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Oil Shocks, Global Uncertainty, and Emerging Corporate Bond Markets

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Abstract: Using a structural VAR model, this paper investigates how oil price shocks and global uncertainty affect emerging market corporate bond returns. The key finding is that the response of emerging market corporate bond returns varies significantly depending on the underlying sources of oil price changes. Oil supply shocks generally have a negative impact on corporate bond returns, while aggregate demand and oil market-specific demand shocks lead to a temporary increase in returns. That is, when oil price increases are driven by stronger global economic activity or by speculative demand reflecting increased risk appetite, they can lead investors to search for higher yields in emerging markets, and thus raise emerging market corporate bond returns in the short run. Conversely, an unexpected increase in global uncertainty strengthens investors' risk aversion and results in a substantial decline in emerging market corporate bond returns. These findings have crucial policy implications not only for portfolio strategies of global investors, but also for government authorities in emerging market economies.

Keywords: emerging market corporate bonds; oil price shocks; structural VAR

1. Introduction

Bond markets in emerging economies have expanded rapidly over the past few decades, surpassing 24 trillion USD in 2020, and it now accounts for more than 25% of the global bond universe. The significant growth in emerging bond markets is driven by increasing demand for higher yields from global investors, the economic growth of emerging markets, and the greater accessibility of these bonds via international capital markets. Therefore, as argued by Arslanalp and Tsuda [4], emerging bond markets have become an important asset class for investors who search for higher yields and risk diversification. Given the high reliance of emerging economies on external financing and the increasing involvement of global investors in emerging bond markets, it is essential for both policymakers and investors to understand the key factors influencing these markets.

As demonstrated by Amstad et al. [2] and Longstaff et al. [35], bond markets in emerging economies are closely linked to global factors. For example, existing studies have suggested that several external factors, such as the US monetary policy (Uribe and Yue [37]; Foley-Fisher and Guimaraes [16]), global risk aversion (González-Rozada and Yeyati [18]; Kennedy and Palerm [28]), and global liquidity (González-Rozada and Yeyati [18]) are crucial determinants of emerging bond markets. Among the various global factors, this paper particularly focuses on oil price shocks and global uncertainty and analyzes their dynamic effects on emerging corporate bond markets. As documented by Hamilton [20,21], it is the well-established fact that oil price shocks are one of the major sources of global business cycles, and they can have direct effects on economic conditions and firm performance. In addition, as documented by Bloom [9], uncertainty is also a critical factor affecting firm's production and investment decision. Especially, it significantly influences investor sentiment, increasing the risk premium required by investors to hold emerging market corporate bonds. This study investigates how emerging market corporate bond returns response to oil price shocks and global uncertainty. Especially, this paper disentangles oil price shocks into supply and demand components driving global crude oil markets and examines how each shock influences emerging market corporate bond returns differently.

Based on the seminal work by Kilian [29] and Kilian and Park [31], I construct a structural VAR model consisting of a three-block structure of world crude oil markets, global uncertainty, and

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emerging market corporate bond returns. Using monthly data on world crude oil production, global real economic activity, and the real price of oil, I identify the separate supply- and demand-sides sources of underlying oil price changes using a recursive ordering restriction. I then analyze the impulse responses of emerging market corporate bond returns to each of the structural oil shocks and global uncertainty, and quantify their significance in explaining variations in corporate bond returns.

The key findings are summarized as follows. First, the reaction of emerging market corporate bond returns differs greatly depending on the underlying sources of oil price increases. For example, oil supply shocks broadly have a negative effect on corporate bond returns, while oil demand shocks lead to a temporary increase in returns. In other words, when oil price increases are driven by stronger global economic activity or by speculative demand reflecting increased risk appetite, they cause investors to search for higher yields in emerging markets, and thus raise emerging market corporate bond returns in the short run. Conversely, an unexpected increase in global uncertainty intensifies investor risk aversion, leading to a substantial decline in corporate bond returns. Second, emerging market corporate bond spreads exhibit heterogeneous responses to different types of structural oil shocks. Specifically, oil supply shocks have a minimal impact on corporate bond spreads, whereas oil demand shocks significantly reduce them, at least in the short term, inducing investors to engage in search-for-yield behavior. As expected, global uncertainty raises emerging market corporate bond spreads markedly. Third, high-yield corporate bonds react more sensitively to structural oil shocks and global uncertainty than investment-grade corporate bonds. That is, oil supply shocks lead to a greater decline in high-yield corporate bond returns, and the positive effect of oil demand shocks is also significantly larger and more persistent. Lastly, variance decomposition analysis implies that in the short-run, oil demand shocks are more relevant than oil supply shocks, explaining roughly 10% and 2% of variations in emerging market corporate bond returns, respectively. In particular, global uncertainty plays a significant role in shaping the movements of corporate bond returns, accounting for more than 10% of their short-term volatility. In the long run, structural oil shocks and global uncertainty contribute approximately 18% and 2%, respectively, to the fluctuations in emerging market corporate bond returns. Among structural oil shocks, oil demand shocks are still more important than oil supply shocks, explaining roughly 11% and 7%, respectively.

The remainder of this paper is organized as followed. Section 2 reviews the relevant literature, Section 3 and 4 describe the methodology and data used for empirical analysis, Section 5 presents the main results of this study, Section 6 performs robustness checks, and Section 7 provides a conclusion.

2. Literature Review

A significant body of literature examines the effects of oil price shocks on real economic activity, with a particular focus on the US economy. Hamilton [20] is one of the key studies, showing a strong negative correlation between oil prices and economic activity. From the perspective of propagation mechanisms, oil price shocks have traditionally been regarded as negative supply shocks, with increased production costs serving as the primary channel through which they impact both the aggregate economy and individual industries. A seminal study of Lee and Ni [34], however, argues that supply effects dominate only in industries with very high energy costs including petroleum refineries and chemicals, while reduction in demand is the key transmission mechanism through which oil price shocks affect US industries. Hamilton [22] also highlights that a key mechanism whereby energy price shocks influence the US economy is through a disruption in consumers' and firms' spending on goods and services other than energy. Moreover, employing a state-of-the-art econometric model and an extended sample period, Jo et al. [24] confirm that the demand channel remains the main transmission mechanism via which oil price shocks affect US manufacturing industries.

A notable methodological advancement by Kilian [29] highlights the importance of distinguishing the sources of oil price shocks when analyzing their impacts on economic activity and inflation. Kilian [29] shows that oil supply shocks cause a temporary decline in US real GDP and have little effect on consumer prices, while aggregate demand shocks initially boost economic activity, but gradually

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decline it as the adverse effect of higher oil prices dominates. Oil market-specific demand shocks lower US real GDP and raise consumer prices. Aastveit et al. [1] examine the effect of structural oil shocks on developed and emerging countries and find that aggregate demand shocks have a positive impact on GDP across all countries, while oil supply shocks and oil market-specific shocks have differential effects across geographical regions. Similarly, Cunado et.al [14] show that economic activity and prices in Asian economies respond very differently to oil price shocks depending on their types: Oil supply shocks have a limited impact, while aggregate demand shocks have a significant positive effect on Asian economies.

Numerous studies, including Apergis and Miller [3], Kilian and Park [31], Wang et al. [38], Güntner [19], and Kwon [33], have also affirmed the importance of identifying the causes of oil price changes when analyzing their effects on stock markets. Most studies have consistently found that oil supply shocks have a minimal effect on stock returns, while oil demand shocks significantly affect them. In particular, aggregate demand shocks lead to a sustained increase in stock returns, whereas oil market-specific demand shocks cause a significant decline. Wang et al. [38] and Güntner [19] argue that differentiating between oil-exporting and oil-importing countries is crucial when assessing the effect of oil price shocks on stock returns. Meanwhile, with the growing significance of emerging markets in the world economy and financial markets, research on the effect of oil price shocks on emerging stock markets has been actively conducted, as evidenced by studies such as Basher and Sadorsky [7], Basher et al. [6], Fang and You [15], and Kwon [32].

Despite the extensive studies on the effect of oil price shocks on economic activity and stock markets, relatively little research has explored their effects on bond markets, particularly corporate bond markets in emerging economies. Kang et al. [27] is the first paper to examine the effects of oil demand and supply shocks on bond market returns, but their focus is on the real returns of the aggregate US bond index. Morrison [36] and Chen et al. [12] are also closely related to this study, as they investigate the effect of structural oil shocks on emerging bond markets. However, the two papers focus on sovereign bonds, while the primary focus of this study is on emerging market corporate bonds. More importantly, this research further incorporates the endogenous response of global uncertainty to assess the extent to which structural oil shocks propagate to emerging corporate bond markets and quantifies their significance in explaining variations in corporate bond returns.

3. Methodology

3.1. VAR Specification

Building on the seminal work by Kilian [29], I develop a structural VAR model that introduces a three-block structure, encompassing world crude oil markets, global uncertainty, and emerging market corporate bond returns. Specifically, the structural VAR model is constructed as follows:

$$A_0 y_t = \alpha_0 + \sum_{i=1}^{p} A_i y_{t-i} + \varepsilon_t, \quad (1)$$

where $y_t = (\Delta prod_t, rea_t, rpo_t, gu_t, \Delta ret_t)$ denotes a 5 $\times$ 1 vector of endogenous variables, A_0 is a 5 $\times$ 5 contemporaneous coefficient matrix, α_0 refers to a 5 $\times$ 1 vector of constant terms, A_i represents the 5 $\times$ 5 autoregressive coefficient matrix, and ε_t stands for a 5 $\times$ 1 vector of serially and mutually uncorrelated structural shocks. The vector of endogenous variables y_t consists of the percentage change in world crude oil production ($\Delta prod_t$), global real aggregate demand (rea_t), the real price of oil (rpo_t), a measure of global uncertainty (gu_t), and the real returns of emerging market corporate bond (Δret_t). Consistent with Kilian [29] and Kilian and Park [31], the lag length (p) in the model is set to 24, which is intended to ensure adequate propagation of oil price shocks and to reduce serial correlation in residuals. This approach aligns with Hamilton and Herrera [23] and Ciner [13], emphasizing the importance of incorporating long lags when evaluating the impact of oil price shocks.

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3.2. Structural Shock Identifications

The structural representation of the VAR model can be transformed into its reduced-form representation by multiplying both sides of Equation (1) by A_0^{-1}. The reduced-form VAR model can then be consistently estimated by the least-squares method. Following Kilian [29] and Kilian and Park [31], structural shocks are identified through a short-run restriction on the contemporaneous relationship between the reduced-form residuals (e_t) and the underlying structural shocks (ϵ_t). Specifically, I impose the exclusion restrictions on A_0^{-1} which is assumed to have a recursive structure such that the reduced-form residuals are a linear combination of the structural shocks, i.e., $e_t = A_0^{-1}\epsilon_t$:

$$e_t \equiv \begin{pmatrix} e_{1t}^{\Delta\text{prod}} \\ e_{2t}^{\text{rea}} \\ e_{3t}^{\text{rpo}} \\ e_{4t}^{\text{gu}} \\ e_{5t}^{\Delta\text{ret}} \end{pmatrix} = \begin{bmatrix} a_{11} & 0 & 0 & 0 & 0 \\ a_{21} & a_{22} & 0 & 0 & 0 \\ a_{31} & a_{32} & a_{33} & 0 & 0 \\ a_{41} & a_{42} & a_{43} & a_{44} & 0 \\ a_{51} & a_{52} & a_{53} & a_{54} & a_{55} \end{bmatrix} \times \begin{pmatrix} \epsilon_{1t}^{\Delta\text{prod}} \\ \epsilon_{2t}^{\text{rea}} \\ \epsilon_{3t}^{\text{rpo}} \\ \epsilon_{4t}^{\text{gu}} \\ \epsilon_{5t}^{\Delta\text{ret}} \end{pmatrix}, \tag{2}$$

where $\epsilon_{1t}^{\Delta\text{prod}}$ denotes the oil supply shock reflecting an unexpected disruption in world oil production, $\epsilon_{2t}^{\text{rea}}$ is the aggregate demand shock representing an unanticipated change in aggregate demand for all industrial commodities associated with fluctuations in global real business cycle, $\epsilon_{3t}^{\text{rpo}}$ is the oil market-specific demand shock capturing changes in precautionary demand caused by uncertainty about the availability of future oil production, which has often been described as a "speculative demand shock" in the literature, $\epsilon_{4t}^{\text{gu}}$ is the global uncertainty shock, and $\epsilon_{5t}^{\Delta\text{ret}}$ stands for the emerging market corporate bond market shock.

The above identifying restrictions on A_0^{-1} are rooted in the following economic grounds. First, crude oil supply does not respond to contemporaneous changes in oil demand within a month due to the high adjustment cost of changes in oil production. Second, global real economic activity does not react to fluctuations in the real price of oil within a given month because of the sluggishness of aggregate economic reaction. Third, placing global uncertainty after the real price of oil indicates that it contemporaneously responds to the three structural oil shocks, but it affects the global crude oil market only with a delay of at least one month. This specification aims to assess the extent to which the direct effect of oil price shocks on emerging market corporate bond returns may be amplified by the endogenous responses of global uncertainty. Moreover, the assumption that oil price shocks are treated as predetermined with respect to global uncertainty has been widely adopted in numerous empirical studies, including Kang and Ratti [25,26] and Kwon [32,33]. Finally, to reflect the small-open economy characteristics of emerging markets, emerging market corporate bond returns are placed last in the ordering, treating oil price shocks and global uncertainty as exogenous to them.

4. Data

This paper utilizes monthly data on global crude oil markets and emerging market corporate bond returns, spanning from January 1999 to December 2023. The starting date of the sample period is determined by the availability of emerging market corporate bond returns. World production of crude oil available from the Energy Information Administration (EIA) is used for a proxy for world oil supply. Global real aggregate demand is measured by the index of global real economic activity in industrial commodity markets proposed by Kilian [29], with the correction discussed in Kilian [30], which can be obtained at the Federal Reserve Bank of Dallas. The index is expressed in percent deviations from trend and derived from a panel of dollar-denominated global bulk dry cargo shipping rates reflecting broad shifts in aggregate demand for world industrial commodity markets. The real price of oil is measured by the spot crude oil price of West Texas Intermediate (WTI) deflated by the US CPI. As a proxy for global uncertainty, I use the VIX index capturing financial uncertainty of the US stock market participants. This measure is widely used in empirical research examining the spillover

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effects of global uncertainty on emerging market economies, such as Carriére-Swallow and Céspedes [11], Bhattarai et al. [8], and Bonciani and Ricci [10].

To estimate emerging market corporate bond returns, this study relies on monthly data for the ICE BofA Emerging Markets Corporate Plus Index (total return index) available at the FRED database. The index tracks the performance of US dollar and Euro denominated emerging markets non-sovereign debt publicly issued within the major domestic and Eurobond markets. Real returns on emerging market corporate bonds are calculated by deflating the index returns using the emerging market CPI. This CPI is constructed as a GDP-weighted average of the CPIs of major emerging economies, including Brazil, China, India, Indonesia, Mexico, Türkiye, Russia, and South Africa–all sourced from the OECD database. For comparison and additional analysis, investment grade and high-yield corporate bond returns are similarly estimated by using ICE BofA High Grade Emerging Markets Corporate Plus Index and the High Yield Emerging Markets Corporate Plus Index, respectively. As described in Table 1, the annualized returns and volatility of emerging market corporate bonds show 4.9% and 6.3%, respectively. As expected, high-yield corporate bonds–also known as junk bonds, issued by companies with lower credit ratings–exhibit a higher annualized return of 5.9% with greater volatility at 9.8%, reflecting a high-risk and high-return profile. In contrast, investment-grade corporate bonds, issued by companies with stronger credit ratings, offer a relatively lower return of 4.3% with reduced volatility at 5.1%. In particular, as indicated by the skewness and excess kurtosis, the return distribution of emerging market corporate bonds is highly asymmetric and exhibits heavy tails, suggesting the presence of significant tail risk.

Table 1. Descriptive statistics on emerging market corporate bond returns.

Variable	Annualized returns	Annualized volatility	Skewness	Excess kurtosis
EM corp. bond return (%)	4.860	6.255	-2.971	22.983
EM IG corp. bond return (%)	4.293	5.052	-2.467	15.838
EM HY corp. bond return (%)	5.854	9.823	-3.271	25.300

5. Results

5.1. Responses of Emerging Market Corporate Bond Returns

Figure 1 shows the cumulative impulse responses of emerging market corporate bond returns to a one-standard deviation innovation in each of the structural oil price shocks and global uncertainty. The black line in the middle is the point estimates and shaded areas indicate one-standard error bands computed using the recursive-design wild bootstrap with 2,000 replications proposed by Goncalves and Kilian [17]. Consistent with the convention, all three structural oil shocks have been normalized to represent one-standard deviation shock leading to a rise in the real price of oil to facilitate the comparison. That is, oil supply shocks are negative, while oil demand shocks are positive.

I find that the reaction of emerging market corporate bond returns differs significantly depending on the underlying sources of oil price increases. Specifically, an unexpected disruption in global crude oil production has a negative effect on corporate bond returns. Conversely, an unanticipated rise in aggregate demand driven by global economic expansion causes a statistically significant increase in returns at least for about 5 months, followed by a gradual decline. That is, the expansionary shock can enhance the balance of payments of emerging market economies, particularly oil-exporting countries, which, in turn, stimulates investors' risk appetite for investments in these markets, leading to a transitory rise in bond returns. This result is similar to the findings by Kilian and Park [31], Güntner [19], and Kwon [32,33] that an aggregate demand shock leads to a temporary rise in stock returns,

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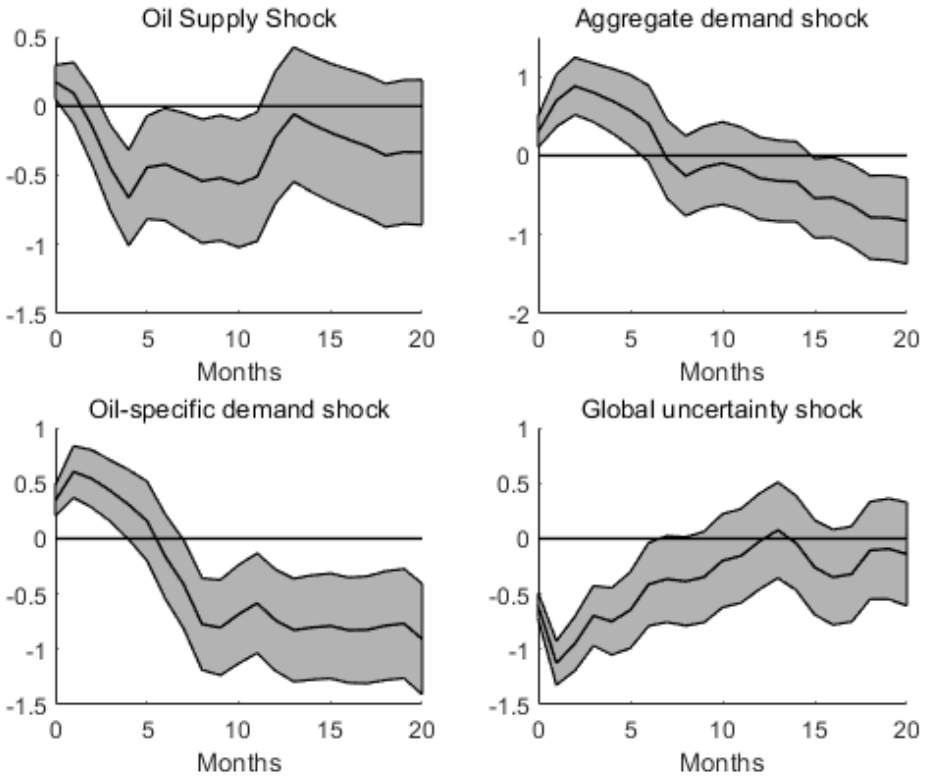

Figure 1. Cumulative impulse responses of emerging market corporate bond returns to one-standard deviation structural shocks

but sharply contrasts to those of Kang et al. [27] showing that it negatively impacts the US aggregate bond returns, commonly viewed as a safe asset. In other words, an unexpected positive innovation in global aggregate demand is positively associated with risky assets such as stocks and emerging market bonds, whereas it has a negative relationship with safe assets like US bonds. An unforeseen rise in oil market-specific demand driven by speculative activity also leads to a transient increase in emerging market corporate bond returns, but its effect is a bit weaker in magnitude and less persistent compared to the aggregate demand shock. This result can be explained by the fact that a positive speculative demand shock, driven by increased investor risk appetite, can trigger search-for-yield activity in emerging markets, which are generally perceived as a high-risk asset class. Lastly, an unexpected rise in global uncertainty strengthens investors' risk aversion and results in a statistically significant decline in emerging market corporate bond returns. This finding is largely consistent with previous studies documenting the negative relationship between uncertainty and emerging stock markets, including Kang and Ratti [26], Kwon [32], and Bhattarai et al. [8]. Overall, the behavior of emerging market corporate bonds appears to resemble that of equities. This is why, despite being bonds, they are typically regarded as a high-risk asset class.

5.2. Responses of Emerging Market Corporate Bond Spreads

To gain a deeper understanding of how structural oil shocks and global uncertainty affect emerging market corporate bond returns in relation to investor risk perception, this subsection analyzes their effects on the option-adjusted spread (OAS) for emerging market corporate bonds. The OAS for emerging market corporate bonds is measured by the ICE BofA Emerging Markets Corporate Plus Index Option-Adjusted Spread available in the FRED database. The OAS is the calculated spread between a computed OAS index of all bonds in a given rating category and a spot US Treasury curve, and its index is constructed using each constituent bond's OAS, weighted by market capitalization.

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The OAS for corporate bonds is typically a critical measure by investors to assess the risk and return associated with fixed-income securities, particularly those with embedded options. Thus, it provides a clearer picture of the risk premium investors demand for taking on the credit risk of corporate bonds, factoring in the potential variability introduced by the bond's options. To analyze the dynamic effects of structural oil shocks and global uncertainty on the OAS, the baseline model in Equation (1) is re-estimated by substituting emerging market corporate bond returns with the OAS expressed in logarithmic terms.

Figure 2 illustrates the results. Overall, oil price shocks reduce the OAS for emerging market corporate bonds as least in the short run, followed by a gradual increase. The magnitude and persistence of the effect, however, vary depending on the underlying causes of oil price shocks. The impacts of aggregate demand and oil market-specific demand shocks are much greater and more persistent than oil supply shocks. That is, demand-driven oil price shocks prompt investors to seek higher yields in emerging market bonds, leading to a reduction in the OAS for emerging market corporate bonds. This helps explain the positive relationship between oil demand shocks and emerging market corporate bond returns shown in Figure 1. Furthermore, this result closely aligns with the findings of Chen et al. [12], which show that oil demand shocks—especially speculative demand shocks—lead to a statistically significant decline in emerging market sovereign spreads. As expected, an unexpected increase in global uncertainty causes a significant rise in the OAS, which helps account for the strong negative relationship between global uncertainty and emerging corporate bond returns described in Figure 1. In other words, the increased global uncertainty intensifies investor risk aversion and dramatically raise the OAS for emerging market corporate bonds because they are a highly risky asset, causing a significant decline in their returns.

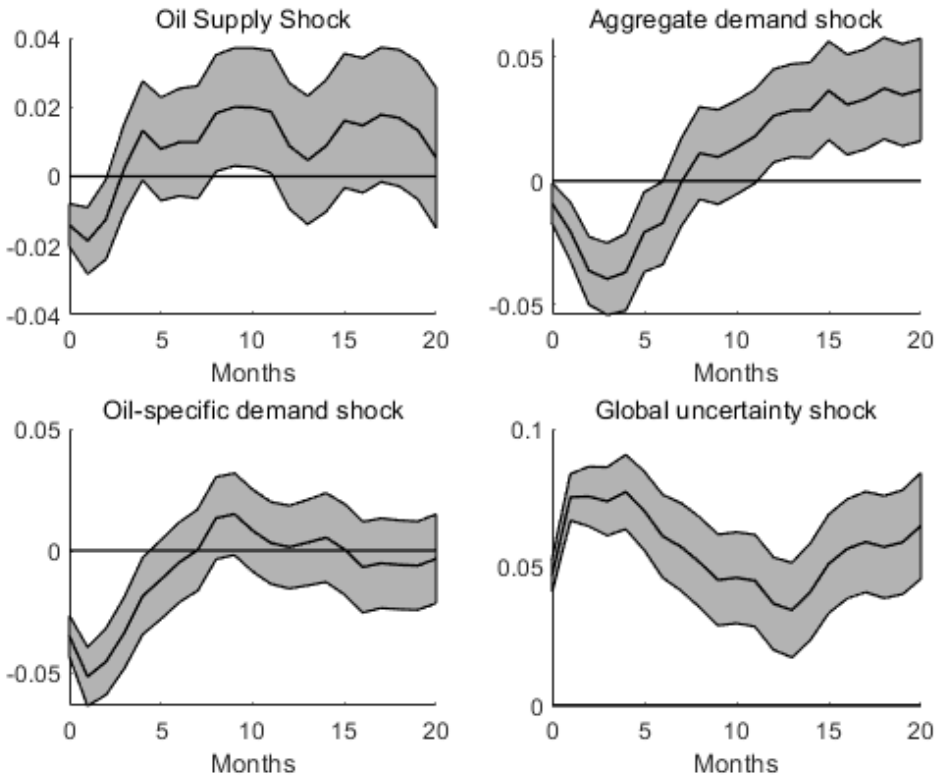

Figure 2. Impulse responses of the option-adjusted spread for emerging market corporate bonds to one-standard deviation structural shocks

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5.3. Investment-Grade vs. High-Yield Corporate Bond Returns

To assess whether the main results shown in Figure 1 may differ greatly by type of emerging market corporate bonds, this subsection examines whether structural oil price shocks and global uncertainty affect real returns of investment-grade and high-yield corporate bonds differently. This can be conducted by estimating the baseline model in Equation (1) by replacing the returns of emerging market corporate bonds with those of investment-grade and high-yield corporate bonds one at a time.

As depicted in Figure 3, the overall results appear similar to those of aggregate corporate bond returns. However, as expected, high-yield corporate bonds respond more sensitively than investment-grade corporate bonds to global shocks. To be more specific, oil supply shocks have a minimal effect on investment-grade corporate bond returns, while they trigger a substantial decline in high-yield corporate bond returns. In addition, the transient positive effects of aggregate demand and oil market-specific demand shocks on high-yield corporate bond returns are significantly larger and more persistent than investment-grade corporate bond returns. The high sensitivity of high-yield corporate bonds to oil price shocks can be attributed to the fact that high-yield issuers are typically smaller or less financially stable companies, making them more vulnerable to economic fluctuations. Additionally, many of these companies operate in sectors directly impacted by oil price changes, such as energy and transportation. An unanticipated increase in global uncertainty leads to a more significant decline in high-yield corporate bond returns on impact, and the negative effects persist for an extended period. That is, an increased uncertainty makes investors become more risk-averse, inducing them to demand higher risk premiums and quickly shift from riskier assets to safer ones. This behavior further amplifies the decline in prices of high-yield corporate bonds, consequently resulting in a sharp reduction in their returns.

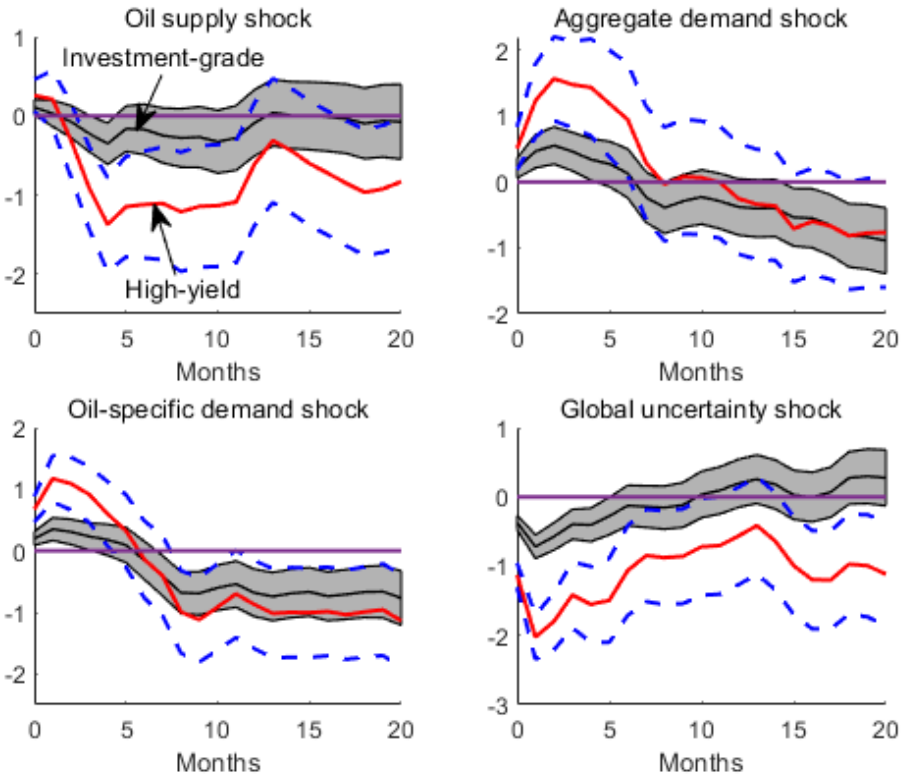

Figure 3. Cumulative impulse responses of investment-grade and high-yield corporate bond returns to one-standard deviation structural shocks

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5.4. Variance Decomposition

This subsection performs forecast error variance decomposition of the percent contribution of structural oil shocks and global uncertainty to the fluctuation in emerging market corporate bond returns. That is, it quantifies how important shocks to global crude oil markets and global uncertainty have been on average for emerging market corporate bond returns.

As reported Table 2, oil demand shocks seem to be more important than oil supply shocks in the short run. In the first month, aggregate demand and oil market-specific demand shocks account for approximately 4% and 5% of the variation in emerging market corporate bond returns, while oil supply shocks explain only about 1%. In particular, the short-term effect of global uncertainty is significantly large compared to structural oil shocks, accounting for more than 16% of corporate bond returns at the first month. As the forecasting horizon extends, the explanatory power of oil supply shocks gradually increases, while the contributions of aggregate demand and oil market-specific demand shocks fluctuate in a cyclical pattern. The contribution of global uncertainty continues to decrease over time. In the long-run, structural oil shocks and global uncertainty explain about 18% and 2% of the fluctuation in emerging market corporate bond returns, respectively. Especially, among structural oil shocks, oil demand shocks are still more relevant than oil supply shocks in the long term: Aggregate demand and oil market-specific demand shocks account for roughly 5% and 6%, respectively, and oil supply shocks explain about 7%.

To summarize, shocks to global crude oil markets play a crucial role in explaining variations in emerging market corporate bond returns. Global uncertainty shocks also have a significant impact on emerging market corporate bond returns, particularly in the short term, though their effects diminish substantially over the long term.

Table 2. Forecast error variance decomposition of emerging market corporate bond returns.

Horizon	Oil supply shock	Aggregate demand shock	Oil market-specific demand shock	Global uncertainty shock
1	0.014	0.039	0.052	0.163
6	0.027	0.085	0.033	0.123
12	0.034	0.042	0.046	0.064
24	0.034	0.070	0.078	0.038
36	0.079	0.073	0.056	0.029
48	0.088	0.057	0.053	0.023
60	0.074	0.047	0.064	0.018

5.5. Rolling Sample Analysis

Motivated by significant fluctuations in oil prices and global uncertainty during the sample periods, this subsection conducts a rolling sample analysis to explore their evolving impacts on emerging market corporate bond returns over time. This approach helps evaluate the magnitude and nature of changes in the decomposition of forecast error variance in emerging market corporate bond returns attributable to each of the structural oil shocks and global uncertainty. To do so, I estimate the structural VAR model in Equation (1) using 180-month rolling samples. The first sample covers data from 1999:01 to 2013:12, the second from 1999:02 to 2014:01, and the third from 1999:03 to 2014:02, with each subsequent sample adding one new month and dropping the first month from the previous sample.

Figure 4 presents the dynamic contributions of structural oil shocks and global uncertainty to variations of emerging market corporate bond returns at the 12-month-ahead forecast horizon over 2014:01–2023:12. Overall, consistent with the key findings of Kilian [29], the effects of structural oil price shocks vary markedly at different point in time. For example, the impact of oil supply shocks on corporate bond returns surged dramatically during the oil price war between the U.S. and

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OPEC members in 2014. Aggregate demand shocks also contributed significantly to the fluctuation in emerging corporate bond markets in the early 2018, with robust global economic growth and increased demand for oil, particularly from emerging markets. The contribution of oil market-specific demand shocks has declined over time, reaching a peak around mid-2015, largely driven by weakened market sentiment following the turbulence in the Chinese stock market. The impact of global uncertainty shocks shows a recurring pattern of rises and falls over time, with a notable surge in 2016, primarily driven by the Brexit referendum and the U.S. presidential election.

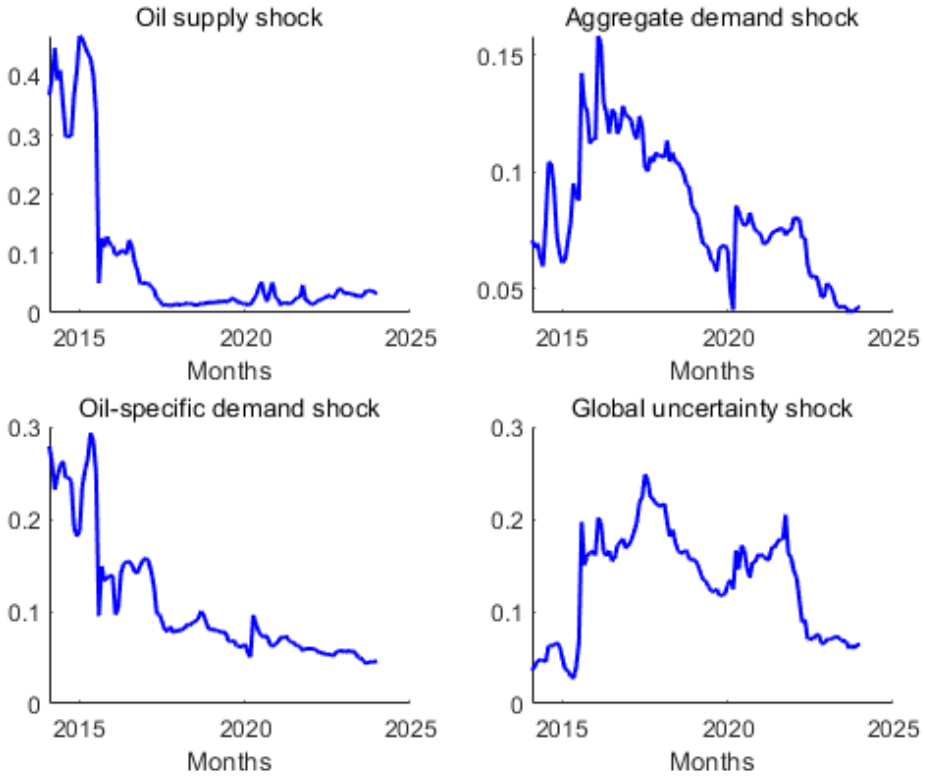

Figure 4. Dynamic contribution to variations in emerging corporate bond returns

6. Robustness Checks

This section investigates the sensitivity of the impulse responses of emerging market corporate bond returns, derived from the baseline model, to alternative specifications, identification assumptions, and data measures. First, I consider a shorter lag length of $p = 12$ in the VAR model from Equation (1). Second, I examine an alternative recursive ordering assumption, represented as $y_t = (gu_t, \Delta prod_t, rea_t, rpo_t, \Delta ret_t)$. Under this identification assumption, global uncertainty can contemporaneously affect the real price of oil, but not the other way around. Third, I use a different measure of global uncertainty, specifically the economic policy uncertainty (EPU) index developed by Baker et al. [5], which is also widely adopted in many empirical studies. Fourth, I use the Brent crude oil price as an alternative measure of oil price. Finally, I explore the robustness of the global real economic activity variable by substituting it with the OECD's measure of world industrial production. As illustrated in Figure 5, the overall main results are found to be largely robust with respect to reasonable changes in the baseline model.

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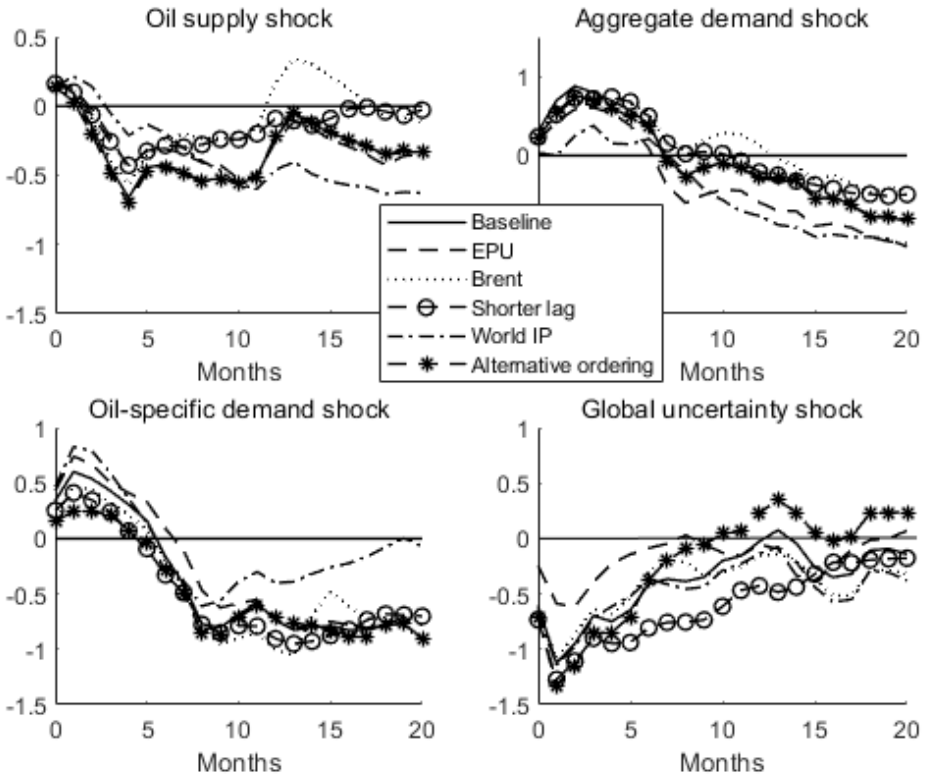

Figure 5. Sensitivity checks: Cumulative impulse responses of emerging corporate bond returns to one-standard deviation structural oil shocks

7. Conclusion

This study investigates the dynamic effects of structural oil shocks and global uncertainty on emerging market corporate bond returns within a structural VAR framework. I find that the reaction of emerging market corporate bond returns differs markedly depending on the underlying causes of oil price increases. For instance, oil supply shocks broadly have a negative impact on corporate bond returns, while oil demand shocks induce investors to search for higher yields in emerging markets, leading to a transient rise in returns. An unexpected increase in global uncertainty heightens investor risk aversion, causing a significant drop in emerging market corporate bond returns. In particular, high-yield corporate bonds response more sensitively to structural oil shocks and global uncertainty than investment-grade corporate bonds. Variance decomposition analysis reveals that in the short run, oil demand shocks are more relevant than oil supply shocks, explaining roughly 10% and 2% of variations in emerging market corporate bond returns, respectively. Especially, global uncertainty has a significant effect on corporate bond returns, accounting for more than 10% of their short-run variations. In the long run, structural oil shocks and global uncertainty contribute approximately 18% and 2%, respectively, to the fluctuations in emerging market corporate bond returns. Among structural oil shocks, oil demand shocks are still more important than oil supply shocks, explaining roughly 11% and 7%, respectively. These results have crucial policy implications not only for global investors, but also for government authorities in emerging market economies.

Future research could be conducted in several directions. First, instead of focusing on aggregate bond index, one could use more systematic and detailed microdata at the industry or firm level to rigorously examine the effects of oil price shocks and global uncertainty on emerging market corporate bond returns. Second, developing a dynamic general equilibrium model would be valuable for a deeper analysis of the transmission channels of oil price shocks and uncertainty. Finally, analyzing the

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role of oil price volatility or identifying other key factors influencing emerging bond markets would be a promising avenue for future research.

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