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The Role of Commodity Prices in US Monetary Policy Transmission:

Evidence from Local Projections and a Proxy-SVAR with Spillovers to Sweden

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Abstract. This study examines the role of commodity prices in the transmission of US monetary policy, both domestically and through spillovers to Sweden. Using high-frequency US monetary policy shocks identified from 1990 to 2023, we estimate impulse response functions through local projection regressions for 19 commodity futures and nine commodity price indices. A Proxy Structural Vector Autoregressive model, using the same shock series as an external instrument, quantifies the contribution of commodity prices to inflation. A 10 basis point surprise increase in the federal funds rate leads to accumulated declines in Brent oil and metal prices of 2.8% and 5.5%, respectively, over 22 days. In the United States, the contribution of these commodity categories to headline and core CPI over a twelve-month period is 56% and 30%, respectively. Extending the model to include Swedish inflation, we find that the same US monetary policy shock also has disinflationary effects in Sweden, with Brent oil and metal prices explaining 21% of the twelve-month decline in headline inflation, while core inflation remains unaffected. These findings underscore the importance of the commodity price channel in transmitting US monetary policy to inflation, providing new empirical evidence of its role in small open economies.

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1 Introduction

Commodity price fluctuations have long been a central concern for policy makers due to their profound impact on global economic activity and inflation dynamics (Ge and Tang, 2020; Harvey et al., 2017; Ivan et al., 2025; Juvenal and Petrella, 2024; Miranda-Agrippino and Rey, 2020). These fluctuations often align with shifts in global monetary conditions, particularly changes in the Federal Reserve's policy, which affect interest rates, exchange rates, and global liquidity (Anzuini et al., 2010; Miranda-Pinto et al., 2023). The sensitivity of commodity prices to macroeconomic conditions was illustrated in 2008 when commodity prices surged to record highs before collapsing in response to the global financial crisis (Anzuini et al., 2010). More recently, substantial commodity price volatility, amplified by pandemic-related disruptions and subsequent policy interventions, has been a critical driver of the surge and subsequent decline in global inflation (Ball et al., 2022; Blanchard and Bernanke, 2023; Gagliardone and Gertler, 2023). In light of this, a deeper understanding of how commodity markets transmit monetary policy has become increasingly relevant. Therefore, this study aims to provide a novel perspective on monetary policy transmission. By quantifying the role of the commodity price channel in transmitting US monetary policy and its influence on global inflation dynamics. Specifically, the study examines how US monetary policy shocks affect commodity prices, and how these changes, in turn, transmit to inflation in both the United States and Sweden, a small open economy highly sensitive to external price movements.

While numerous studies examine the role of commodity prices in broader macroeconomic fluctuations (see e.g., Dotsey and Reid, 1992; Elder and Serletis, 2010; Hamilton, 1983; Kilian, 2008; Rahman and Serletis, 2011; Serletis and Xu, 2023), fewer have explicitly analyzed how monetary policy shocks propagate through commodity prices to inflation (see Anzuini et al., 2010; Breitenlechner et al., 2022; Ider et al., 2023; Miranda-Pinto et al., 2023). Understanding how commodity prices relate to macroeconomic variables is particularly relevant considering the increasing globalization of financial markets and the recent increase in inflation levels during the COVID-19 pandemic (see Figure 1). Therefore, a more comprehensive understanding of this transmission mechanism is essential for improving monetary policy formulation, allowing central banks to better anticipate inflationary pressures.

The United States plays a central role in global commodity markets, making it a critical focus for this study. As the issuer of the world's primary reserve currency, the US Federal Reserve exerts a significant influence on international financial systems, affecting exchange rates and global capital flows (Bertaut et al., 2023). This influence is especially prominent in commodity markets, since most commodities are priced and traded in US dollars. Fluctuations in the value of the dollar directly impact commodity prices and demand, creating a channel through which US monetary policy decisions can ripple across financial markets (Hofmann et al., 2023; Rees, 2023). Furthermore, the Federal Reserve is considered the most influential central bank, with its policies shaping liquidity, risk sentiment, and interest rates in countries around the world (Rey, 2015). Together, these factors position US monetary policy as a determinant of commodity price fluctuations, with potentially significant implications for global inflation, particularly through spillover effects on smaller, open economies. Understanding these spillover effects is crucial for assessing inflationary pressures globally, especially in economies that are highly exposed to external developments.

Sweden, as a small open economy with robust trade ties and a great dependence on global markets, is especially vulnerable to external inflationary pressures (Petersson et al., 2024). Furthermore, Sweden's export-oriented economy is highly sensitive to global economic shifts, particularly during periods of increased uncertainty and structural changes in international trade patterns (International Monetary Fund, 2025). The Swedish Riksbank also acknowledges the significant impact of international developments on domestic monetary policy, noting that fluctuations in global demand for Swedish exports can directly influence domestic inflation rates. Additionally, changes in import prices and exchange rate movements play significant roles in shaping Sweden's inflation dynamics (Sveriges Riksbank, 2022). As a country heavily reliant on imports of goods, Sweden is particularly exposed to fluctuations in commodity prices, which are often shaped by monetary policy decisions in major economies such as the United States. These price shifts can transmit directly to domestic inflation through higher import costs and exchange rate adjustments. Indeed, empirical evidence shows that Sweden is significantly affected by international monetary policy spillovers, highlighting the importance of understanding external transmission channels (Ellen et al., 2018; Hajek and Horvath, 2018). Moreover, since Sweden maintains its own monetary policy framework independent of the European Central Bank (ECB), understanding how foreign monetary policy is transmitted through commodity markets and, in turn, affects Swedish inflation is crucial for assessing the challenges faced by the Riksbank in maintaining price stability.

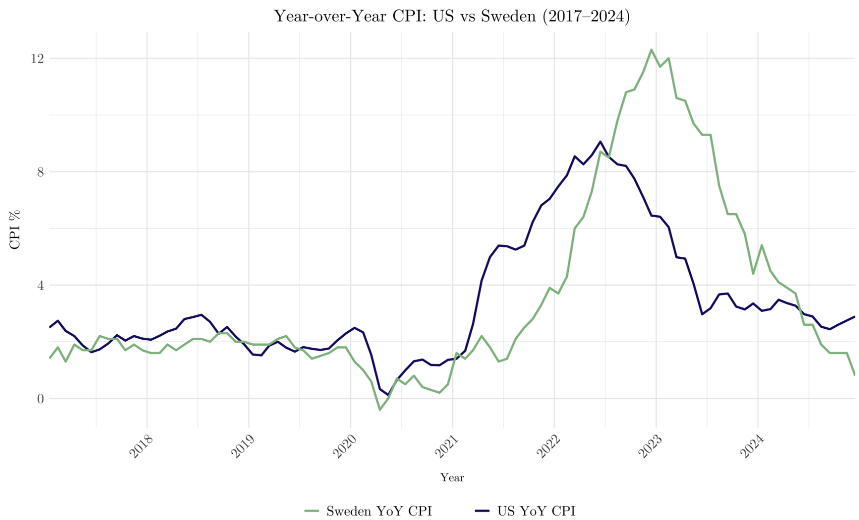

Figure 1: Headline Inflation

Note: This figure reports development of Year-over-Year CPI in the United States and Sweden from 2017-2024. Sources: Federal Reserve Database and Statistics Sweden.

This study aims to deepen the understanding of how US monetary policy affects both the US economy and small open economies like Sweden, through commodity price fluctuations. By examining this transmission channel, we seek to provide a more comprehensive framework for policymakers to better anticipate and manage inflationary pressures, particularly in economies that are vulnerable to global commodity market volatility. Ultimately, this research aims to expand the empirical understanding of monetary policy transmission, providing policymakers and market participants with the insights needed to assess global economic fluctuations more effectively. In this regard, the following research questions will be explored:

1. *What is the economic significance of the commodity price channel in the transmission of US monetary policy to inflation dynamics in the United States?*
2. *What is the economic significance of the commodity price channel in the transmission of US monetary policy to inflation dynamics in Sweden?*
3. *Which commodity categories exhibit the strongest role in transmitting spillovers from US monetary policy to Swedish inflation?*

We utilize daily data spanning from January 1990 to December 2023 for prices of 19 individual commodity futures and nine commodity indices, along with seven macroeconomic variables. To accurately capture exogenous shifts in monetary policy, we employ a high-frequency identified monetary policy shock series based on changes in interest rates within 30-minute windows surrounding the Federal Open Market Committee (FOMC) announcements, provided by Bauer and Swanson (2022). Our empirical analysis relies on local projection (LP) regressions and a proxy structural vector autoregressive (proxy-SVAR) framework.

We estimate impulse response functions (IRF) for aggregate commodity indices and individual commodity prices following a 10 basis point increase in the US federal funds rate using local projection regressions. Aggregate commodity indices almost uniformly exhibit statistically significant negative responses, whereas individual commodity prices respond heterogeneously: metal prices show negative responses, while food commodities do not react with statistical significance. Building on this, we use a proxy-SVAR model to quantify inflation spillbacks to the US economy. We find that, within twelve months, the relative contribution of Brent oil and metal prices to US headline inflation is 56%, and 30% to core inflation. When extending the proxy-SVAR model to include Swedish CPI measures to examine the spillover effects of US monetary policy, we find that the relative contribution of commodity prices to Swedish headline inflation is 21% over a twelve-month horizon, while there is no statistically significant contribution to core inflation.

Our findings suggest that the Federal Reserve can benefit from explicitly including commodity price forecasts when calibrating their policy rate to sharpen inflation control and increase resilience to shocks. For Sweden, whose monetary policy cannot move global prices, but whose inflation is exposed to commodity prices, the Riksbank could enhance its forecasting accuracy and policy precision by systematically modeling commodity price pass-through and stress-testing commodity driven scenarios.

This study makes three key contributions to the existing literature. First, it provides a novel analysis of the role of commodity prices in the transmission of US monetary policy to inflation, both in the United States and in Sweden, highlighting a cross-border channel that has received limited attention in prior research. Second, it deepens the understanding of the link between commodity prices and macroeconomic fundamentals, underscoring their broader economic relevance. Third, it leverages a newly extended series of high-frequency monetary policy shocks through the end of 2023, enabling analysis of the recent inflationary period.

The remainder of this paper is structured as follows: Section 2 reviews relevant literature and outlines the development of our research question. Section 3 presents the theoretical framework guiding our analysis. Sections 4 and 5 describe the data and methodology, respectively. Section 6 reports the empirical results, followed by a review and discussion on the results and policy implications in Section 7. Finally, Section 8 provides the conclusion of our study.

2 Literature Review

This section provides a review of the literature examining commodity prices, monetary policy shocks, and the macroeconomy. We begin by outlining key findings on the relationship between commodity prices and macroeconomic variables. Then, we present previous research on the integration of high-frequency identification methods into different empirical models as a means of quantifying monetary policy transmission. Subsequently, the literature on international spillovers of monetary policy is reviewed. The section concludes with an overview of the traditional monetary policy transmission channels.

2.1 Commodity Prices and the Macroeconomy

Since Frankel (1984), global monetary conditions and interest rates have been recognized as crucial determinants of commodity price fluctuations. This recognition has sparked research into the link between monetary policy and commodity price dynamics, grounded in macroeconomic theory. Along these lines, Boughton and Branson (1988) assessed whether commodity prices serve as reliable leading indicators of inflation. Their study found that while commodity price movements often precede changes in consumer prices in industrialized economies, there is no robust long-term relationship between commodity price levels and inflation trends.

Barsky and Kilian (2001) argued that expansionary monetary policy can raise expectations of higher inflation and stronger economic growth, leading to increased demand for goods, including commodities. The authors further demonstrate that the oil price surge of the 1970s was partially driven by anticipated inflation resulting from expansionary monetary policy, underscoring the link between monetary policy and commodity price movements.

Moreover, numerous studies have examined the relationship between commodity prices, particularly oil, and macroeconomic conditions. For instance, Hamilton (1983) used a vector autoregressive (VAR) framework to identify a strong historical correlation between oil price shocks and recessions in the United States, noting that seven of the eight recessions since World War II were preceded by sharp increases in crude oil prices. Similarly, Dotsey and Reid (1992) provided empirical evidence linking restrictive monetary policy and rising oil prices to declines in economic activity. While Kilian (2008) corroborated these findings, he also argued that the influence of energy price fluctuations on economic activity has diminished since the 1980s. Furthermore, research on oil price volatility and real economic output has consistently found that oil price uncertainty negatively affects real economic output, though the methodological approaches vary (see e.g., Elder and Serletis, 2010; Rahman and Serletis, 2011; Serletis and Mehmandosti, 2019; Serletis and Xu, 2023). Previous research has also examined how increases in global oil prices affect Swedish inflation specifically. Bjellerup and Löf (2008) demonstrate that temporary increases in oil prices have a direct effect on Swedish inflation in the short and medium term. Their results suggest that changes in global commodity prices can have somewhat sustained effects on inflation.

2.1.1 The Persistence of Shocks

An important consideration in the relationship between monetary policy shocks and commodity prices is the persistence of the resulting price effects. Cashin et al. (1999), using a median-unbiased estimation framework, found that global commodity price shocks tend to be highly persistent. This implies that the economic consequences of these shocks can extend far beyond the initial disruption, potentially affecting inflation and macroeconomic activity over longer horizons. Building on this, De Gregorio (2012) argued that the experience of the 2008 global financial crisis highlighted the necessity for central banks to pay closer attention to commodity price developments. They claimed that such shocks may spill over into core inflation, complicating the task of monetary policy, especially in the context of inflation targeting frameworks.

2.2 Monetary Policy Shocks – High Frequency Identification

Early efforts to identify structural monetary policy shocks often relied on VAR frameworks with strong identifying assumptions. These approaches typically imposed zero restrictions on contemporaneous relationships between variables. However, such assumptions were frequently criticized for their limited credibility, particularly in open economies, and often led to somewhat counterintuitive results. For instance, Eichenbaum and Evans (1995) assumed US monetary shocks had no immediate effect on foreign interest rates, an assumption that has been contradicted by evidence showing rapid policy adjustments in other central banks following decisions made by the US Federal Reserve (see e.g. Gerko and Rey, 2017).

The introduction of high-frequency (HF) identification methods marked a significant improvement in addressing these limitations. Kuttner (2001) initiated the high-frequency identification approach by analyzing changes in futures prices around FOMC announcements to distinguish between expected and unexpected policy shifts. Gürkaynak et al. (2005) further advanced this method by focusing on intraday financial market data, using a narrow window around policy announcements to more precisely isolate monetary policy surprises. This technique has been shown to minimize the impact of other macroeconomic news and has since become the standard in the field (see e.g. Anzuini et al., 2010; Braun et al., 2025; Miranda-Pinto et al., 2023).

Shocks identified with high-frequency data have enabled researchers to examine, not only the direct effects of monetary policy, but also the channels through which such effects emerge. Although we do not construct monetary policy shocks ourselves, our study related to an important strand of the literature that decomposes monetary policy shocks into distinct components. Gürkaynak et al. (2005) and Swanson (2021) adopt a factor-based approach, showing that monetary announcements convey information about both the current policy rate and the anticipated path of future rates. Furthermore, an important development came from Jarociński and Karadi (2020), who distinguished between monetary policy shocks and central bank information effects. They demonstrated that central bank announcements can reflect monetary policy decisions and the central bank's economic outlook for the future simultaneously. However, the distinction between the two components has important implications for identification and interpretation, as failure to separate them may bias the estimated responses to a monetary policy shock. Bauer and Swanson (2024) build on the findings of Jarociński and Karadi (2020) by incorporating their distinction between monetary policy shocks and information effects into the construction of a high-frequency monetary policy shock series for the United States.

To incorporate high-frequency shocks into empirical models, researchers have mainly made use of two approaches. Paul (2020) proposes directly including the shock series in VAR models, which constitutes a simplified estimation. In contrast, the external instrument method, primarily developed by Stock and Watson (2012), used high-frequency identification surprises as instruments in a proxy-SVAR. Gertler and Karadi (2015) adopted this framework by leveraging asset price movements around announcements as instruments. Moreover, building on the reasearch of Jarociński and Karadi (2020), Miranda-Pinto et al. (2023) employed this method in a proxy-SVAR setting to identify spillbacks and spillovers of US monetary policy. The use of an external instrument is the one chosen for our study.

2.3 Monetary Policy Transmission – Small Open Economies

Despite growing interest in high-frequency identification of monetary policy shocks, empirical applications have largely focused on large economies such as the United States. In contrast, small open economies, such as Sweden, remain underrepresented in the literature despite facing distinct transmission dynamics driven by their exposure to global financial markets and exchange rate fluctuations. Small open economies are particularly sensitive to international financial conditions. In this respect, Akıncı (2013) demonstrated that global financial factors are key drivers of business cycle fluctuations in emerging markets.

Gerko and Rey (2017) showed that spillovers from US monetary policy into the United Kingdom can be as strong as domestic monetary effects, even under a flexible exchange rate regime. In addition, Soosalu (2024) applied high-frequency identification methods to Canada. Using a series of intraday surprises from Canadian bankers' acceptance futures, the study found that a contractionary monetary shock leads to output and price declines, and short-term increases in credit and mortgage spreads. These findings underscore the need to account for cross-border transmission channels in models of monetary policy for open economies.

Furthermore, Ellen et al. (2018) examined ECB monetary policy spillovers to small open economies, focusing on Sweden, Norway, and Denmark. Using high-frequency identification, they found that monetary policy and communication shocks from the ECB significantly affect asset prices and yield curves in all three countries, with particularly strong effects in Denmark due to its currency being fixed to the Euro. For Sweden and Norway, the spillovers are also substantial despite floating exchange rates. While domestic monetary policy remains effective at the short end of the yield curve, ECB communication reduces control over medium- to long-term rates, highlighting the constraints global financial integration can place on monetary autonomy.

In the same vein, Hajek and Horvath (2018) employed a global vector autoregressive (GVAR) model to analyze the spillover effects of both conventional and unconventional monetary policy conducted by the ECB and the United States Federal Reserve on non-euro EU countries. Their findings suggest that Sweden experienced the most pronounced impact from monetary policy spillovers from the ECB. Specifically, a 100-basis-point increase in the ECB shadow policy rate lead to a 0.8% decline in Swedish real economic activity.[1]

Although considerable research has explored the effect of commodity prices on monetary policy, as well as spillovers of monetary policy from large central banks to small open economies, less attention has been paid to the role of commodity prices as a channel through which monetary policy transmits across borders. In this light, Anzuini et al. (2010) used a VAR framework to examine the impact of monetary policy shocks on commodity prices. They found that expansionary US monetary policy shocks drive up the broad commodity index, though the effects are not very large. Ultimately, they conclude that commodity prices may serve as useful leading indicators of inflation. More recently, Miranda-Pinto et al. (2023) conducted a similar study using a proxy-SVAR model to investigate the extent to which the commodity price channel contributes to inflation spillbacks in the United States, and inflation spillovers in other countries. Their findings indicated that the response of commodity prices to monetary policy shocks accounts for approximately 40% of the total effect of monetary policy on US headline inflation and more than 60% of the effect of US monetary policy on the headline inflation of other countries.

[1] The ECB shadow rate is a synthetic indicator of monetary policy stance which combines conventional and unconventional monetary policy measures (Blot and Creel, 2024).

2.4 Traditional Monetary Policy Transmission Channels

Transmission channels of monetary policy have, in general, been extensively studied. Mishkin (1996) identifies three primary mechanisms through which monetary policy influences the broader economy: (i) the interest rate channel, (ii) other asset price–channels, and (iii) the credit channel. These mechanisms are widely accepted in the literature (see e.g., Bank of England, 1999; Lane, 2022; Reserve Bank of Australia, 2025).

First, changes in policy rates directly affect market interest rates, which influence household and firm behavior regarding spending, saving, and investment, thereby affecting aggregate demand in the economy. This is referred to as the interest rate channel.

Second, the other asset price-channel works through monetary policy's effect on asset prices, particularly foreign exchange and equities. A lower domestic real interest rate reduces the attractiveness of domestic assets, leading to currency depreciation (Bryant et al., 1993; Taylor, 1993). Monetary policy also influences equity prices via Tobin's q-theory, affecting firms' investment decisions, while also stimulating consumption through higher asset valuations (Modigliani, 1971; Tobin, 1969).[2]

Third, the credit channel operates through asymmetric information in credit markets. Expansionary monetary policy increases bank reserves, enhancing credit availability for borrowers reliant on bank financing. There is also a balance-sheet mechanism, which similarly reflects how higher asset prices and improved cash flows strengthen firms' net worth, boosting investment and aggregate demand.

Commodity prices are notably absent from discussions of traditional monetary policy transmission channels, despite their proven role in shaping macroeconomic dynamics. Existing research has established links between commodity prices and broader economic conditions, yet the role of these prices in monetary policy transmission remains rather underexplored. Our study seeks to fill this gap by investigating the commodity price channel as a mechanism through which US monetary policy not only induces inflation spillbacks to the US, but also triggers inflation spillovers to economies like Sweden. Specifically, we aim to quantify the role of commodity prices in transmitting monetary policy from the US, and assess their subsequent effects on Swedish inflation. By disaggregating commodity price movements into categories, such as energy and metals, we aim to add a more nuanced understanding of how different types of commodities mediate the transmission of policy shocks. In doing so, our study intends to provide valuable insights into the inflationary consequences of US monetary policy decisions, highlighting their implications not just for the domestic US economy, but also for small open economies like Sweden.

[2] Tobin's q-theory posits that firms' investment decisions depend on the ratio of the market value of capital to its replacement cost of capital. A higher q, stimulated by lower interest rates raising equity prices, makes new investment more attractive, thereby linking monetary policy to real economic activity through asset markets (Tobin, 1969).

3 Theoretical Framework

Barsky and Kilian (2001, 2004) study the impact of monetary policy on commodity prices and argue that the channel through which monetary policy affects commodity prices is via the expectations of stronger inflation and economic growth. However, more recently, Miranda-Pinto et al. (2023) identified four additional transmission mechanisms: (i) the cost of carry channel, (ii) the real economy channel, (iii) the liquidity and portfolio channel, and (iv) the exchange rate channel.

First, *cost of carry channel* stems from the idea that changes in interest rates affect the opportunity cost of commodity storage. Specifically, Miranda-Pinto et al. (2023) argue that a sizable increase in the federal funds rate may discourage investors from holding commodities in storage, as they may seek higher returns in alternative financial assets, such as bonds. Furthermore, Frankel (2014) highlights another consequence of rising interest rates: they may reduce the incentive for oil-producing nations to withhold oil from extraction. By opting to extract and sell oil, rather than preserving it under ground, these countries can reinvest the proceeds at higher interest rates, yielding greater returns than if the oil remained unextracted. An increase in extraction subsequently would raise the supply of oil, which, combined with general lower demand caused by higher interest rates, contributes to a decline in oil prices. These principles can also be applied to other commodities, such as the extraction of minerals, logging of forest, etc. (Miranda-Pinto et al., 2023).

Second, Miranda-Pinto et al. (2023) argue that interest rate changes influence both investment and consumption, thereby affecting the current and future demand for commodities. This mechanism, referred to as the *real economy channel*, suggests that while the real effects of monetary policy take time to fully materialize, forward-looking agents in commodity markets adjust their portfolios immediately in anticipation of future changes. Additionally, Ottonello and Winberry (2020) provide evidence that monetary policy has important impacts on investments, particularly among financially stable firms. Given that many commodities, such as metals, are heavily tied to investment demand, the prices of industrial commodities are expected to respond to monetary policy shocks (Miranda-Pinto et al., 2023).

The third mechanism is the *liquidity and portfolio channel*, which posits that the monetary policies of major central banks, such as the Federal Reserve, influence global financial conditions (Miranda-Pinto et al., 2023). When monetary policy is expansionary, liquidity increases, which may encourage greater leverage and risk-taking. On the other hand, when monetary policy is contractionary, liquidity becomes somewhat depleted, financing becomes more expensive, and actors become more risk-averse. Hence, these monetary policy shifts affect liquidity–driven trading in both physical and derivatives markets.

Lastly, Miranda-Pinto et al. (2023) argue that there is an exchange rate mechanism. The *exchange rate channel* is particularly relevant since internationally traded commodities are often priced in US dollars. An appreciation of the US dollar, ceteris paribus, increases the price of commodities in foreign currencies. This, in turn, reduces demand while encouraging supply, exerting downward pressure on commodity prices.

It is our intention to empirically assess the extent to which each of the aforementioned channels—the cost of carry, real economy, liquidity and portfolio, and exchange rate channels—act in transmitting monetary policy through commodity prices. Clarifying the relative importance of these individual channels is useful for understanding how monetary policy affects commodity prices and subsequently, how changes in commodity prices propagate to inflation. By assessing the role of these channels domestically and across borders, we aim to provide a deeper insight into the transmission of monetary policy.

4 Data

This section outlines the data used in the local projection regressions and the proxy-SVAR analysis. We begin by describing the commodity price variables and the macroeconomic indicators included in the models. Next, we present the monetary policy shock series employed as an external instrument in the proxy-SVAR framework. Finally, we discuss the key delimitations and scope of our empirical approach.

4.1 Macroeconomic Variables and Commodities

Following Miranda-Pinto et al. (2023), we employ daily data on commodity futures traded on the Intercontinental Exchange (ICE) and the Chicago Mercantile Exchange (CME), obtained from Investing.com. All prices are denominated in US dollars and cover a sample of 19 commodities. We also use commodity indices, for instance, food products, base metals, and energy, sourced from S&P Capital IQ. A complete list of the commodity futures and indices used in our estimations is provided in Table A1 of the Appendix.

We use macroeconomic data for the United States and Sweden that spans from January 1990 through December 2023, covering US business days. For the United States, we follow Miranda-Pinto et al. (2023) and employ data on headline and core consumer price indices (CPI). The difference between the two measures is that headline CPI comprises all items, while core inflation excludes energy and food prices. Furthermore, we use data on US industrial production and the excess bond premium. These variables are all collected from Refinitiv Eikon and the Federal Reserve Economic Database. The dollar exchange index used in the analysis is the real effective exchange rate broad basket index, and is sourced from the BIS data portal. For Sweden, we use headline and core CPI data from Statistics Sweden, as well as the USD-SEK exchange rate data, which is sourced from Refinitiv Eikon.

The chosen variables are intended to capture the transmission of monetary policy shocks through commodity prices and their subsequent effects on the US economy and Swedish inflation. For the US, industrial production is included as a measure of real economic activity, reflecting shifts in domestic production and output capacity (Bernanke and Gertler, 1995). The excess bond premium serves as an indicator of changes in credit market sentiment and broader financial conditions following monetary policy adjustments (Gertler and Karadi, 2015). Finally, the dollar index is included because of its essential role in monetary policy transmission through its effect on trade balances, imported inflation, and international financial flows (Rey, 2015). For Sweden, our analysis focuses specifically on inflation transmission through commodity prices. Thus, we only include headline and core CPI, and the bilateral USD–SEK exchange rate, deliberately excluding other macroeconomic factors.

4.2 Monetary Policy Instrument

Following previous research (see e.g., Gertler and Karadi, 2015; Miranda-Pinto et al., 2023; Stock and Watson, 2012), we employ an external instrument in a proxy-SVAR to assess monetary policy transmission.

For the monetary policy shocks, we adopt an orthogonalized monetary policy surprise instrument developed by Bauer and Swanson (2022). The shocks are identified as monetary policy surprises, measured by interest rate changes in Euro-Dollar futures contracts within 30-minute windows surrounding FOMC announcements. The shocks are derived as the first principal component of the changes in the interest rates of the money market futures contracts ED1–ED4, covering the next twelve months. As such, the surprises primarily reflect changes in expectations regarding the future trajectory of the short-term interest rate over the upcoming year. The residuals obtained from the principal component analysis are subsequently regressed onto six macroeconomic and financial variables to obtain orthogonalized monetary policy surprises.[3] The main idea behind the orthogonalization process is to isolate the unexpected component of monetary policy shocks by removing any predictable variation, thereby ensuring the exogeneity of the shock series.

Without orthogonality, the monetary policy shocks risk contamination by other economic variables or events, possibly leading to endogeneity and biased estimates. Such contamination undermines the causal interpretation of empirical results and reduces the reliability of impulse response functions and variance decompositions.

Orthogonality is particularly important because it allows for the estimation of the true impact of monetary policy changes independently. If shocks were to contain predictable variation, they would reflect market anticipations and expectations rather than the policy action itself. This would distort the measured effects by incorporating factors other than the actual policy change. Thus, orthogonalization mitigates the informational component of the shocks, ensuring that the remaining shock represents a genuine surprise suitable for robust empirical analysis.

[3]The six variables are: nonfarm payrolls surprise, employment growth, S&P 500, the slope of the yield curve, Bloomberg commodity price index, and the implied skewness of the 10-year Treasury yield. These variables were selected by Bauer and Swanson (2022) on the basis of them being relevant predictors of the interest rate changes around FOMC announcements.

4.3 Delimitations

The delimitations of our study are primarily due to data constraints. First, the monetary policy surprise instrument employed in our analysis spans from 1988 through 2023. Second, data on individual commodity futures and commodity indices prior to 1990 is sparse. As a result, our sample period is restricted to January 1990 through December 2023, covering US business days. Regarding the selection of commodity futures, we generally follow the methodology of Miranda-Pinto et al. (2023) in choosing what commodities to include in our analysis. However, due to data access limitations, we include only those commodity futures and price indices for which daily data are publicly available between January 1990 and December 2023.

Additionally, our study focuses solely on monetary policy shocks in the United States. Given that most globally traded commodities are denominated in US dollars and are traded on exchanges in the United States, it is reasonable to focus our analysis on Federal Reserve-related monetary policy shocks. The US dollar's dominant role in international trade and finance implies that fluctuations in US monetary policy are likely to influence global commodity markets more strongly than monetary policy actions from other economies. Moreover, previous research has shown that Federal Reserve policy decisions generate global spillover effects that extend well beyond the US economy (Hofmann et al., 2023; Miranda-Pinto et al., 2023; Rey, 2015), particularly impacting small open economies through various channels. Hence, focusing on US monetary policy shocks allows us to more accurately capture the significance of the commodity price channel and its effect on inflation.

5 Methodology

This section describes the empirical methodologies employed in our study. We begin by outlining the local projection approach used to estimate the dynamic effects of monetary policy shocks on commodity prices. We then present the proxy-SVAR method, which serves to identify and trace the transmission of these shocks through the commodity price channel.

5.1 Local Projections

To compute impulse responses of commodity prices, we employ a local projection regression following Jordà (2005) and Miranda-Pinto et al. (2023):

$$\ln y_{t+h} - \ln y_{t-1} = \alpha_i + \beta_h \, \mathrm{MPS}_t + \sum_{\ell=1}^{L} \phi_\ell \, x_{t-\ell} + \mu_t, \tag{1}$$

where y_{t+h} is the price of the commodity i at time t+h for h = 0, 1, 2,..., 24. α_i is the intercept. The variable MPS_t is the orthogonalized instrument for monetary policy shocks. The vector $x_{t-\ell}$ includes the lth lag of $\ln y_{t+h} - \ln y_{t-1}$ and the instrument, MPS_t. The number of lags in the model, L=8, is selected based on the Akaike information criterion (AIC). We estimate this regression separately for each individual commodity and commodity index, resulting in a total of 28 distinct impulse response functions.

The choice of a 24-day horizon is consistent with prior literature (see Miranda-Pinto et al., 2023) and can be justified on two additional grounds. First, financial markets typically respond rapidly to new information, and a 24-day window allows us to capture both the immediate (within a few days) and short-run (up to approximately one month) effects of monetary policy shocks. Second, extending the horizon too far risks diluting the identified monetary policy shock, as unrelated or subsequent shocks may begin to influence outcomes, thereby confounding the estimated effects.

For our analysis of how much a one-off monetary policy surprise affects commodity futures prices and commodity indices individually over a period of 24 days, relying on local projection regressions is an appropriate method. With local projections, we effectively estimate an ordinary least squares (OLS) regression for every commodity and commodity index in our sample, for each forecast horizon. Consequently, this lets us estimate the causal effect of a monetary policy shock on commodity prices at different periods in time. Using local projections, we can measure the magnitude of commodity price responses and, more interestingly, compare the size of the effect over time and across different commodities and commodity indices. The resulting magnitude and timing of peak responses from the local projections allow us to interpret how specific commodities react differently to the same shock.

Local projections are also robust to some model misspecifications, making this approach suitable for analyzing commodity prices which can often be characterized by, for instance, heavy tails (Kittiakarasakun, 2013). Commodity futures can react forcefully to a range of shocks and developments such as FOMC-announcements, decisions made by the Organization of the Petroleum Exporting Countries (OPEC), and weather shocks, all of which can make commodity price data volatile and heteroskedastic. In VAR frameworks, such volatility can complicate lag selection and inference, and may result in biased or misleading impulse response estimates. Moreover, heteroskedasticity in the underlying data can produce artificially narrow confidence intervals, reducing the reliability of statistical inference. Local projections mitigate these concerns to some extent by estimating separate OLS regressions for each forecast horizon. We also employ heteroskedasticity-robust Newey-West standard errors (Jordà, 2005).

The local projection regressions are employed to identify which commodity indices or individual commodities exhibit the strongest responses to a US monetary policy shock. This analysis serves two main purposes: first, to assess whether commodity prices show any evidence of an overshooting effect following the shock; and second, to facilitate the selection of commodities most relevant for inclusion in the subsequent proxy-SVAR model.

In the local projection analysis, we use daily high-frequency data on commodity futures prices and commodity indices. We assume that any commodity price responses observed within days following a monetary policy shock predominantly reflect immediate adjustments driven by expectations and cost of carry effects. This assumption relies on the fact that monetary policy usually takes several months to exert its full impact on real economic activity. Consequently, short-term price reactions should primarily be visible in commodities that are easily storable, such as metals and energy products. In the proxy-SVAR analysis that follows, we instead use end-of-month prices to capture the longer-horizon impacts.

5.2 Proxy-SVAR

To estimate the spillback effects on US inflation from changes in commodity prices following a US monetary policy shock, we follow the approach of Miranda-Pinto et al. (2023) and employ the following proxy-SVAR model:

$$A_0 Y_t = \sum_{j=1}^{p} A_j Y_{t-j} + B\varepsilon_t, \tag{2}$$

where Y_t is an 8×1 vector containing the variables of interest shown in Table 1. A_0 is the contemporaneous coefficient matrix. A_j is the dynamic matrix that captures the lag structure of the system. B is the impact matrix, which contains the coefficients of structural shocks to the variables in Y_t . ϵ_t is a vector of unobserved structural shocks, assumed to be zero-mean white noise processes.

In contrast to a standard SVAR, which combines contemporaneous effects and shock magnitudes into a single matrix, the proxy-SVAR maintains two distinct matrices; the A_0 and the B matrix. This is done to both capture which variables move together instantly (A_0) and to set the size of each structural shock's immediate impact (B).

Table 1: Variables in the vector Y_t

Element in Y_t	**Description**
FFR_t	Federal Funds Rate (%-points)
$\ln P_t^{\mathrm{Brent}}$	Nat. Log of Brent Crude-Oil Futures Price
$\ln P_t^{\mathrm{Metal}}$	Nat. Log of Metals Price Index
$\ln \mathrm{CPI}_t$	Nat. Log of US Headline CPI
$\ln \mathrm{CoreCPI}_t$	Nat. Log of US Core CPI (ex. Food & Energy)
$\ln \mathrm{IP}_t$	Nat. Log of US Industrial Production Index
EBP_t	Excess Bond Premium (%-points)
$\ln \mathrm{DXY}_t$	Nat. Log of Broad US Dollar Index

The SVAR model presented in (2) corresponds to the following reduced form representation:

$$Y_t \;=\; \sum_{j=1}^{p} D_j \, Y_{t-j} \;+\; u_t, \tag{3}$$

where $u_t \;=\; A_0^{-1}B\,\varepsilon_t$ is a vector containing reduced-form residuals of the system and $D_j = A_0^{-1}A_j$.

To recover the column of $A_0^{-1}B$ that corresponds to the monetary policy shock, we employ the aforementioned Bauer and Swanson (2022) orthogonalized monetary policy surprise instrument, $z_t \;\equiv\; \text{MPS}_t$. This external instrument serves as a proxy for monetary policy shocks. It is by construction correlated with monetary policy shocks, and orthogonal to any remaining structural shocks:

$$E[\epsilon_t^{MP}, z_t'] \neq 0$$
$$E[\epsilon_t^{other}, z_t'] = 0$$

In other words, the instrument is (i) relevant because it is correlated with the shock of interest, and (ii) exogenous because it is uncorrelated with other structural shocks. Hence, z_t is a valid proxy for structural monetary policy shocks.

Since we want to mimic shocks in the federal funds rate specifically, we project the residual from the federal funds rate equation onto our instrument. This procedure is an instrumental variable regression, representing the actual "proxy" component of our empirical methodology. We regress:

$$u_t^{\text{FFR}} \;=\; \pi_0 + \pi_1\, z_t + e_t. \tag{4}$$

This provides us with fitted values $\hat{s}_t = \hat{\pi}_1 z_t$, which are then rescaled, such that a shock of one unit corresponds to a 10 basis point increase in the federal funds rate.

To enable an analysis of the commodity price channel specifically, we order Y_t such that the federal funds rate variable enters first, followed by the relevant commodity prices, and then the remaining macroeconomic variables. We then estimate the Proxy-SVAR subject to the orthogonality condition:

$$\mathbb{E}[\hat{s}_t\, u_t'] \;=\; \kappa\, e_1' \qquad \kappa = Cov(z_t, \varepsilon_t^{\text{MP}}), \tag{5}$$

where $e_1 \;=\; (1, 0, \ldots, 0)'$ selects the monetary column of B^{-1}. Together with the recursive zero structure that rules out contemporaneous policy effects on variables other than the ones of interest. This identification lets us estimate the impact matrix B, which translates structural shocks into the contemporaneous responses of variables. The inverse, B^{-1}, allows us to recover the magnitude of structural shocks from these contemporaneous impacts, enabling the calculation of impulse response functions following monetary policy shocks.

With the estimated effects of monetary policy shocks on our macroeconomics variables of interest, we calculate the impulse response functions analogous to Miranda-Pinto et al. (2023):

$$IR_t = \left(A_0^{-1}B\right)_i \quad \text{for} \quad t = 0,$$

where IR_0 is the instantaneous effect of the structural shock on each variable of interest, i, and

$$IR_t = \mathbf{D} \cdot \mathbf{IR}_{t-1} \quad \text{for} \quad t = 1, 2, \ldots, 24,$$

captures the lagged effects of the structural shock on each variable of interest. The number of lags used in the model is selected based on the Akaike information criterion (AIC) to be $p = 4$.

5.3 Model Augmentations

5.3.1 Decomposition Exercise

To quantify the impact of the commodity price channel on inflation, we construct a counterfactual system in which we force the impulse responses of the commodity prices to be zero. In practice, the decomposition exercise implies that we zero out the impact of the policy shock on the Brent oil- and metal-price equations in the impact matrix B. This allows us to evaluate the effects of changes in commodity prices on the different inflation measures by comparing our baseline scenario, where we let commodity prices react first, to the counterfactual case where the commodity channel is shut off. This decomposition exercise of the proxy-SVAR allows us to answer our research questions regarding the economic significance of the commodity price channel in the transmission of US monetary policy.

5.3.2 Inclusion of Sweden in the Model

To estimate the spillover effects of US monetary policy on Swedish headline and core inflation, we augment the baseline proxy-SVAR model by including Swedish CPI measures and the USD-SEK exchange rate. We also extend the decomposition exercise to this augmented model and compare the results to those from the baseline specification. This approach enables us to assess the relative importance of the commodity price channel in transmitting US monetary policy to Swedish consumer prices.

6 Results

This section initially presents the results derived from the local projection regressions, highlighting the peak responses of both commodity indices and individual commodities following a US monetary policy shock. Subsequently, we display the results from the proxy-SVAR estimation. Lastly, we quantify and discuss the magnitude of the commodity price channel in transmitting monetary policy shocks to inflation.

6.1 Local Projections

To establish a benchmark for evaluating the magnitude of commodity price responses, we first examine the impulse response function of the US dollar index following a standard US monetary policy shock. On average, a 10 basis point increase of the federal funds rate results in a modest short-term appreciation of the US dollar, with a peak cumulative response of approximately 0.35% within the first few days after the shock. The observed appreciation of the US dollar index indicates that, subsequent to a contractionary shock, the US dollar strengthens relative to a basket of foreign currencies. Although the magnitude of the appreciation is moderate, the response is in line with the textbook expectation of domestic currency appreciation following a monetary policy tightening. As can be seen in Figure 2, we also note that the effect vanishes within a week.

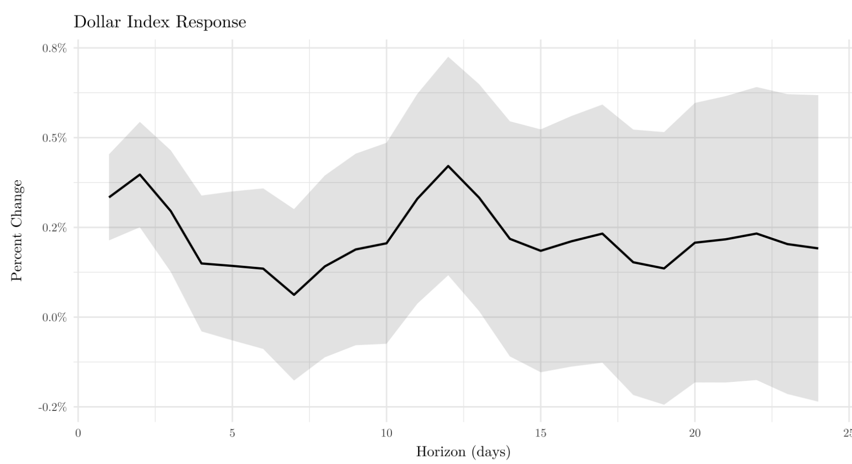

Figure 2: Impulse Response of Dollar Index

Note: This figure reports the 24-day response of the dollar index to a 10 basis points positive shock (increase) to the US monetary policy rate. The shaded area represents 90% confidence bands, calculated using Newey-West standard errors at each horizon h.

The peak responses of commodity price indices to a 10 basis point increase in the federal funds rate are presented in Figure 3. The estimated coefficients of all local projection regressions represent cumulative percentage changes in prices from $t-1$ to $t+h$, and therefore capture total price effects rather than immediate reactions. We observe that the metal index exhibits the strongest sensitivity, declining by approximately 5.5% over 22 business days following the monetary policy shock. The energy index experiences a similar, albeit smaller, cumulative decrease of 2.2%, peaking after 19 business days. Additionally, commodity groups such as precious metals, beverages, and the Bloomberg Commodity Index (BCOM) all exhibit statistically significant declines at the 90% confidence level. In contrast, price changes observed for the food, cotton, and agricultural commodity indices are not statistically significant.

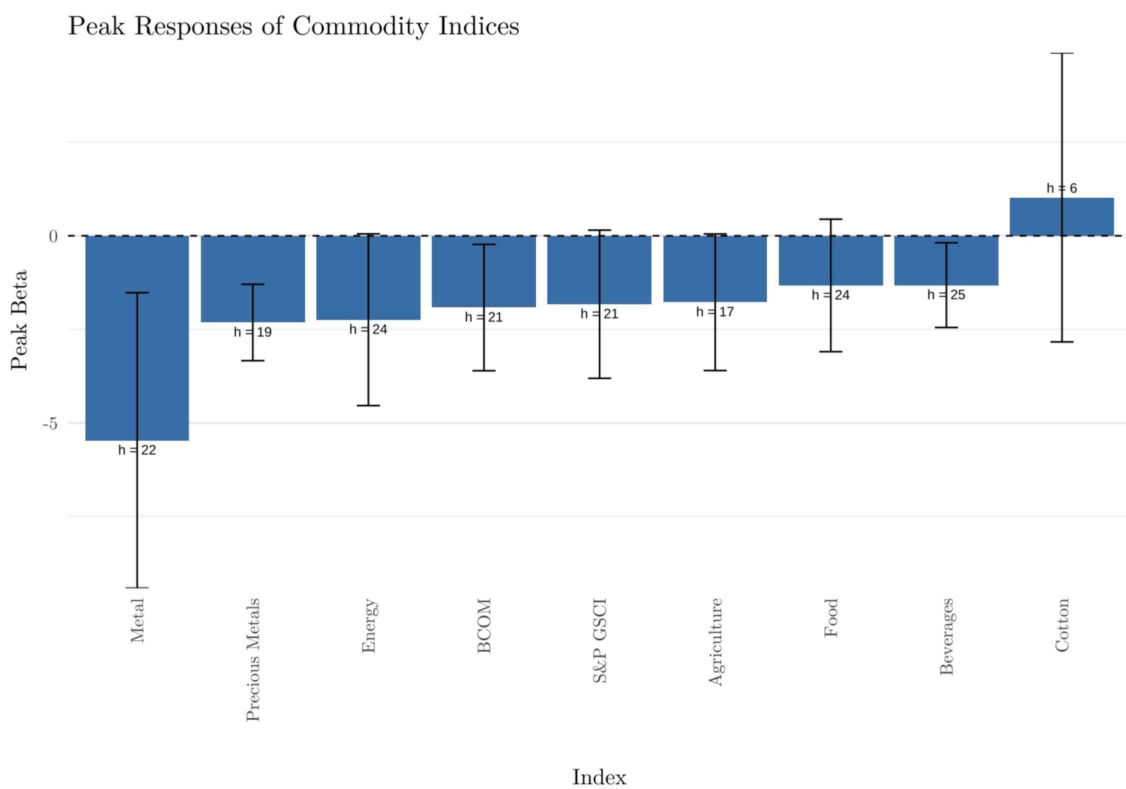

Figure 3: Peak Responses of Commodity Price indices

Note: This figure reports the peak responses of commodity price indices to a 10 basis point increase in the federal funds rate with 90% confidence bands. The numbers by the boxes indicate the day (h) of the peak response for each index.

In Figure 4, we report the results of local projection regressions on 19 individual commodities. Commodities such as gold, silver, oil, and coffee notably exhibit price declines following a contractionary US monetary policy shock. Our findings indicate that storable and industrial commodities, such as oil and metals, tend to exhibit greater responsiveness to monetary tightening than other commodities. Among industrial and metal commodities, gold exhibits the smallest price decline.

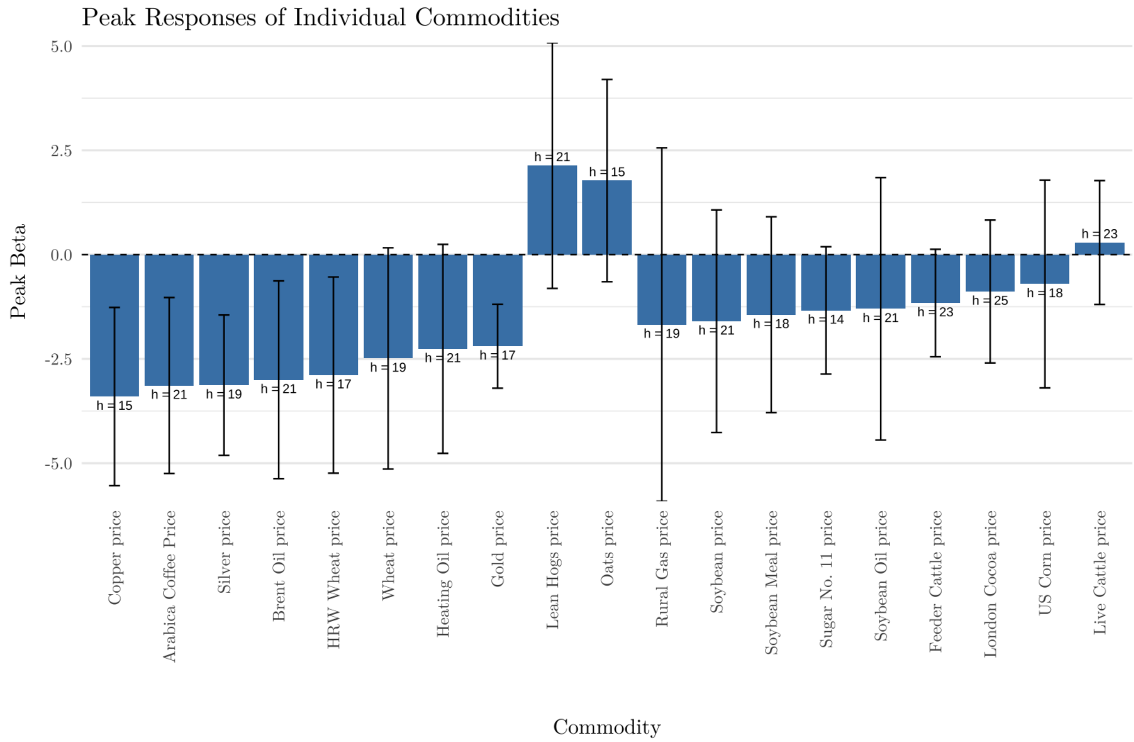

Figure 4: Peak Response of Individual Commodity Prices

Note: This figure reports the peak responses of individual commodity prices to a 10 basis point increase in the federal funds rate with 90% confidence bands. The numbers by the boxes indicate the day (h) of the peak response for each commodity.

The magnitude of these price responses exceeds that of the exchange rate reaction shown in Figure 2, suggesting a potential overshooting effect driven by the commodity-related mechanisms discussed in Section 3. For robustness, we also check if the commodities exhibit similar responses to an alternative set of monetary policy shocks developed by Bu et al. (2021). These results are shown in Figure A1 and Figure A2 in the Appendix and are broadly consistent with our primary findings.

6.2 Proxy-SVAR

Having established the important role of the Federal Reserve's monetary policy in driving commodity prices, we now turn to analyzing the spillback and spillover effects of US monetary policy shocks on inflation dynamics in the United States and Sweden. Given that metals and energy commodities were the most responsive to policy shocks, we focus our proxy-SVAR analysis on these two categories. For energy, we exclusively use Brent oil prices instead of the broader energy index, as the response of Brent oil was both of a large magnitude and statistically significant, whereas the broader index showed a weaker and less significant effect. Metals are included based on their strong and consistent reaction to monetary policy shocks and their economic relevance. Furthermore, previous empirical literature has consistently documented a robust and economically important relationship between oil price fluctuations and inflation dynamics (see e.g., Dotsey and Reid, 1992; Elder and Serletis, 2010; Rahman and Serletis, 2011; Serletis and Xu, 2023). Consequently, restricting our analysis to the base metals index and Brent oil prices are both empirically justified and theoretically relevant, allowing for a focused assessment of the critical channels through which monetary policy impacts inflation.

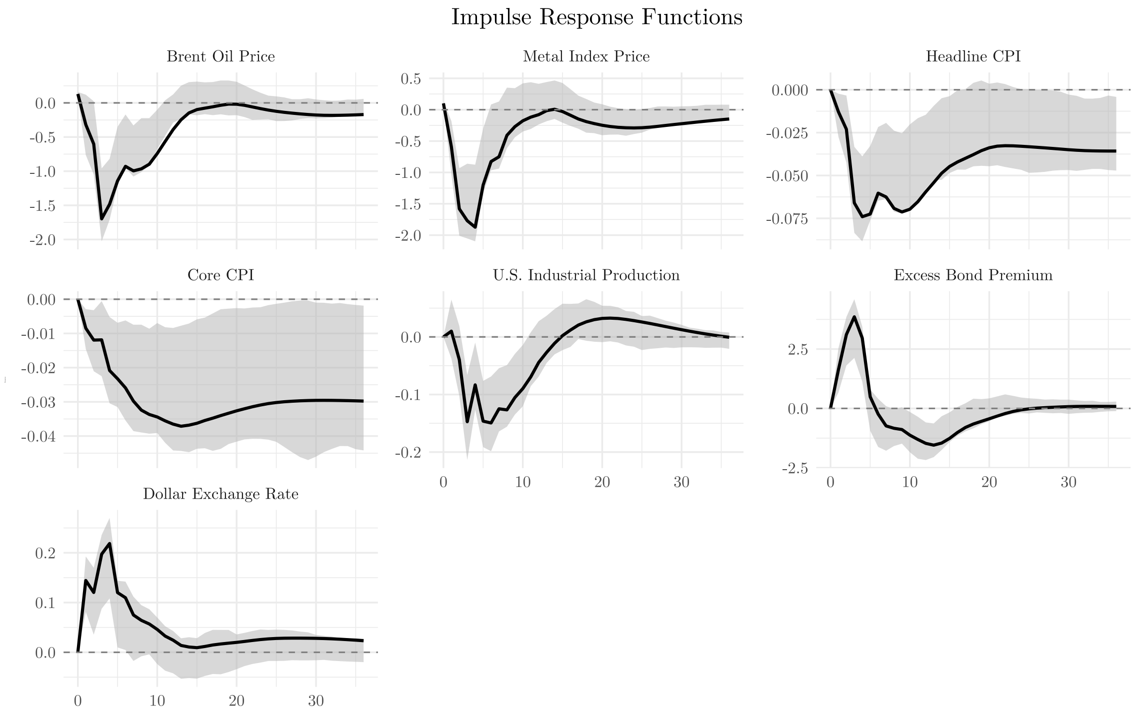

Figure 5: Proxy-SVAR Impulse Response of US Monetary Policy Shock

Note: This figure reports the impulse responses of US macroeconomic variables to a 10 basis point increase in the federal funds rate with 68% confidence bands. The y-axis denotes percent. The x-axis denotes the number of months after the monetary policy shock.

Figure 5 presents the results of the baseline proxy-SVAR estimation. Following a contractionary US monetary policy shock, both Brent oil prices and the metal commodity index exhibit clear declines, with peak cumulative responses of approximately 1.7% and 1.9%, respectively, around four months after the shock before gradually recovering. These findings align with the previous finding that commodity prices are sensitive to monetary policy changes.

The inflation measures also respond in line with theoretical predictions. US headline CPI declines by approximately 0.075% over four months, while core CPI exhibits a more gradual and persistent response, reaching a peak decline of 0.037% after thirteen months. Similarly, industrial production decreases, peaking at a cumulative decline of roughly 0.15% three months after the shock, suggesting real economy effects consistent with the transmission of monetary policy.

Moreover, financial conditions tighten, as reflected by a significant increase in the excess bond premium, which peaks at approximately 3.5% over three months. Finally, we also observe an appreciation in the US dollar also in response to the shock, with the dollar index rising by about 0.2% by its peak at around four months after a shock. Overall, these results are consistent with existing literature on monetary policy transmission through commodity and financial markets (see, e.g., Cesa-Bianchi and Sokol, 2022; Jarociński and Karadi, 2020; Miranda-Agrippino and Rey, 2020).

For robustness, we also check if the results of the proxy-SVAR results are robust to using an alternative series of monetary policy shocks. Again, we use the shocks developed by Bu et al. (2021). These results are shown in Figure A3 in the Appendix and are broadly consistent with our primary findings.

6.2.1 The Commodity Price Channel in the United States

To quantify the importance of the commodity price channel, we follow Bernanke, Gertler, et al. (1997) and Miranda-Pinto et al. (2023) and perform a decomposition exercise where we shut off the response of oil and metal prices to the monetary policy shock at all time periods. This is simply done by setting the coefficients of the Brent oil and metal index prices to zero.

Figure 6 presents the results of our decomposition. When comparing the baseline case where commodities react first, to the case where commodity reactions are set to zero, we observe that a contractionary US monetary policy shock induces a decline in both CPI measures. Importantly, the disinflationary effect on headline CPI is significantly more pronounced when commodity prices are allowed to adjust, suggesting that commodity-price dynamics amplify the overall impact of monetary policy. In contrast, the difference between the two scenarios is less substantial for core CPI. However, the difference between the two scenarios can still be considered rather large. These findings emphasize the important role of commodity price pass-through in amplifying the domestic disinflationary effects of US monetary policy tightening.

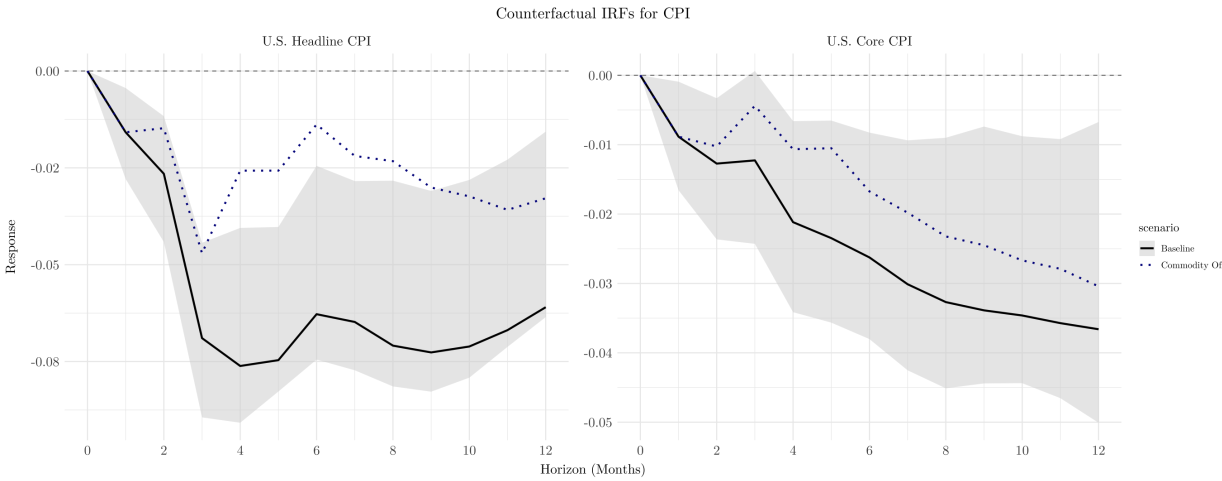

Figure 6: Proxy-SVAR Impulse Response of US Monetary Policy Shock: The Role of Oil and Metals

Note: The black line represents the baseline estimation. The dotted blue line represents the responses of inflation under the assumption that Brent oil and metal prices do not react to monetary policy shocks. The grey area represents 68% confidence bands. The y-axis denotes the responses in percent. The x-axis denotes the number of months after the shock.

6.2.2 Spillovers of US Monetary Policy to Sweden

To estimate the monetary policy spillovers to the Swedish economy through the commodity price channel, we augment the proxy-SVAR model to include the headline and core inflation in Sweden, as well as the bilateral exchange rate between the US dollar and the Swedish krona. The results of the decomposition exercise on Swedish inflation are reported in Figure 7.

Following a contractionary US monetary policy shock, we observe a disinflationary effect on both Swedish headline and core CPI. However, the gap between the baseline and counterfactual scenarios is substantially larger for headline CPI, while the responses of core CPI are nearly identical across the two specifications. The disinflationary effect on core CPI is not statistically significant for several months after the shock. This suggests that commodities, particularly oil, play a key role in transmitting US monetary policy to Swedish consumer prices.

Additionally, we find that the US dollar tends to appreciate more against the Swedish krona under the baseline scenario than under the counterfactual, implying that the commodity price channel contributes to the strengthening of the US dollar relative to the Swedish krona following a monetary policy tightening.

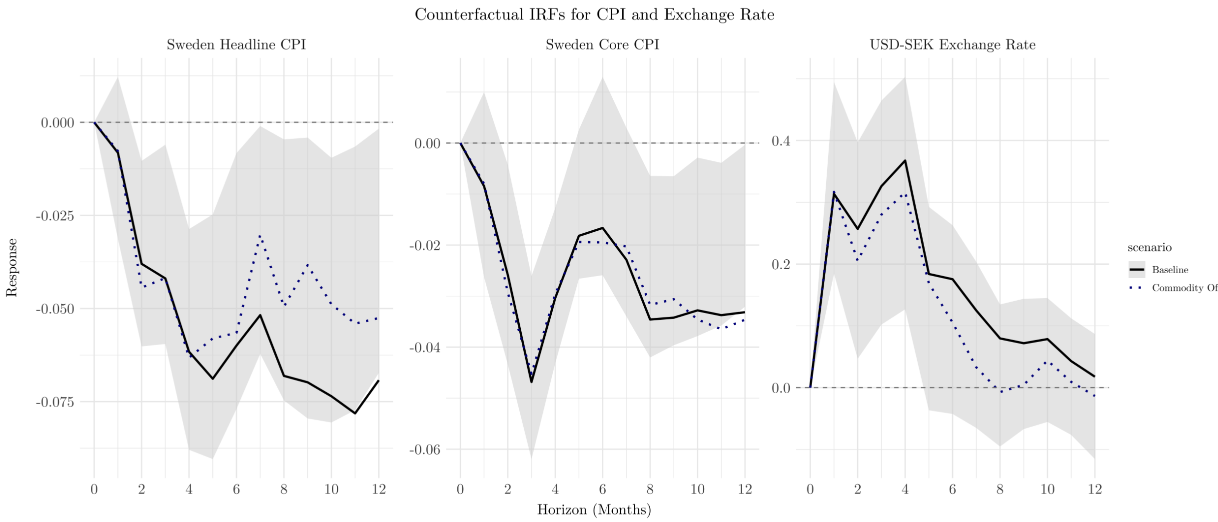

Figure 7: Proxy-SVAR Impulse Response of US Monetary Policy Shock: The Role of Oil and Metals in Spillovers to Sweden

Note: The black line represents the baseline estimation. The dotted blue line represents the responses of inflation under the assumption that Brent oil and metal prices do not react to monetary policy shocks. The grey area represents 68% confidence bands. The y-axis denotes the responses in percent. The x-axis denotes the number of months after the shock.

6.3 Quantifying the Commodity Price Channel

In Table 2, we present the quantified assessment of the importance of the commodity price channel. We quantify the importance of the commodity price channel at three different horizons: 0-3 months, 0-6 months, and 0-12 months. For each horizon window we first compute the baseline cumulative response by summing the impulse response function values at horizons 0 through 3, 6, and 12. We then do the same in the counterfactual scenario, and thereafter subtract it from the baseline cumulative response, to obtain the absolute contribution of the commodity price channel. Lastly, we express it as a share of the total cumulative effect by taking the difference divided by the baseline cumulative effect times 100.

Regarding spillbacks to the US economy, our findings indicate that the average relative contribution of commodity prices to headline inflation is approximately 30% during the initial three months after a monetary policy tightening. This impact increases significantly over longer horizons, accounting for around 56% at both six- and twelve-month horizons. In the US case, core inflation also shows sensitivity to the commodity price channel, though the magnitude is somewhat lower. Specifically, the channel contributes slightly above 30% at the three-month horizon, peaks at approximately 41%

at the six-month mark, and subsequently declines to roughly 30% over the twelve-month horizon.

In terms of spillovers to the Swedish economy, the commodity price channel contributes modestly, around 2.5%, to headline inflation over the six-month horizon, increasing substantially to approximately 21% by twelve months. On a three month horizon, there is no statistically significant difference between the baseline and counterfactual scenario for headline inflation. Similarly, for Swedish core inflation, our analysis reveals no statistically significant differences between the baseline scenario and the counterfactual scenario. Lastly, examining the bilateral exchange rate between the US dollar and the Swedish krona, we observe a commodity price channel contribution of approximately 10% over the three-month horizon, which progressively rises to about 14% over six months. At the twelve month horizon, there is no statistically significant effect of the USD-SEK exchange rate. However, these findings underscore the commodity price channel's role in driving the appreciation of the US dollar relative to the Swedish krona in the short-run, indicating that the exchange rate channel is, in fact, intertwined with commodity price fluctuations.

Table 2: Average Relative Importance of the Commodity Price Channel on Headline and Core Inflation

Variable	**Counterfactual**	**0–3 Months**	**0–6 Months**	**0–12 Months**
United States				
Headline CPI	No oil, no metals	30.3%	56.0%	56.4%
Core CPI	No oil, no metals	30.6%	41.4%	30.6%
Sweden				
Headline CPI	No oil, no metals	(-6.6%)	2.5%	20.9%
Core CPI	No oil, no metals	(-1.7%)	(-3.2%)	(-0.5%)
USD-SEK	No oil, no metals	10.5%	14.2%	(28.3%)

Note: This table presents the average relative importance of the commodity price channel to the total effect of a US monetary policy shock on inflation and the bilateral exchange rate. Parentheses indicate lack of statistical significance.

7 Discussion

This section first reviews the results from the local projection regressions and the proxy-SVAR model, examining how our findings relate to existing literature and discussing potential explanations for the observed outcomes. Second, we consider the policy implications of our results for the central banks of the United States and Sweden. Finally, we outline the key limitations of our study and offer suggestions for future research within the field.

7.1 Review of Results

7.1.1 Local Projection

The local projection analysis provides clear insights into the short-term dynamics of commodity prices following a contractionary monetary policy shock from the Federal Reserve. We observe heterogeneity in the impulse responses, where generally, energy and industrial commodities react negatively with statistical significance, while the reactions of other commodities are not statistically significant.

Industrial Metals

Following a 10 basis point increase in the federal funds rate, metal commodities and the broader metal commodity index exhibit a strong and rapid negative effect on prices, with peak cumulative reactions within approximately three weeks. Copper, a metal largely used for industrial purposes, is also responsive, reflecting its sensitivity to monetary policy changes. The negative effect on the price of metals may be indicative of increased costs associated with holding inventories following an increase in interest rates. When interest rates rise, holding inventories becomes more expensive due to higher financing and storage costs, prompting producers and holders to reduce inventories quickly, thereby exerting downward pressure on prices. This finding aligns closely with the theoretical predictions of the cost of carry channel discussed in Section 3 (Frankel, 2014; Miranda-Pinto et al., 2023).

However, despite this relatively rapid response, some inertia in commodity price adjustments probably exists due to operational and logistical constraints concerning changes in inventory levels. Firms likely face practical limitations, such as transportation, storage facility availability, and contractual obligations, which prevent instantaneous adjustments following increased interest rates. This inertia may cause the observed delay between monetary policy shocks and changes in commodity prices (Frankel, 2006). However, considering that monetary policy changes usually take a long time to materialize in the broader economy, seeing prices of industrial metals react within three weeks can still be considered a fast response.

Precious metals

Prices of precious metals also react negatively to contractionary shocks, although to a lesser extent and somewhat slower than other metals. The stronger and quicker reactions of industrial metals compared to precious metals following monetary policy tightening could primarily be explained by their distinct relationships with economic growth expectations, storage costs, and roles in financial markets. Industrial metals are closely tied to construction, infrastructure, and manufacturing, that is, sectors highly sensitive to economic cycles and investment decisions. Precious metals, however, generally have weaker industrial demand, lower inventory volumes, and higher value density. This makes their storage costs relatively less sensitive to interest rate changes. Moreover, precious metals such as gold serve as safe-haven assets (Reboredo, 2013) and are substantially influenced by financial market sentiment and the strength of the US dollar, which typically appreciates following monetary tightening. These factors might dilute the immediate impact of monetary policy shocks, resulting in smaller and less direct price reactions compared to industrial metals. Hence, precious metals seem to have a less significant role in driving both the cost of carry and the real economy channel.

Brent Oil

Brent oil also exhibits significant price declines, albeit at a slightly slower pace compared to metals. This slower and smaller response could perhaps be attributed to logistical constraints and strategic supply decisions by major oil producers, such as OPEC. OPEC has the aim of regulating world supply of oil, and considering the fact that they account for roughly 40% of the world's total crude oil production, as well as almost 80% of total proven crude oil reserves, it is not unreasonable for the response of Brent oil to be less conclusive than that of metal (Colgan, 2021; OPEC, 2023; U.S. EIA, 2025). Despite such supply-side interference, oil prices still react negatively to a US monetary policy shock, which could indicate the presence of the cost of carry mechanism in oil markets, albeit less pronounced due to market-specific factors.

We also plot the impulse response of US oil production to a contractionary monetary policy, and note that there is an increase in the oil production in the first month (see Figure A7 in the Appendix). This likely contributes somewhat to the decline in prices. However, we do not observe a similar effect regarding the oil production of OPEC (see Figure A8 in the Appendix). Hence, the noticeable decline in oil prices, coupled with increased US production, but stable OPEC output, suggests that while the cost of carry channel seems to be at play, its impact is dampened by commodity specific constraints and the behavior of dominant producers. Thereby, it may make oil markets less responsive to monetary policy than more inventory-sensitive commodities like industrial metals.

Another important interpretation of these results relates to the real economy channel discussed in Section 3. The channel is based on the notion that interest rate changes impact investments and consumption, influencing both current and future commodity demand. The observed declines in metal and oil prices after a monetary tightening likely reflect market expectations of reduced economic activity. Lower anticipated investment and consumption levels can lead to decreased demand for commodities used heavily in industrial processes and energy production, which subsequently lowers their prices. While our results do not directly capture portfolio adjustments by market participants, the price responses we observe are consistent with a scenario where market agents anticipate weaker future economic growth and, accordingly, reduced commodity demand. Thus, our empirical findings only indirectly support the presence of the real economy channel in the transmission of monetary policy shocks.

Other Commodities

With regards to the impulse responses of other commodities, such as the food and agricultural indices and their related individual commodities, show smaller and mostly statistically insignificant price responses. It is reasonable to assume that these commodities are typically less influenced by monetary policy compared to energy and industrial commodities, since any fluctuations in prices are presumably more supply-driven. Climate, weather, and pests, for instance, are factors that are perhaps more likely to affect changes in the prices of food and agricultural commodities than monetary policy changes. Moreover, these commodities could also be less influenced by monetary policy changes due to their perishability and lower storage feasibility. Consequently, the weaker price responses in agricultural markets further support the idea that the cost of carry channel has a less substantial role for commodities that are difficult or costly to store, to some extent validating the theoretical framework around commodity storability and liquidity (Cashin et al., 1999). Furthermore, food-related commodities may also be less closely tied to the broader economic outlook or inflation expectations. As a result, they are likely to play a more limited role in the transmission of monetary policy through the real economy–, liquidity and portfolio–, and exchange rate channels as well.

7.1.2 Proxy-SVAR

The proxy-SVAR model allowed for a deeper exploration of the impacts of US monetary policy shocks on macroeconomic indicators. Consistent with the local projection results, the proxy-SVAR analysis found that metal and oil prices significantly declined following monetary policy tightening, further pointing to the existence and importance of the commodity price channel.

The results of the baseline proxy-SVAR presented in Figure 5 show responses that are broadly consistent with standard macroeconomic theory. A contractionary monetary policy shock leads to a decline in Brent oil and metal prices, consistent with the effects of both the cost of carry and real economy channels. The observed declines in both US headline and core inflation further support the role of commodity prices as transmitters of monetary policy to broader price levels. Industrial production also contracts following the shock, in line with reduced investment and consumption activity predicted by the real economy channel. Meanwhile, the increase in the excess bond premium reflects tighter financial conditions and heightened risk premia in credit markets, while the appreciation of the US dollar suggests a capital reallocation toward dollar-denominated assets, amplifying downward pressure on internationally traded commodity prices. Taken together, these findings suggest that commodity prices themselves serve as important variables through which monetary policy shocks propagate to the broader economy, transmitting effects via both financial channels (such as inventory costs and exchange rates) and real channels (such as demand expectations and production input costs). These findings are consistent with those of Miranda-Pinto et al. (2023), who also highlight the central role of commodity prices in the transmission of monetary policy shocks through both financial and real economic channels.

To a limited extent, the effect of a contractionary US monetary policy shock on the excess bond premium can be used to evaluate the liquidity and portfolio channel. As mentioned in Section 3, this channel is based on the notion that major central banks can influence global financial conditions. Furthermore, as can be observed in figure Figure 5, the excess bond premium increases, indicating somewhat tighter financial conditions, as well as a decline in the risk-bearing capacity of the financial sector. This is intuitive considering that higher interest rates raise costs of borrowing and increase risk aversion among investors, thereby reducing the willingness of financial intermediaries to absorb risk. Although we cannot attest to the actual liquidity effects in financial markets following a shock, we can assume that the increase in the excess bond premium may be indicative of the existence of the liquidity and portfolio channel in the transmission of US monetary policy when also considering the globalization of financial markets.

Spillbacks: United States

The impulse response functions in Figure 6 reveal a substantial spillback effect on both US headline and core inflation following a contractionary monetary policy shock. These findings underscore the role that energy and industrial metals play in transmitting monetary policy into domestic consumer price dynamics. Comparing the baseline scenario to the counterfactual where the commodity price channel is switched off, we observe a reduction in the disinflationary response of both inflation measures, highlighting the strength of this transmission mechanism. Quantitatively, the contribution of the commodity price channel to the total disinflationary effect on US headline CPI is estimated to be 56% over a twelve-month horizon, while the corresponding estimate for core CPI is 30%.

The 26 percentage point difference is consistent with the exposure of headline inflation to energy prices, which tend to be rather volatile, and seem to be directly affected by monetary policy via the commodity price channel. Since food prices showed limited and statistically insignificant reactions to policy shocks in our local projections, the headline–core gap is likely attributable almost entirely to energy prices. This result provides strong evidence that energy commodities not only respond significantly to monetary tightening, but also materially amplify its impact on consumer prices. It also reinforces the view that ignoring the commodity price channel in inflation forecasting could lead to a substantial underestimation of monetary policy's effects, particularly in economies with high energy dependence.

Spillovers: Sweden

Our analysis also provides evidence of spillover effects from US monetary policy to Swedish inflation, with commodity prices acting as a key transmission channel. The impulse response functions shown in Figure 7 indicate that US monetary policy tightening has a disinflationary effect on Swedish headline CPI, and that this effect is considerably dampened when the commodity price channel is switched off. On a twelve month horizon, the relative contribution of the commodity price channel to Swedish headline inflation is approximately 21%. This implies that a substantial portion of the transmission of US monetary policy to Swedish inflation operates through internationally traded commodities, emphasizing how deeply embedded Sweden is in global price systems. It reflects the extent to which Swedish inflation is not solely driven by domestic conditions, but is shaped by external monetary developments via fluctuations in input costs. This suggests that even in the absence of domestic monetary tightening, Sweden can experience imported disinflationary effects when global commodity prices fall, a mechanism that complicates the Riksbank's ability to stabilize inflation independently. These findings reinforce those of Ellen et al. (2018), who provide evidence of monetary policy spillovers from the ECB to Sweden, and those of Hajek and Horvath (2018), who found that Sweden is significantly affected by international monetary spillovers.

In contrast, the response of core CPI is smaller and nearly identical across scenarios, causing statistically insignificant results. However, this still has practical economic significance. The results indicate that the headline response is primarily driven by energy price movements, and thereby, metals seem to play a smaller role in the transmission of monetary policy from the United States to Sweden. In Figure A5 and Figure A6 in the Appendix, we plot the Swedish imports and exports of oil and metals. Sweden exports virtually no crude oil, while importing between 100 and 150 billion SEK worth of crude oil annually, or just above 6% of total imports. Considering this, together with the fact that we find no statistically significant effect on core CPI, it underscores Sweden's vulnerability to external oil price fluctuations, particularly in light of its heavy dependence on imported oil. This result supports the findings of Bjellerup and Löf (2008), who argue that global oil prices influence Swedish inflation. This also aligns with an evaluation made by the International Monetary Fund earlier this year, which argued that the rather recent decline in Swedish headline inflation was primarily driven by falling energy prices, while core CPI remained largely unaffected (International Monetary Fund, 2025). In the case of metals, the difference in the amount that Sweden imports and exports is much smaller, indicating a more balanced trade position which potentially dampens the domestic inflationary impact of global metal price fluctuations.

In addition, the bilateral exchange rate between the US dollar and the Swedish krona also responds to US monetary tightening. In our decomposition exercise, we find that a 10 basis point increase in the federal funds rate causes the US dollar to appreciate against the Swedish krona. However, the magnitude of this effect is considerably smaller than those of the prices of Brent oil and metals, following the shock. Hence, the appreciation of the US dollar does little to offset the decrease in commodity prices, meaning that the exchange rate does not meaningfully weaken the disinflationary impact of falling Brent oil and metal prices.

Moreover, our results show that roughly 14% of the movement in the USD-SEK exchange rate over a six-month horizon can be attributed to the commodity price channel. This highlights that commodity price dynamics play a role not only in shaping inflation, but also in driving exchange rate fluctuations. Together, these results suggest that the exchange rate channel and the commodity price channel are not independent mechanisms, but instead interact in shaping the transmission of US monetary policy. In particular, part of the appreciation of the US dollar appears to be driven by the decline in global commodity prices, which are themselves highly sensitive to US monetary shocks. Since commodities are traded globally in US dollars, a sharp fall in their prices can trigger a reallocation of capital toward dollar-denominated assets, reinforcing dollar strength. This implies that the exchange rate response is in part an outcome of commodity price movements rather than a purely separate adjustment mechanism. For small open economies like Sweden, this interaction deepens the spillover effects of US monetary policy and underlines the importance of viewing the exchange rate and commodity price channels as interdependent rather than isolated.

7.2 Policy Implications

Our results from both the local projection and proxy-SVAR analyses demonstrate the economic importance of the commodity price channel in the transmission of US monetary policy. A 10 basis point increase in the federal funds rate leads to cumulative declines in commodity index prices ranging from approximately 1.3% to 5.5% within about three weeks. Furthermore, the subsequent decomposition exercises reveal that these commodity price movements have a substantial impact on inflation outcomes in both the United States and Sweden. These findings suggest that the central banks of the United States and Sweden may benefit from accounting for commodity price dynamics more explicitly in their monetary policy frameworks.

7.2.1 The United States

Considering that the contribution of the commodity price channel to US inflation was estimated to be 56% to headline inflation and 30% to core inflation over a twelve month horizon indicates that there is a usefulness for the Federal Reserve to explicitly recognize the relative importance of this channel when calibrating its policy rate. Since commodity prices explain a large part of the effects of US monetary policy on inflation in the short term, taking their forecasts into account, especially those of oil and metals, would allow for improved policy decision making. This may be particularly relevant given the current economic outlook of the United States. Heightened uncertainty stemming from geopolitical tensions and fiscal policy decisions has increased the instability of forecasts (Thedéen, 2025), emphasizing the need for more robust and substantive analytical approaches.

7.2.2 Sweden

While not explicitly tested in our study, Sweden can reasonably be characterized as a price taker in global commodity markets, with limited ability to influence global prices through domestic demand or monetary policy. The Riksbank's inflation targeting framework focuses on medium- to long-term price stability, which makes it particularly important to account for external inflation driving factors. Our findings indicate that Swedish headline inflation is sensitive to fluctuations in oil prices, corroborating earlier results by Bjellerup and Löf (2008) as well as recent assessments made by the IMF (International Monetary Fund, 2025). Taken together, these insights highlight the importance of explicitly integrating commodity price dynamics into the Riksbank's inflation modeling and policy calibration frameworks, particularly when assessing imported inflation pressures.

In particular, incorporating commodity price forecasts, especially for oil, into inflation models along with realistic pass-through estimates to domestic prices may enhance the Riksbank's decision-making in periods of global monetary tightening. Scenario-based stress testing for commodity price shocks could also improve Sweden's preparedness for externally driven inflationary episodes. Given the country's high reliance on oil imports, this is especially important for assessing how foreign monetary policy decisions from the Federal Reserve can influence Swedish price stability even in the absence of specific domestic shocks.

The observed interaction between the exchange rate and commodity price channels also has important implications. Our results suggest that part of the krona's exchange rate response to US monetary tightening is driven by commodity price movements. While a weaker krona typically increases inflationary pressure by raising import prices and supporting export demand, our counterfactual scenarios show that falling commodity prices can mitigate this effect somewhat. This implies that the inflationary consequences of krona depreciation depend partly on the direction of commodity prices. For instance, if the krona depreciates during a period of rising commodity prices, inflationary pressures are likely to intensify, and the Riksbank may need to respond with monetary tightening. Conversely, if the krona depreciates while global commodity prices are falling, the overall inflationary impact may be weaker, and a monetary tightening could prove less effective or even unnecessary. In light of these findings, the Riksbank may consider developing more integrated policy frameworks where exchange rate assessments and commodity price dynamics are evaluated jointly, rather than separately. Doing so could enhance its ability to interpret external shocks and respond with greater efficacy.

These policy implications are also consistent with recent remarks by Riksbank Governor Erik Thedéen, delivered during a press conference following the decision to maintain the policy rate at its current level (2.25%), thereby maintaining a neutral monetary policy stance (Thedéen, 2025). He argued that heightened inflation in the United States, driven by specific policy decisions, is likely to spill over to European economies, and emphasized the uncertainty surrounding the global outlook. Additionally, he pointed out that current declines in oil prices may affect Swedish inflation dynamics, further highlighting the importance of accounting for external commodity price movements in Sweden's monetary policy framework. He also noted that the recent krona appreciation against the dollar has been primarily driven by financial flows, further stressing the need for an integrated framework that evaluates exchange rate developments alongside commodity price dynamics. These observations provide a real-time policy context that reinforces the arguments made in this study.

7.3 Limitations and Future Research

An important factor limiting our analysis is the restricted access to data on daily commodity futures prices. As mentioned in Section 4, we have been able to use data on 19 different commodities, as well as data on certain publicly available commodity price indices. Ideally, full access to daily data on individual commodity futures would allow a more comprehensive analysis of the size and delay of price movements following shocks to monetary policy. More importantly, it could enable comparisons between a broader range of commodities. Furthermore, it would allow us to construct our own commodity indices which could also provide a better understanding of how various commodity sub-indices affect inflation spillbacks and spillovers. Additionally, better access to commodity data could permit the inclusion of other commodities or commodity indices in the proxy-SVAR model, permitting an analysis of multiple counterfactual scenarios.

Along the same lines, we would also have needed data on oil and metal inventories to properly examine the cost of carry channel. Although we had access to some inventory data on industrial metals, it was not enough to make any useful inference. Regarding oil inventories, we found no relevant publicly available data. Having sufficient data on inventories would have allowed us to perform further analyses on how these may have changed in response to increases in the federal funds rate as well.

These data limitations somewhat restricted the precision with which we could isolate transmission mechanisms and highlight the need for future research using more comprehensive commodity market and inventory data to validate and extend our findings.

7.3.1 External Validity

The main concern for the external validity of our study is that the spillover effects we find on Swedish inflation are likely not directly applicable to all other small open economies. As discussed earlier, the results we obtained may depend on Sweden's specific levels of imports and exports of certain commodities. Other countries may differ significantly in their reliance on imports of crude oil, for instance, and may therefore experience greater or lesser spillover effects on headline inflation. However, it is reasonable to assume that the exchange rate of the US dollar and other currencies is not independent of the commodity price channel, which would have similar policy indications for other central banks. This is especially true if a country's currency is not fixed to the value of the US dollar.

7.3.2 Internal Validity

An issue relating to the internal validity of our study is the concern of biased estimates. It has been shown that local projections using heteroskedasticity- and autocorrelation-robust standard errors (such as Newey-West standard errors used in our model) can be prone to downward bias (Herbst and Johannsen, 2021). While such bias tends to shrink the estimated impulse responses toward zero, which may not pose a severe problem in itself, it can also lead to biased standard errors, thereby threatening the statistical significance of our estimates. Given the volatility of commodity price data, we deemed it necessary to use heteroskedasticity and autocorrelation robust standard errors to avoid any bias due to serial correlation and heteroskedasticity. Still, this presents a trade-off between robustness to autocorrelation and the possibility of biased standard errors. Lastly, while our models are relatively parsimonious, the choice of control variables, lag length, and forecast horizon may influence the results. Although we have chosen specifications in line with the literature, alternative approaches might yield different magnitudes or timing of estimated effects.

7.3.3 Future Research

Given the strong influence of US monetary policy on commodity prices and inflation, future studies could be expanded to examine whether other central banks, such as the ECB, generate comparable spillover effects through the commodity price channel. It would also be valuable to investigate how other types of shocks, particularly those affecting food and agricultural commodities, influence inflation dynamics. Lastly, further research could include testing nonlinear effects, such as asymmetric responses to monetary policy tightening versus easing.

8 Conclusion

This thesis investigates the commodity price channel in the transmission of US monetary policy, its spillback effects on US inflation, and its spillover effects on Sweden's inflation. Using daily data for 19 commodity futures and macro-financial variables from 1990 to 2023, we use high-frequency identified US monetary policy surprises and local projections to estimate the responses of commodity prices to a 10 basis point increase in the federal funds rate. We then employ a proxy-SVAR to trace the effects of the monetary policy tightening on commodity prices, US inflation, and Swedish inflation.

This study has shown that US monetary policy shocks can influence Swedish inflation through their effects on global commodity prices. To our knowledge, this is the first analysis to explicitly document the economic relevance of this spillover channel for Sweden, highlighting the importance of accounting for external price dynamics in domestic policy discussions.

The empirical strategy yields three core findings. First, local projections show that tighter US policy rapidly decreases prices of storable, investment-sensitive commodities: Brent oil falls by 2.8% and the metals index by 5.5% over one month, while most other commodity prices are virtually unaffected. Second, incorporating these responses in the proxy-SVAR reveals sizable domestic spillbacks. Price decreases in Brent oil and metals explain 56% of the 12-month decline in US headline CPI and 31% of the reduction in core CPI. Third, the same shocks generate cross-border spillovers. Swedish headline CPI falls despite a depreciation of the krona against the dollar, with oil and metal prices accounting for 21% of the 12-month decline in Swedish headline inflation. Swedish core inflation remains largely unaffected by the changes in Brent oil and metal prices.

Two policy considerations follow. For the Federal Reserve, commodity prices are an integral channel for policy effectiveness. Systematic commodity price forecasts and scenario analyses should therefore inform rate decisions and risk assessments. For the Riksbank, and by extension other small open economies, the findings underscore the limits of monetary autonomy. Even with a flexible exchange rate, external monetary policy shocks transmitted via global commodity prices can influence domestic inflation. Thus, including explicit pass-through coefficients in forecasting models and stress-testing alternative commodity price scenarios could enhance inflation projections and financial stability policies.

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Appendix

A.1 Commodities and Commodity Indices

Commodities	**Exchange**
Arabica Coffee	Intercontinental Exchange
Brent Oil	Intercontinental Exchange
London Cocoa	Intercontinental Exchange
Copper	Chicago Mercantile Exchange
US Corn	Chicago Mercantile Exchange
Feeder Cattle	Chicago Mercantile Exchange
Gold	Chicago Mercantile Exchange
Hard Red Winter Wheat	Chicago Mercantile Exchange
Heating Oil	Chicago Mercantile Exchange
Natural Gas	Chicago Mercantile Exchange
Lean Hogs	Chicago Mercantile Exchange
Live Cattle	Chicago Mercantile Exchange
Oats	Chicago Mercantile Exchange
Silver	Chicago Mercantile Exchange
Soybean	Chicago Mercantile Exchange
Soybean Meal	Chicago Mercantile Exchange
Soybean Oil	Chicago Mercantile Exchange
Sugar No. 11	Intercontinental Exchange
Wheat	Chicago Mercantile Exchange
Indices	
Bloomberg Commodity Index (BCOM)	
Goldman Sachs Commodity Index (S&P GSCI)	
S&P BSE Metal Index	
S&P GSCI Precious Metals	
S&P Global 1200 Energy Index	
S&P GSCI Agriculture Index	
S&P 500 Food Products	
S&P 500 Beverages	
S&P GSCI Cotton Index	

Table A1: Commodities and Indices

A.2 Robustness Check: Bu et al. (2021) Monetary Policy Shocks

To ensure robustness of our results, we perform the same local projection analysis for commodity indices and commodity futures with the monetary policy shock series developed by Bu et al. (2021), known as the BRW shock series. The BRW shock series is constructed by estimating unobservable monetary policy shocks, using two-step regressions from Fama and MacBeth (1973). The BRW shocks consider changes in zero-coupon treasury yields over large parts of the yield curve (1-year up to 30-year maturities) in a 1-day window around FOMC-announcement days. This is done to produce a shock series that is free from significant Federal Reserve information effects, which are shown to be non-existing for maturities of at least 5-years (Bu et al., 2021). Thus, the BRW series should only reflect monetary policy shocks, and can therefore be considered appropriate in assessing the robustness of our results. The shock series spans from 1994 to 2020, allowing us to compare the outcomes of the two shock series throughout most of our period of interest (1990-2023).

The results obtained using the BRW monetary policy shock series are shown in Figure A1 and **??** in the Appendix. The findings are broadly in line with our results obtained from the regressions using the Bauer and Swanson (2022) monetary policy surprise instrument. However, a key difference is that with the BRW shocks, the amount of days for which it takes the commodities to reach a peak reaction is lower than with the monetary policy surprise instrument we use in our main analysis. Moreover, we also check the robustness of our proxy-SVAR by using the BRW monetary policy shocks. The results of this exercise are shown in Figure A3. For all macroeconomic and financial variables, except US core CPI, we observe roughly the same results.

The differences could be due to various factors, such as the shocks different variances (see Figure A4). However, since the BRW shock series is constructed using a 1-day window around FOMC announcements, whereas the shocks from Bauer and Swanson (2022) are identified using a narrower 30-minute window, this difference in construction is likely the main driver of any differences between the results. Moreover, the two series also based on different financial instruments: the BRW series are derived from changes in treasury yields, while Bauer and Swanson (2022) use interest rate changes in Euro-Dollar futures. As such, differences may also arise because the two series capture monetary policy surprises from different segments of the financial market. Lastly, the shock series also have different time spans; BRW shocks are measured from 1994 to 2020, while the ones we use in our main analysis cover 1990 through 2023.

Nevertheless, considering that the results are similar in terms of which commodities reactions are strongest, as well as the magnitude of the responses, we deem our results to be rather robust to using other series of shocks.

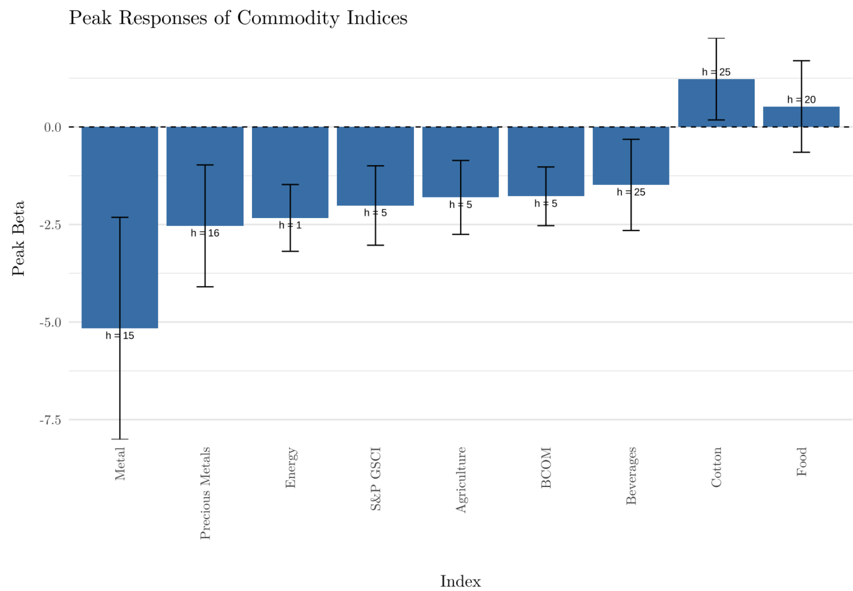

Figure A1: Peak Responses of Commodity Indices with BRW Shocks

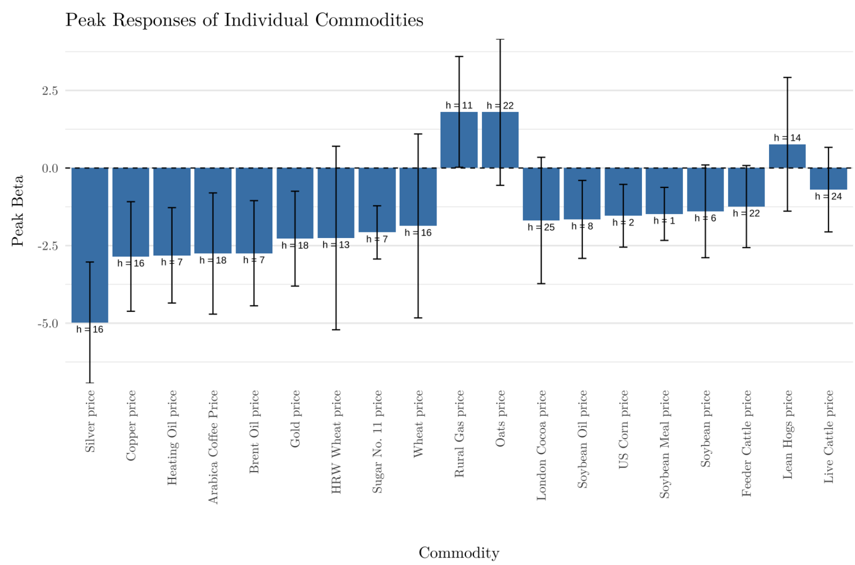

Figure A2: Peak Responses of Individual Commodities with BRW Shocks

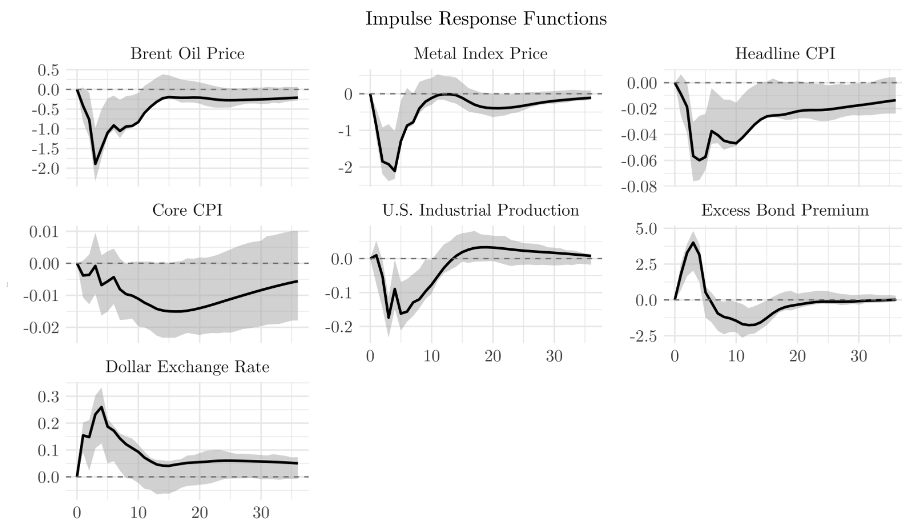

Figure A3: Proxy-SVAR Impulse Response with BRW Shocks

Note: This figure reports the impulse responses of US macroeconomic variables to a 10 basis point increase in the federal funds rate with 68% confidence bands. The y-axis denotes percent. The x-axis denotes months after the shock.

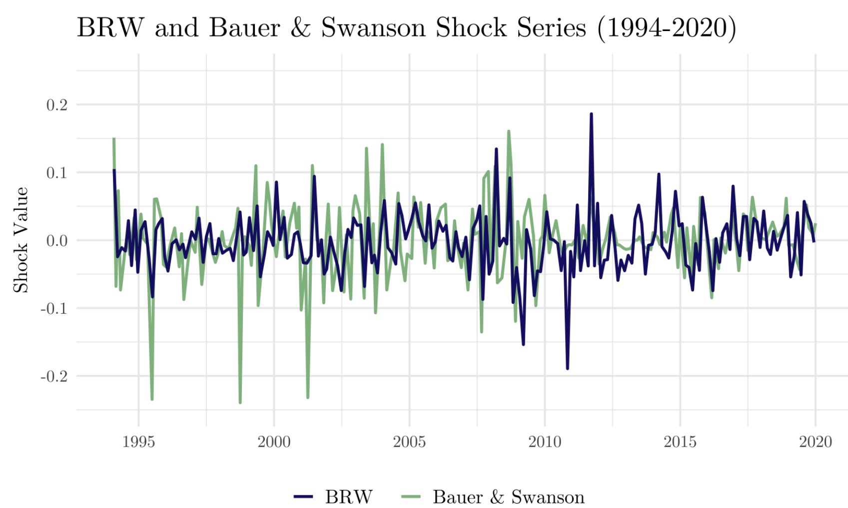

Figure A4: BRW and Bauer & Swanson Shock Series (1994-2011)

Note: This figure reports the Bauer & Swanson shock series used for our study and the Bu et al. (BRW) shock series used for robustness checks. 1994-2011 are the years for which data is available for both monetary policy shock series.

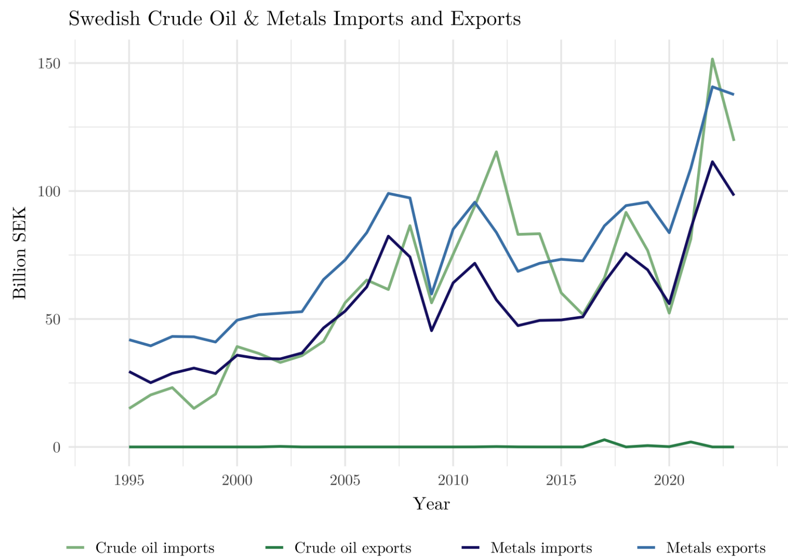

Figure A5: Swedish Crude Oil and Metals Imports and Exports

Note: This table presents the total Swedish imports and exports of crude oil and metals in Billion SEK (1995-2023). Source: Statistics Sweden.

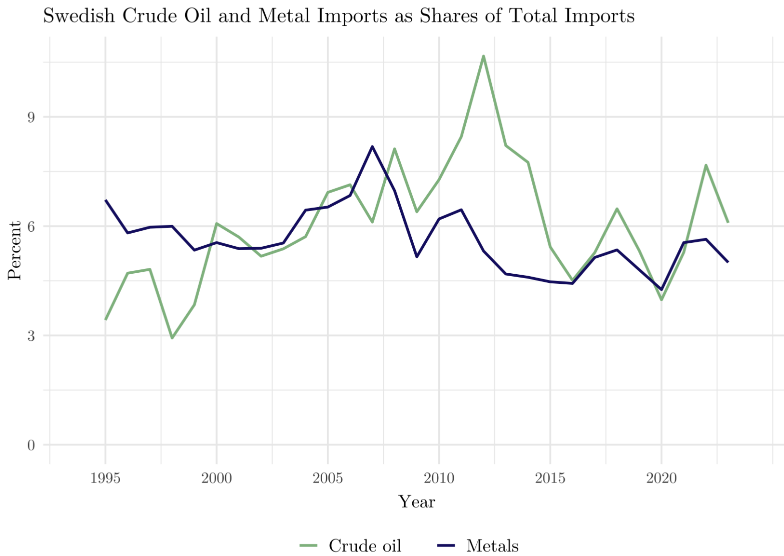

Figure A6: Swedish Crude Oil and Metals Imports as Shares of Total Imports

Note: This table presents the Swedish imports of crude oil and metals as shares of Sweden's total imports (1995-2023). Source: Statistics Sweden.

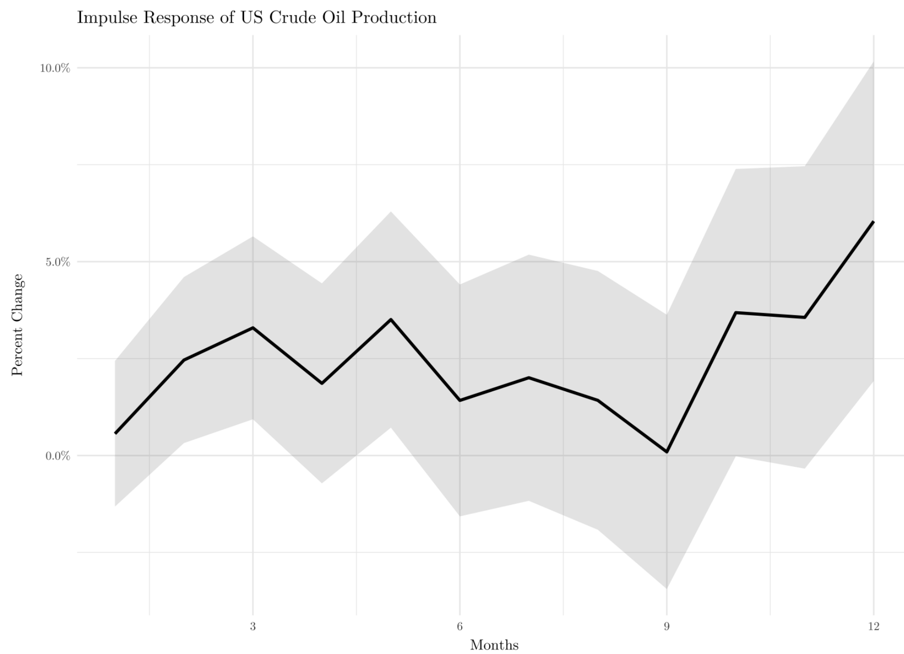

Figure A7: Impulse Response of US Crude Oil Production

Note: This figure reports the impulse responses of US production of crude oil (including lease condensate, Mb/d) to a 10 basis point increase in the federal funds rate with 68% confidence bands. The y-axis denotes percent. The x-axis denotes months after the shock.

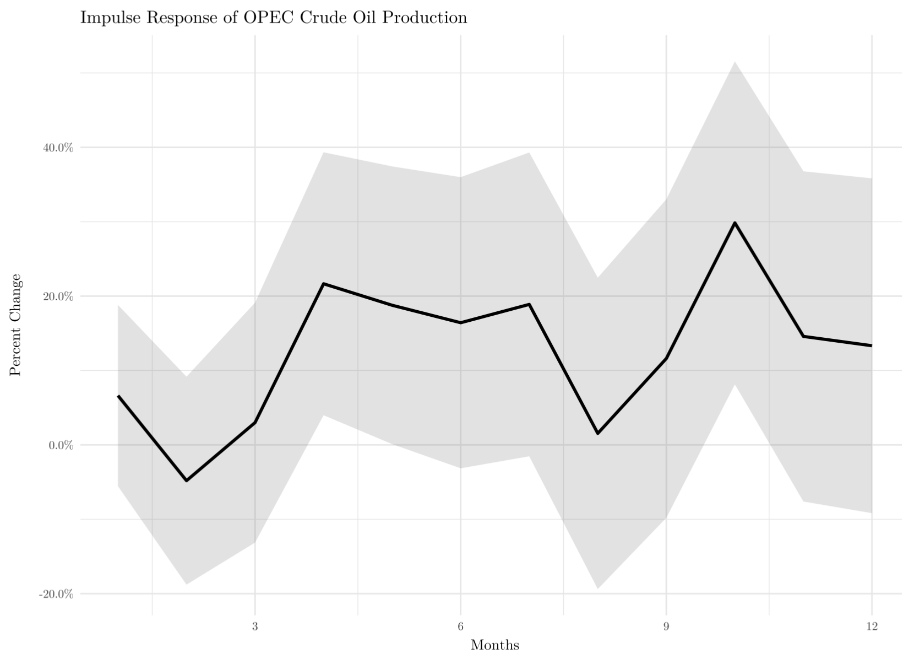

Figure A8: Impulse Response of OPEC Crude Oil Production

Note: This figure reports the impulse responses of OPEC production of crude oil (including lease condensate, Mb/d) to a 10 basis point increase in the federal funds rate with 68% confidence bands. The y-axis denotes percent. The x-axis denotes months after the shock.

Declaration of AI Technologies in the Research Process

During the preparation of this study, the authors used ChatGPT (OpenAI) to enhance the language and readability of this work, and as a helping tool for coding. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the study.