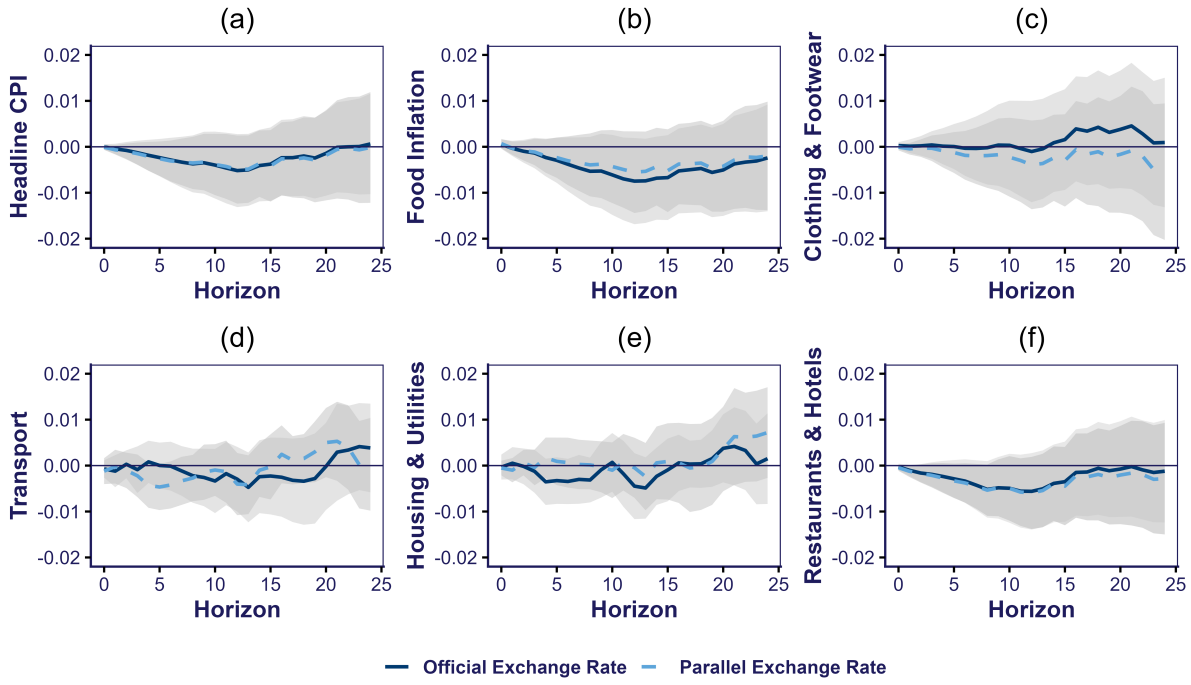

Figure 2: LPs Responses to BSVAR-Identified FX Supply Shocks (Zero Restrictions)

inflation responds more strongly to positive FX supply shocks when the parallel exchange rate is used as the relevant exchange rate measure.

For housing and utilities inflation, the response is stronger in the specification based on the official exchange rate, whereas the response estimated using the parallel exchange rate remains close to zero throughout most of the horizon. However, both specifications presents considerable volatility and lack statistical significance. Finally, restaurants and hotels inflation exhibits negative and relatively persistent responses under both specifications, suggesting possible indirect effects of currency appreciation on operating and food-related costs, although these effects are also statistically insignificant.

Overall, the results suggest that positive FX supply shocks tend to generate disinflationary effects in Angola, regardless of the exchange rate measure employed. The responses obtained using the official and parallel exchange rate specifications display broadly similar patterns for headline inflation, food inflation, clothing and footwear, and restaurants and hotels. In contrast, transport and housing and utilities inflation exhibit greater divergence across specifications and more volatile responses. However, the estimated effects remain statistically insignificant throughout most of the forecast horizon, suggesting that inflation does not respond robustly to exchange rate appreciations associated with positive FX supply shocks.

Panels (a) and (b) of Figure 3 show that positive FX demand shocks generate rapid, persistent, and statistically significant inflationary responses in both headline and food inflation. In both cases, inflation rises steadily until approximately horizons 8 to 12 before gradually moderating, although remaining positive throughout most of the forecast horizon. The responses estimated using the official and parallel exchange rate specifications are remarkably similar, suggesting that pressures associated with increased demand for foreign currency are transmitted relatively uniformly across both segments of the FX market. Nevertheless, food inflation exhibits somewhat stronger responses, particularly in the specification based on the official exchange rate, reinforcing the importance of the food sector as a key channel through which exchange rate pass-through operates in the Angolan economy.

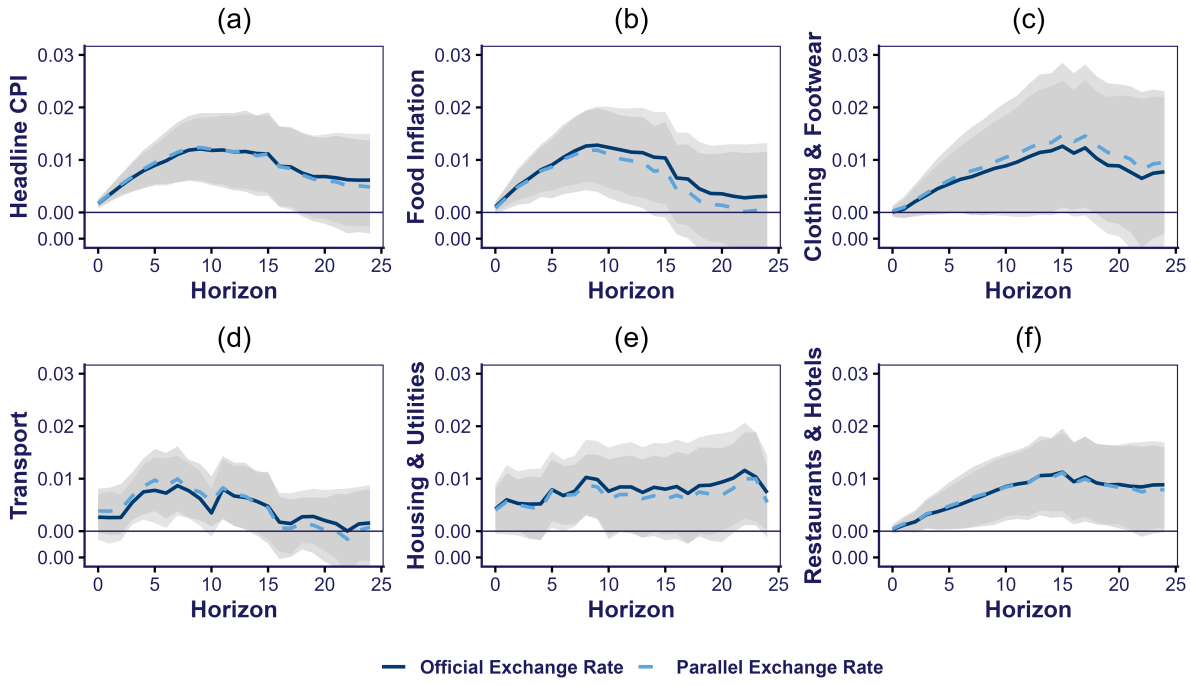

Figure 3: LPs Responses to BSVAR-Identified FX Demand Shocks (Zero Restrictions)

By contrast, clothing and footwear inflation demonstrates statistically insignificant responses to FX demand shocks throughout the entire forecast horizon. In terms of magnitude, however, the responses tend to be somewhat stronger in the specification based on the parallel exchange rate, suggesting greater sensitivity of this sector to pressures originating in the informal FX market.

Transport inflation reveals positive responses over almost the entire forecast horizon, although with greater volatility. The effects are statistically significant mainly between horizons 3 and 9. The responses estimated using the parallel exchange rate are generally stronger during the initial horizons, gradually converging towards those obtained using the official exchange rate at longer horizons.

Finally, restaurants and hotels inflation responds positively and significantly to FX demand shocks, consistent with rising operating and food-related costs associated with exchange rate depreciation. The responses estimated using the official and parallel exchange rate specifications are highly similar throughout virtually the entire forecast horizon.

Overall, the results indicate that positive FX demand shocks generate persistent and statistically robust inflationary effects, regardless of whether shocks are identified using the official or the parallel exchange rate. The strongest effects are observed for headline inflation, food inflation, and restaurants and hotels inflation, suggesting that pressures arising from increased demand for foreign currency are transmitted relatively quickly and intensely to sectors that are highly dependent on imports and tradable goods. The observed sectoral heterogeneity further reinforces the view that exchange rate pass-through in Angola is not uniform, varying according to import dependence, price-setting mechanisms, sector-specific institutional characteristics, and the segment of the FX market from which exchange rate pressures originate.

6.2 State Dependence LPs Results

As illustrated in Figure 4 and Figure 5, panels (a) and (b), corresponding to headline and food inflation, display a broadly consistent pattern across specifications based on the official and parallel exchange rates. Under high exchange rate segmentation regimes, FX demand shocks generate positive responses, although their magnitude remains relatively small. In contrast, when exchange rate segmentation is low, the responses become negative and more persistent throughout the forecast horizon, with the effect being particularly pronounced for food inflation.

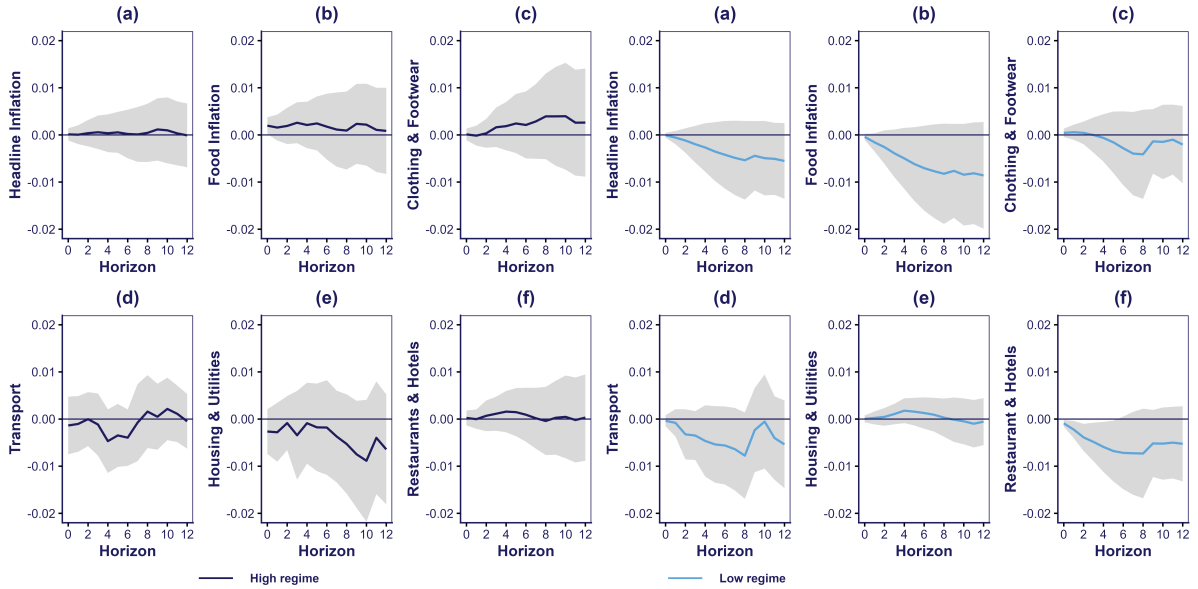

Figure 4: State-Dependent IRFs to FX Supply Shocks: Official Exchange Rate

Panel (c) shows that clothing and footwear inflation responds positively to FX demand shocks under high-segmentation regimes, with the effect being stronger and more persistent in the specification based on the official exchange rate. By contrast, under low-segmentation regimes, the responses turn negative in both specifications.

Panels (d) and (e), corresponding to transport and housing and utilities inflation, exhibit greater heterogeneity. Under high-segmentation regimes, the responses fluctuate around zero, with no clearly defined persistent pattern. In contrast, during periods of low exchange rate segmentation, transport inflation displays relatively pronounced negative responses, whereas housing and utilities inflation remains close to zero, exhibiting only modest and short-lived effects.

Finally, panel (f) shows that restaurants and hotels inflation remains broadly stable under high-segmentation regimes, regardless of the measure used to capture exchange rate segmentation. However, under low-segmentation regimes, FX demand shocks generate negative and persistent responses, a pattern observed in both the official and parallel exchange rate specifications. These responses are statistically significant, particularly over the first four to five horizons.

Overall, while the estimated responses are not statistically significant, the results display a consistent pattern across specifications, suggesting stronger and more persistent inflationary effects of FX supply shocks under low-segmentation regimes. This provides suggestive evidence that lower exchange rate segmentation may strengthen the transmission of exchange rate shocks to consumer prices, although the findings should be interpreted with caution given the uncertainty surrounding the estimates.

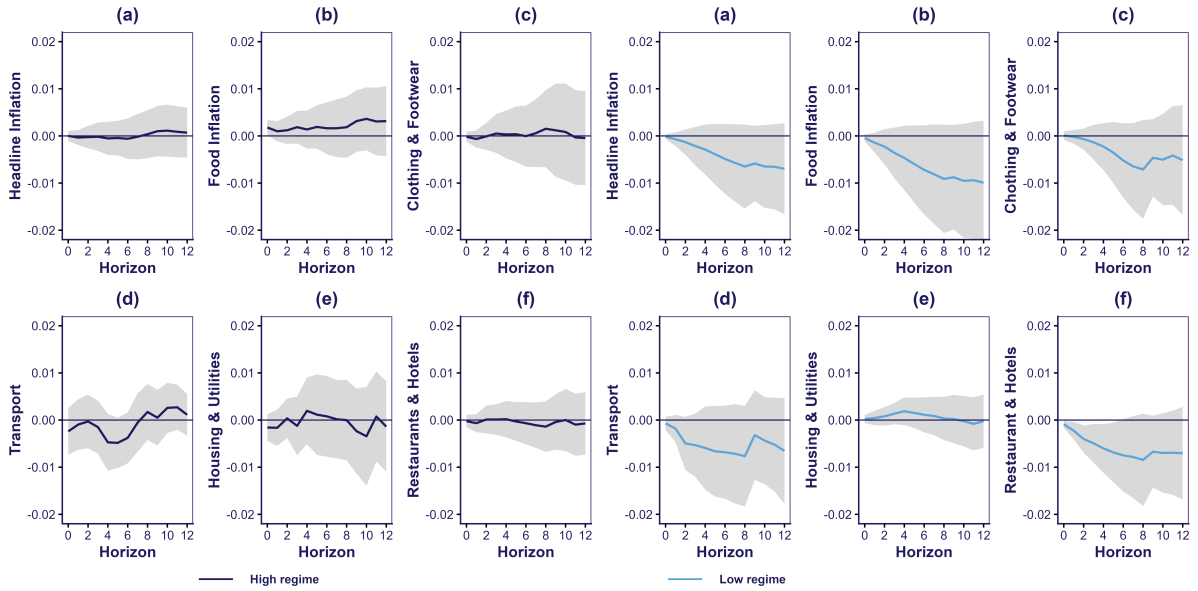

Figure 5: State-Dependent IRFs to FX Supply Shocks: Parallel Exchange Rate

Panels (a) and (b), corresponding to headline and food inflation, display positive and persistent responses to FX demand shocks in both the official and parallel exchange rate specifications. As illustrated in Figure 6 and Figure 7, under high exchange rate segmentation regimes, the responses are smaller in magnitude but exhibit greater persistence throughout the forecast horizon, maintaining an upward trajectory and being associated with relatively narrower confidence intervals. In contrast, during periods of low exchange rate segmentation, the responses are stronger in the short and medium term horizons, suggesting a more pronounced inflationary impact of FX demand shocks. However, these effects tend to lose momentum at longer horizons, particularly after the eighth period, and are accompanied by substantially wider confidence intervals. Consequently, although the responses are quantitatively larger under low-segmentation regimes, the statistical evidence appears less robust, especially in the case of food inflation when segmentation is measured using the parallel exchange rate.

Panels (c), (d), (e), and (f), corresponding to clothing and footwear, transport, housing and utilities, and restaurants and hotels inflation, reveal a pattern similar to that observed for headline and food inflation. Under high exchange rate segmentation regimes, the responses to FX demand shocks tend to be positive, relatively moderate in magnitude, but more persistent, stable, and accompanied by comparatively narrower confidence intervals, suggesting greater precision of the estimates, even though the effects remain statistically indistinguishable from zero in most horizons. By contrast, under low-segmentation regimes, the responses generally display larger magnitudes in the short- and medium-term horizons, indicating a stronger inflationary impact, but are also characterised by greater volatility, lower persistence, and wider confidence intervals.

These findings reinforce the evidence that exchange rate segmentation influences not only the magnitude but also the persistence and predictability of the transmission of FX demand shocks across different CPI components. From an economic perspective, the results suggest that lower segmentation between the official and parallel FX markets may facilitate a faster and stronger transmission of FX demand shocks to consumer prices. Conversely, higher levels of segmentation tend to reduce the initial magnitude of these effects while contributing to greater persistence over time. This pattern suggests that exchange rate segmentation acts as a friction in the transmission mechanism of FX shocks, limiting their immediate impact while prolonging the price adjustment process in the economy. However, given that most responses are not statistically significant at

conventional confidence levels, these interpretations should be viewed as suggestive evidence rather than as definitively established causal relationships.

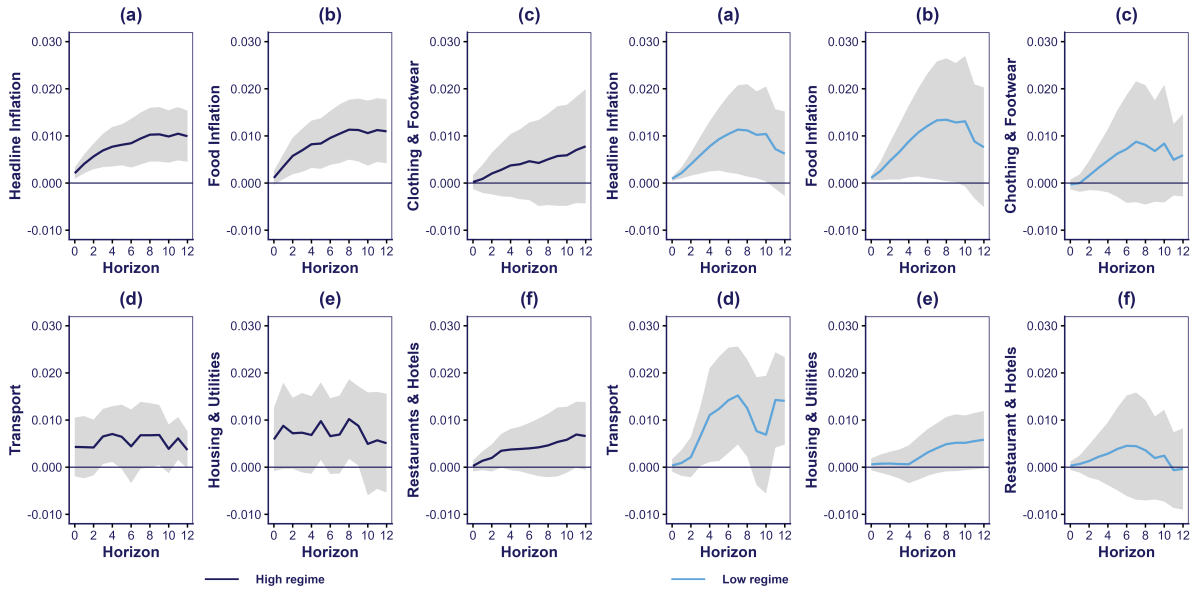

Figure 6: State-Dependent IRFs to FX Demand Shocks: Official Exchange Rate

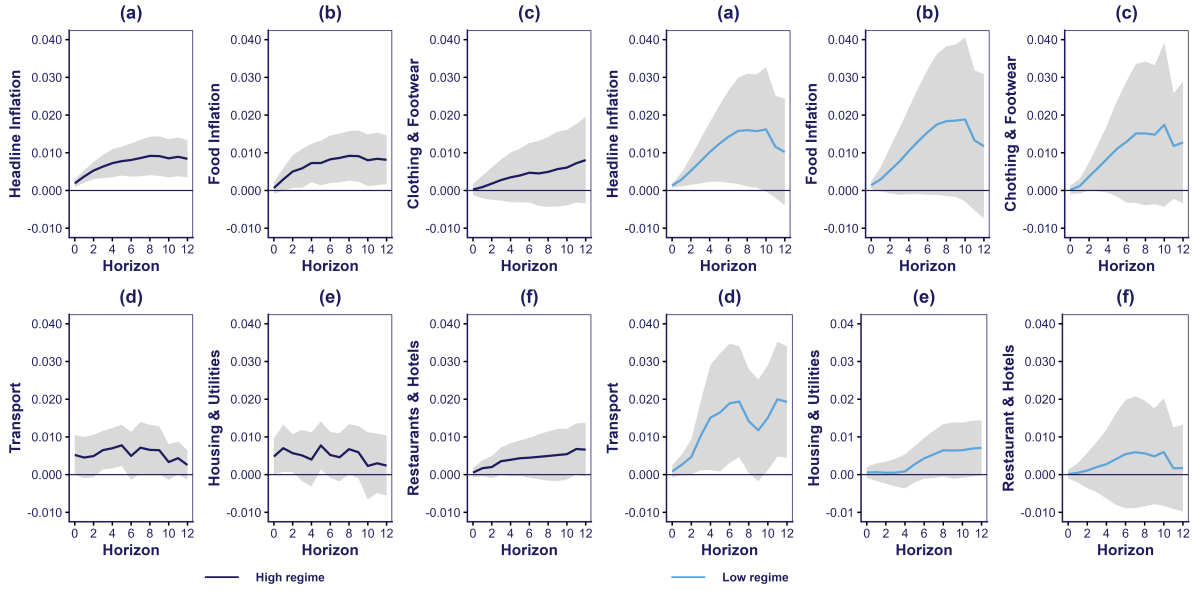

Figure 7: State-Dependent IRFs to FX Demand Shocks: Parallel Exchange Rate

6.3 Implications of the Results

The results presented above provide several important insights into inflation dynamics and exchange rate transmission mechanisms in Angola.

- First, inflation appears to respond much more strongly to FX demand shocks associated with currency depreciation than to positive FX supply shocks typically associated with exchange rate appreciation. While exchange rate depreciations generate rapid, persistent,

and statistically significant increases in inflation, positive FX supply shocks produce relatively weak and statistically insignificant disinflationary effects. This asymmetry suggests the presence of downward price rigidity in the Angolan economy. Several factors may contribute to this outcome, including limited competition in some markets, persistent FX market segmentation, exchange rate uncertainty, and the continued relevance of the parallel market in price formation. Even during periods of exchange rate appreciation, effective access to foreign currency may remain constrained, reducing the extent to which lower import costs are passed through to domestic prices.

- Second, food inflation emerges as the main channel through which exchange rate shocks affect overall inflation. Compared with other CPI components, food prices react more rapidly, more strongly, and more persistently to exchange rate shocks. This finding is particularly relevant given that food inflation accounts for a substantial share of overall inflation dynamics in Angola. Consequently, exchange rate fluctuations have important implications for household purchasing power and food security.
- Third, the strong similarity between the responses obtained using the official and parallel exchange rate specifications suggests that both segments of the FX market contain relevant information regarding underlying exchange rate pressures. This finding reinforces the view that the parallel market plays an important role in the formation of domestic prices. The fact that sectors such as transport and clothing and footwear exhibit relatively stronger responses under the parallel exchange rate specification further suggests that, in some sectors, economic agents rely on informal market signals when setting prices, particularly during periods of restricted access to foreign currency.
- Fourth, the state-dependent results indicate that exchange rate segmentation influences the transmission of exchange rate shocks to domestic prices. Although the evidence does not point to a uniform pattern across all inflation components, the results suggest that the degree of segmentation between the official and parallel markets affects both the magnitude and persistence of exchange rate pass-through. This finding supports the view that exchange rate transmission depends not only on the source of exchange rate shocks but also on prevailing FX market conditions.
- Finally, from a policy perspective, the results highlight the central role of exchange rate stability in controlling inflation in Angola. Policies aimed at improving access to foreign currency, reducing segmentation between the official and parallel markets, and enhancing exchange rate predictability may be more effective in containing inflationary pressures than policies focused exclusively on interest rates. In addition, the strong sensitivity of food inflation to exchange rate shocks underscores the importance of measures aimed at reducing dependence on imported food products and strengthening domestic productive capacity.

7 Conclusions

This paper analysed how different types of exchange rate shocks affect inflation dynamics in Angola, distinguishing between FX supply shocks and FX demand shocks in an oil-dependent and highly import-dependent economy. Methodologically, the study combined a Bayesian Structural VAR identified through sign restrictions with LPs to estimate the dynamic responses of headline and sectoral inflation under both official and parallel exchange rate specifications.

The results show that FX demand shocks generate strong, persistent, and statistically significant inflationary effects, particularly on headline and food inflation. In contrast, positive FX supply shocks tend to produce weaker and statistically non-significant disinflationary effects.

These findings suggest important asymmetries in exchange rate pass-through, with depreciation episodes generating substantially larger price adjustments than exchange rate appreciations.

The results also indicate that the parallel exchange rate contains relevant information about inflationary pressures in Angola. In several cases, impulse responses estimated using the parallel exchange rate are very similar to those obtained with the official exchange rate, suggesting that the informal FX market plays an important role in domestic price formation, especially in sectors more exposed to foreign currency shortages and import dependence.

The state-dependent analysis further suggests that the degree of exchange rate segmentation affects the transmission of exchange rate shocks into inflation. Overall, the findings reinforce the central role of exchange rate stability in inflation control in Angola and highlight the structural vulnerabilities associated with high import dependence, limited foreign currency access, and persistent exchange rate segmentation. From a policy perspective, the results suggest that improving FX market functioning, reducing segmentation between official and informal markets, and strengthening domestic productive capacity may be important for reducing inflation persistence and exchange rate pass-through in Angola.

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9 Appendix

Table 2: Data Sources and Variable Definitions

Variable	Description	Source
Headline CPI	Overall consumer price index	National Institute of Statistics, Angola
Food Inflation	Food consumer price index	National Institute of Statistics, Angola
Clothing Footwear	Clothing and footwear price index	National Institute of Statistics, Angola
Housing Utilities	Housing and utilities price index	National Institute of Statistics, Angola
Transport	Transport price index	National Institute of Statistics, Angola
Restaurants Hotels	Restaurants and hotels price index	National Institute of Statistics, Angola
Luibor ON	Overnight interbank interest rate	Central Bank of Angola
BNA Rate	Central bank policy rate	Central Bank of Angola
Oil Price	Brent oil price	Bloomberg Terminal
Exchange Rate	Official exchange rate (USD/AOA)	Central Bank of Angola
FX Parallel	Parallel exchange rate (USD/AOA)	BNA and Banco de Fomento de Angola
GDP	Monthly GDP proxy	National Institute of Statistics, Angola
Imports	Imports	Central Bank of Angola
IR	International reserves	Central Bank of Angola
FX Sales	Foreign exchange sales	Central Bank of Angola

Table 3: Descriptive Statistics

Variable	Mean	Median	Min	Max	SD
Headline CPI	4.239	4.223	3.106	5.637	0.803
Food Inflation	4.251	4.169	3.102	5.714	0.820
Clothing Footwear	4.208	4.248	2.887	5.834	0.937
Housing Utilities	4.310	4.367	3.504	5.319	0.565
Transport	4.381	4.329	3.605	5.422	0.568
Restaurants and Hotels	4.206	4.196	3.046	5.599	0.804
Luibor ON	0.135	0.143	0.029	0.317	0.065
BNA Rate	0.151	0.160	0.088	0.200	0.038
Oil Price	4.272	4.294	3.290	4.826	0.327
Exchange Rate	5.645	5.736	4.557	6.832	0.837
FX Parallel	5.969	6.157	4.628	7.085	0.815
GDP	11.611	11.609	11.271	11.864	0.112
Imports	7.204	7.123	6.512	8.260	0.340
IR	9.883	9.724	9.489	10.468	0.312
FX Sales	6.650	6.836	3.932	7.882	0.786

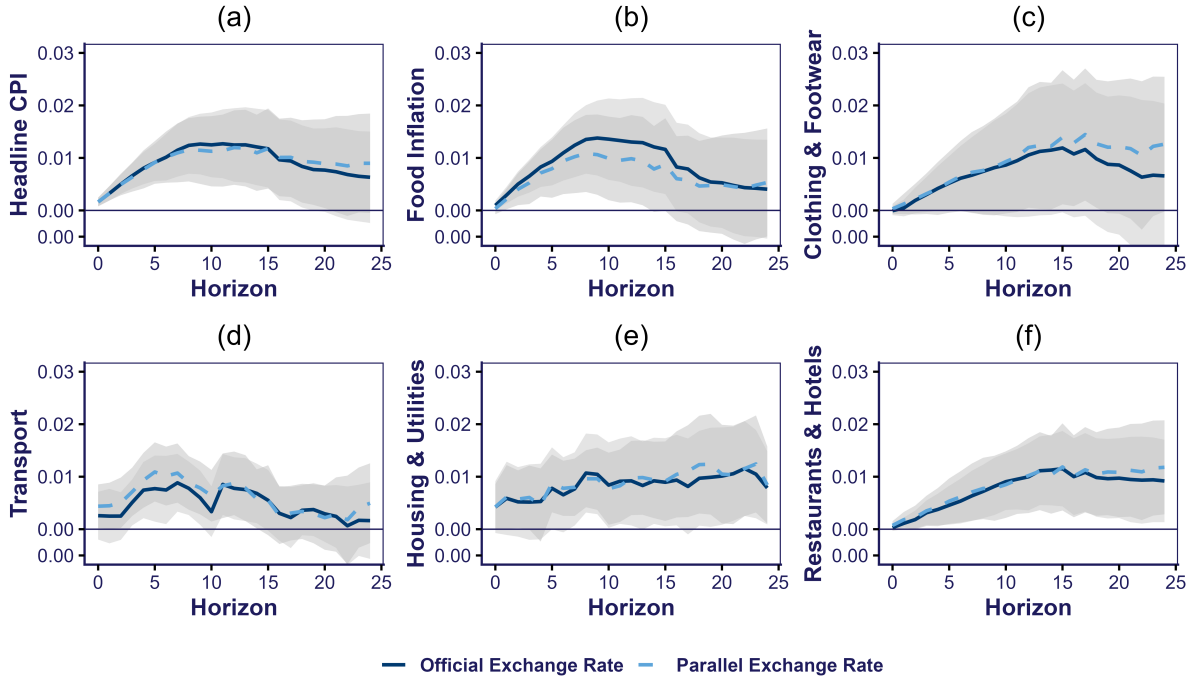

Figure 8: LPs Responses to BSVAR-Identified FX Supply Shocks (Multi-Horizon Restrictions)

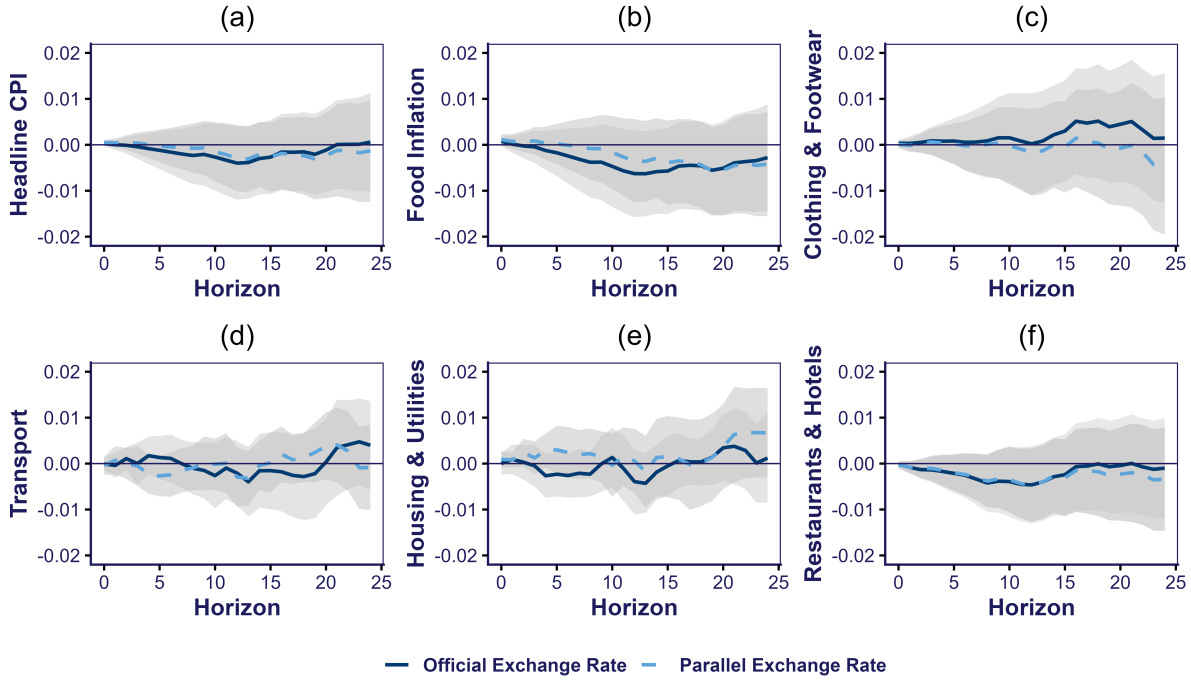

Figure 9: LPs Responses to BSVAR-Identified FX Demand Shocks (Multi-Horizon Restrictions)

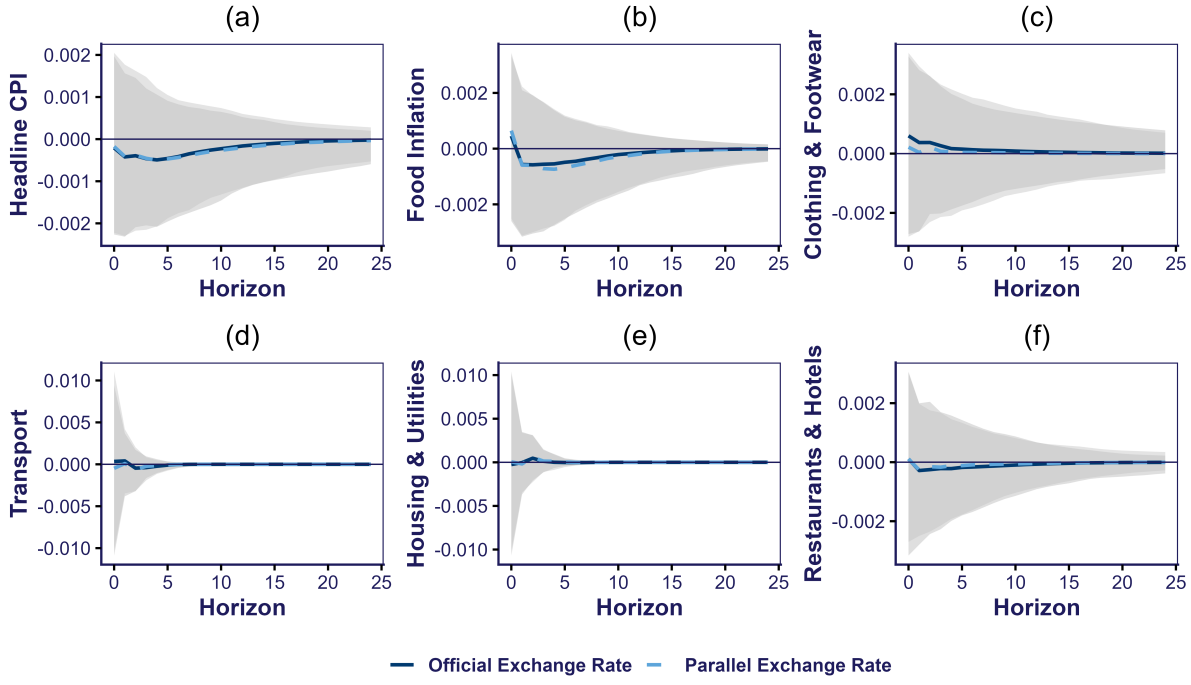

Figure 10: BSVAR Impulse Responses to FX Supply Shocks under Zero-Restriction Identification

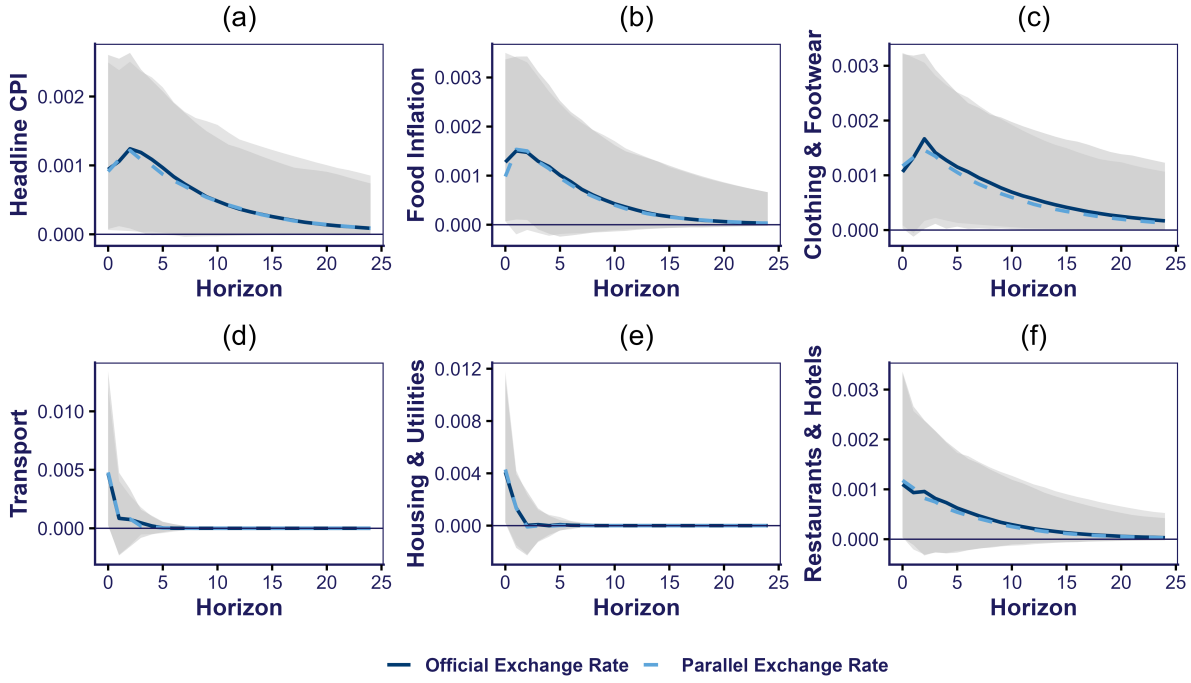

Figure 11: BSVAR Impulse Responses to FX Demand Shocks under Zero-Restriction Identification