Global Spillovers from FED Hikes and a Strong Dollar: The Risk Channel

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We study the international transmission of U.S. monetary policy shocks and a strong U.S. dollar. We measure exogenous changes in the U.S. monetary policy using high frequency identification following Gertler and Karadi (2015). We follow Obstfeld and Zhou (2022) and IMF ESR 2022 and use the U.S. dollar appreciation against G10 currency as a global "dollar shock".

We focus on the effects of both of these shocks, U.S. monetary policy and the dollar, on heterogeneous risk premia in emerging markets (EMs) vs advanced economies (AEs), measured by deviations from uncovered interest parity (UIP). As shown by Kalemli-Özcan and Varela (2021) empirically and by Akinci, Kalemli-Özcan and Queralto (2022) in a global general equilibrium framework, UIP premia is a country-level time-varying risk premia priced by the international investors to hold EM assets. As shown by Albagli et al. (2024), different shocks lead international investors to price this risk premia differentially. Such time-varying deviations from the UIP, have been identified as crucial in understanding deteriorating macro conditions in emerging markets with risk-sensitive capital flows (Kalemli-

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Özcan (2019), Di Giovanni et al. (2022), Kalemli-Özcan and Unsal (2023)). The UIP deviations can also be important for advanced economies as they are linked to demand for U.S. treasuries (e.g Degasperi, Hong and Ricco (2023), Jiang, Krishnamurthy and Lustig (2021).[1]

To uncover the global impact of U.S. monetary policy and the dollar, we rely on local projections, as proposed by Jordà (2005). The local projection method provides a flexible framework and is easy to implement. Moreover, it is well documented that local projections have several advantages over VAR models (e.g. Kilian and Lütkepohl (2017); Plagborg-Møller and Wolf (2021)).

We find that, a tighter U.S. monetary policy lead to higher UIP premia in EMs, whereas such effects are not observed in AEs. Due to currency and credit risk, foreign investors may demand a risk premium to absorb local currency debt compared to risk-free foreign exchange debt. Hence another interpretation of the increase in the UIP premium is a temporary tightening of foreigners' portfolio constraints in the absorption of local currency debt which may force private deleveraging and growth slowdown, compounded by fire sales in local currency assets (see Basu et al. (2023) for theoretical underpinnings of this channel, where closing the UIP wedge improves welfare). Indeed, the U.S. monetary policy shock, which is financial in nature, brings an immediate depreciation and an expected appreciation of EMs' currencies, along with a higher interest rate differential between EMs and the U.S., as UIP risk premium is priced-in the interest rate differentials (as shown by Kalemli-Özcan and Varela (2021).)

In contrast, in AEs, the UIP premia does not change, as expected appreciation and lower interest rate differentials cancel each other out. So the important difference between EMs and AEs is the opposite direction movement in the interest rate differentials as a response to FED hikes. The reasoning for these results comes from Kalemli-Özcan (2019), who first showed that short-term government bond spreads increasing in emerging markets and decreasing in

[1] See also quantitative models, where exogenous UIP deviations take center stage, such as Dedola, Rivolta and Stracca (2017), Akinci and Queralto (2023), Gourinchas (2018) for contractionary effects of the U.S. monetary policy on real outcomes of other countries.

advanced countries, as a result of tighter U.S. monetary policy. As in Kalemli-Özcan (2019); De Leo, Gopinath and Kalemli-Özcan (2022), the increase in interest rate differentials, here, is also a result of higher risk premia in EMs, since De Leo, Gopinath and Kalemli-Özcan (2022) shows that EMs do not increase their own monetary policy rates as a response to FED hikes as EM monetary policy is counter-cyclical.[2] Panels A and C of Figure 1 document these effects.

The effects of the dollar shock are strikingly different, as shown in Panels B and D of Figure 1. Now, UIP premium is decreasing in EMs and increasing in AEs, and the movements are much smaller compared to the U.S. monetary policy shock. Interest rate differentials are decreasing in both set of countries, but there is a persistent expected depreciation in EMs, indicating that the dollar shock picks up real or fundamental shocks, such as supply shocks, which require macroeconomic adjustment in the form of more depreciated EM currencies in the medium term rather than temporary downturns associated with financial shocks. As expected, therefore, the dollar shock is not priced-in as risk premia in EMs, unlike the U.S. monetary policy shock. This distinction is key for policymakers because in EMs with financial frictions such as occasionally binding borrowing constraints, the salience of the UIP premium after the U.S. monetary policy shock may imply the need to use other tools such as FX interventions, as opposed to the dollar shock.[3]

Overall, our analysis underscores the need for caution in interpreting the impact of dollar shocks. Unlike U.S. monetary policy shocks leading to higher risk premia in EMs, the dollar shock may not be financial and could be capturing a real shock which requires external

[2]Degasperi, Hong and Ricco (2023) show empirically how risk premia and commodity channels interact in the transmission of U.S. monetary policy. In particular, risk premium underlines the financial channel and is key to explain the real effects while the commodity channel can explain inflation dynamics. When U.S. monetary policy tightens, global demand contracts, implying higher risk premia and inflation, whereas with a direct shock to commodity prices, such as an appreciation of dollar, inflation can be higher.

[3]See Basu et al. (2023) for a conceptual framework that underlines the types of shocks matter for the optimal policy response by the emerging market economies. The IMF's Integrated Policy Framework and its Institutional View on The Liberalization and Management of Capital Flows incorporate findings from this conceptual model.

adjustment and no policy intervention.

1 Data

We work with a quarterly unbalanced panel with 59 countries from 1990q1 to 2019q4; 42 are EMs. We use 12 month UIP deviations, measured in logs as follows: $(i_t - i_t^{US}) - (s^e_{t+12} - s_t)$, i.e. the difference between the log interest rate differentials and the gap between log expected and spot nominal exchange rate. We use the twelve-month treasury rates from Bloomberg, twelve-month expectations of the exchange rate from Consensus Economics and spot nominal exchange rates from IFS. Our analysis also includes real GDP from the World Economic Outlook. We drop hard pegs and dual market exchange rate countries (Ilzetzki, Reinhart and Rogoff (2022) classifications 1 and 6). Thus, we always work with an unbalanced panel composed of managed and pure floats at the time of their inclusion.

We use two shocks. The first one is the Nominal Major Currencies U.S. dollar index from FRED, which we refer to as the dollar shock. It is a trade-weighted dollar index against a basket of G10 currencies.[4] We normalize it to a 10% depreciation shock as in Obstfeld and Zhou (2022).

The second is an exogenous measure for the U.S. monetary policy shocks. We rely on Gertler and Karadi (2015) monetary policy surprises. These surprises are obtained from high frequency changes in interest rates around central bank policy announcements. The key identifying assumption is that monetary policy is predetermined over the event window and hence not affected by financial market reaction. In particular, we use Gertler and Karadi (2015) averaged monthly weighted raw surprises in three-month Fed Fund Futures (FF4) to instrument the twelve-month U.S. treasury rate, which we obtain from Bloomberg.[5] We

[4] The currencies included in the Index are the euro, Japanese yen, Canadian dollar, UK pound sterling, Swiss franc, Australian dollar, and Swedish krona.

[5] The monetary policy shocks from Gertler and Karadi (2015) pass comfortably the weak instrument tests, and hence they are relevant in capturing exogenous changes in the U.S. monetary policy. We can provide test

provide additional details about the data in the Appendix.

2 Empirical Analysis

We follow Jordà (2005); Stock and Watson (2018) to compute the dynamic effects of these shocks on twelve-month UIP deviations (in logs) for country c in period $t+h$. We rely on two baseline specifications. Specification (1) captures the dynamic effects of U.S. monetary policy shocks, whereas specification (2) captures the dynamic effect of the dollar shock following Obstfeld and Zhou (2022). Controls ($x_{c,t-i}$) include four lags of the dependent variable, GDP growth and inflation differentials with respect the U.S. These controls are consistent with the literature on the international transmission of U.S. monetary policy shocks, as they control for the trade and financial channels of international transmission.

$$y_{c,t+h} = \alpha_c + \beta_h \hat{i}_t^{US} + \sum_{i=1}^{i=4} \eta_i x_{c,t-i} + \varepsilon_{c,t+h} \tag{1}$$

$$y_{c,t+h} = \alpha_c + \beta_h Dollar_t + \sum_{i}^{4} \eta_i x_{c,t-i} + \varepsilon_{c,t+h} \tag{2}$$

As the dependent variable ($y_{c,t+h}$) we include UIP deviations and its components, the interest rate differential and the exchange rate adjustment, all in logs. We summarize results in Figures 2 and 3 below for the components and Figure 1 shows the response of the UIP premia.

As summarized in the introduction, we find that the two shocks yield opposite results on risk premia. The U.S. monetary shock, leads to an increase in UIP risk premia in EMs and a decrease in AEs. The dollar shock, however, does not lead to an increase in UIP premia in EMs but it does in AEs, despite a much smaller magnitude.

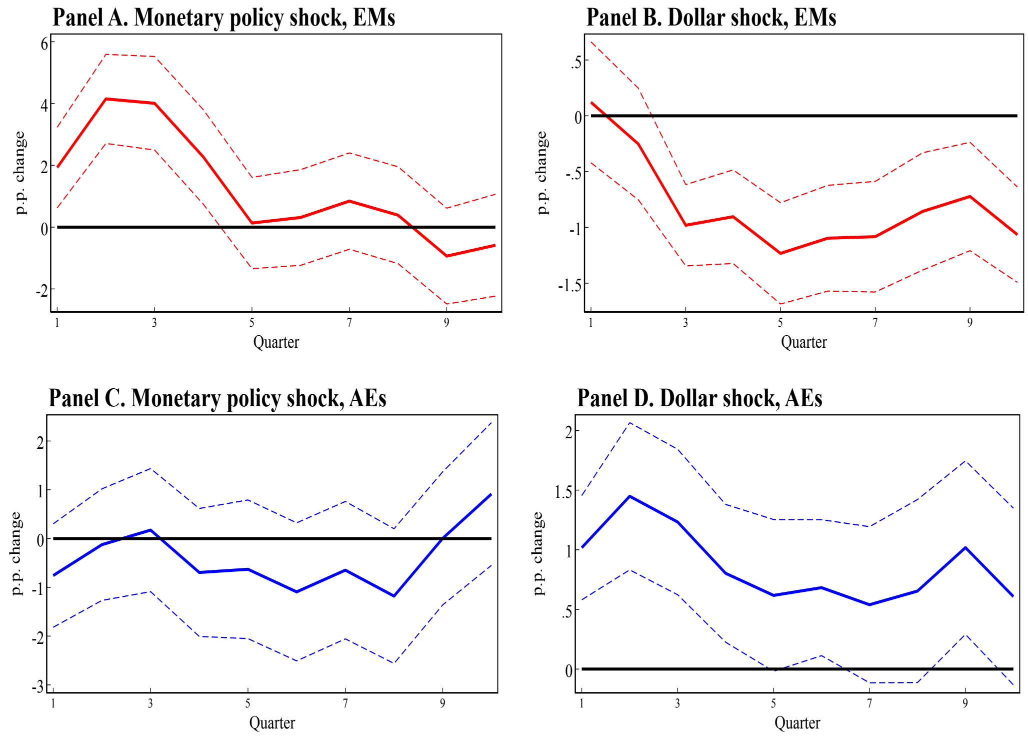
results upon request.

To understand why this is the case, we look at the components of UIP, namely the interest rate differential and the exchange rate adjustment. For the U.S. monetary policy shock (first specification), we find that for EMs the interest rate differentials increases more than expected changes in exchange rate. In the case of the dollar shock, however, we show there is a persistent expected depreciation in spite of the actual depreciation at the time of the shock, indicating that the dollar appreciation captures more fundamental shocks which requires macroeconomic adjustment in the medium term. Notably, the dollar shock does not create a higher interest rate differentials, as this is not a financial shock and hence no change in the risk premium.

In AEs both shocks work as they should, the exchange rate depreciates when the dollar appreciates (or when the U.S. hikes) but then there is an expected appreciation.

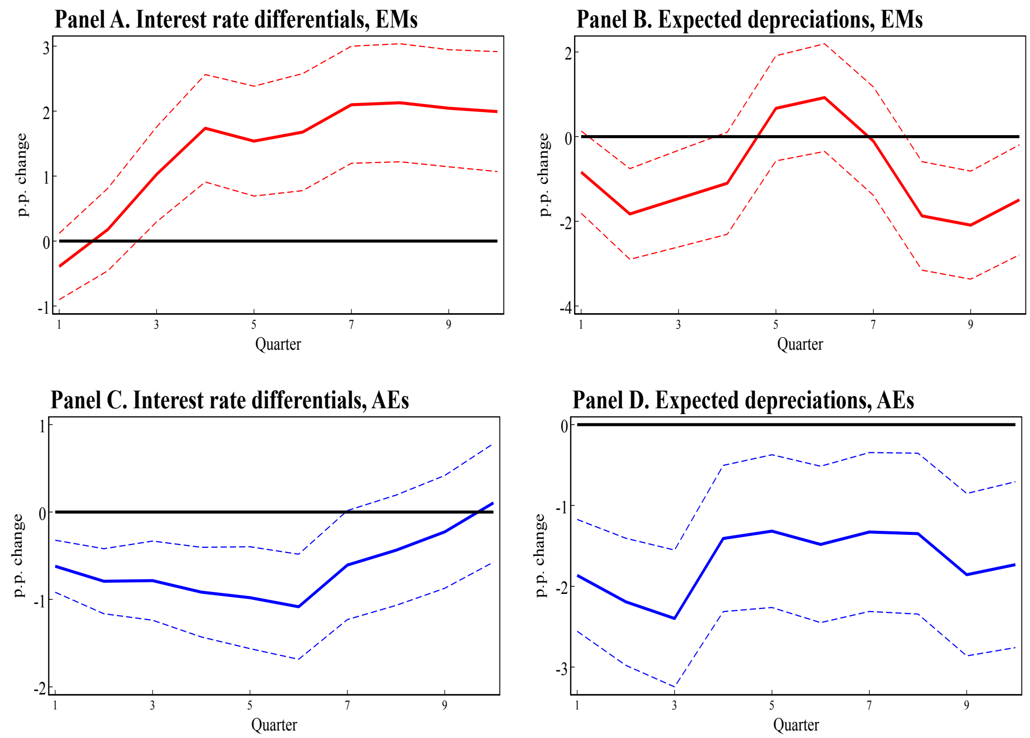
Results are robust when adding an additional set of global controls as in Obstfeld and Zhou (2022). In particular, in specification (1) we add the contemporaneous and four lags of the oil price index, and median country trade balance, while in specification (2) we also include the twelve-month U.S. Treasury rate. We show these robustness results in the Appendix.

Figure 1: The UIP Premia: Response to U.S. Monetary Policy and Dollar Shocks



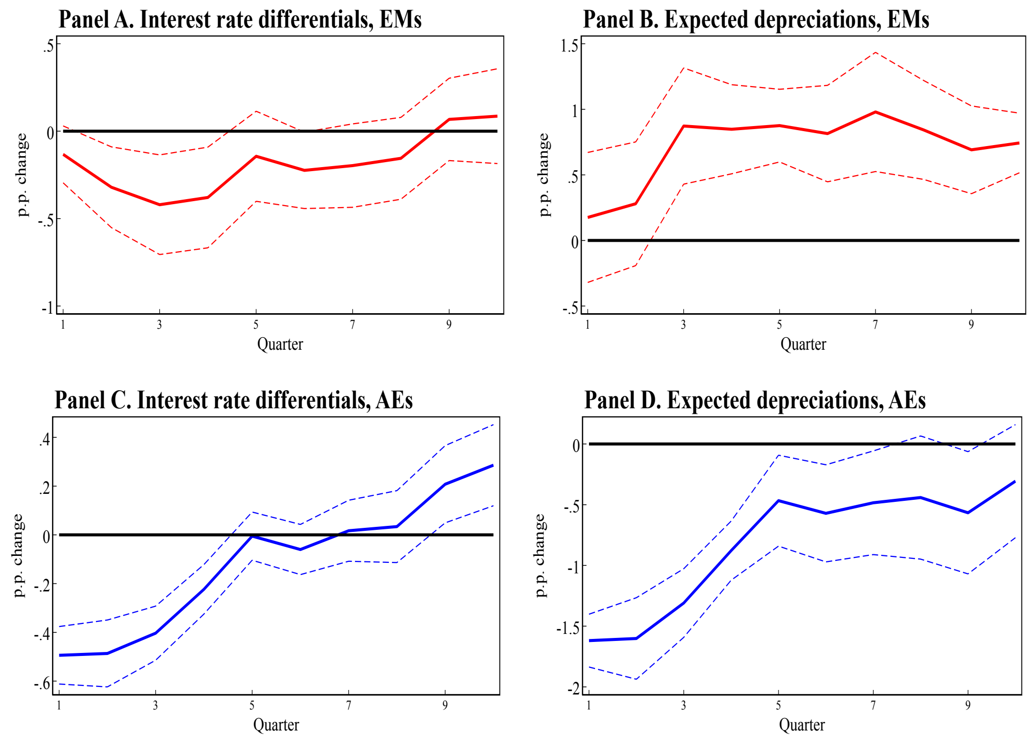
Notes: Figure shows the impulse response function of UIP premia to the Monetary policy shock and the Dollar shock, following specifications 1 and 2 respectively. Top row is for EMs, bottom row is for AEs.

Figure 2: Components of the UIP Premia: Response to U.S. Monetary Policy Shocks



Notes: Figure shows the impulse response function of UIP components to the Monetary policy shock, following specifications 1. Top row is for EMs, bottom row is for AEs.

Figure 3: Components of the UIP Premia: Response to Dollar Shocks



Notes: Figure shows the impulse response function of UIP components to the Dollar shock, following specifications 2. Top row is for EMs, bottom row is for AEs.

3 Conclusion and Next Steps

We find that, unlike FED hikes, an appreciation of the U.S. dollar (the dollar shock) does not lead to higher risk premia in EMs, even though their currencies depreciate vis-a-vis the dollar. Our interpretation is that U.S. monetary policy shocks are directly linked to global financial conditions (e.g. Rey (2013)), whereas, a strong dollar may be capturing more fundamental, real (instead of financial) global shocks which requires external adjustment in EMs. Future work should look into underlying determinants for the differential effects of these shocks on the UIP risk premia, which is central to GDP fluctuations in EMs during these events.

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A Appendix

A.1 Data

Our data is of quarter frequency, and covers the period 1990q1-2019q4. In our analysis, we drop hard pegs and dual markets exchange rate countries, i.e. classifications 1 and 6 from Ilzetzki, Reinhart and Rogoff (2022). We work with an unbalanced panel composed of managed and pure floats. We have a total of 59 countries in the sample which we use to run the EM vs AE exercises. We list the countries in Table A1.

Below we describe the variables we use and we summarize data sources in Table A2. Descriptive statistics are reported in Table A3.

- 12m UIP deviation: calculated as the difference between log interest rate differentials and the gap between log expected and spot exchange rate, all at the same horizon. Log interest rate differentials are the short-term government bond or policy rate differentials vis-‘a-vis the United States. The log expected exchange rate is the 12-month ahead expected exchange rate as of month t and the log exchange rate is the spot rate (period average), both nominal and in terms of local currency per U.S. dollar.
- GDP: real seasonally adjusted
- CPI: period average
- Dollar shock: trade-weighted dollar index against a basket of G10 currencies from FRED (ticker DTWEXBGS). We use end of quarter observations and weights by merchandise trade weights.
- 12 month US treasury rate
- Gertler and Karadi (2015) shock: averaged monthly weighted raw surprises in 3-month Fed Fund Futures (FF4) from Gertler and Karadi (2015)

Table A1: Country Sample

Advanced Economies	Norway	Chile	Korea	Russia
Australia	Spain	China	Latvia	Serbia
Canada	Sweden	Colombia	Malaysia	Singapore
Denmark	Switzerland	Costa Rica	Malta	Slovak Republic
Euro Area	United Kingdom	Croatia	Mauritius	South Africa
Finland	**Emerging Economies**	Czech Republic	Mexico	Thailand
Germany	Albania	Ecuador	Morocco	Tunisia
Iceland	Argentina	Egypt	Pakistan	Turkey
Ireland	Armenia	Guatemala	Paraguay	Uruguay
Israel	Azerbaijan	Hungary	Peru	
Italy	Belarus	India	Philippines	
Japan	Brazil	Indonesia	Poland	
New Zealand	Bulgaria	Kazakhstan	Romania	

Notes: We follow the IMF 2000 World Economic Outlook country groups classification. Because we measure U.S. monetary policy spillovers, we drop the U.S.

Table A2: Data sources

Variable	Source
GDP	WEO
CPI	IFS
12m UIP deviation	Bloomberg, IFS and Consensus Forecast
US 12m treasury bill	Bloomberg
Gertler and Karadi (2015) shock	Updated version of Gertler and Karadi (2015)
Dollar shock	FRED

Table A3: Descriptive Statistics (1990q1-2019q4)

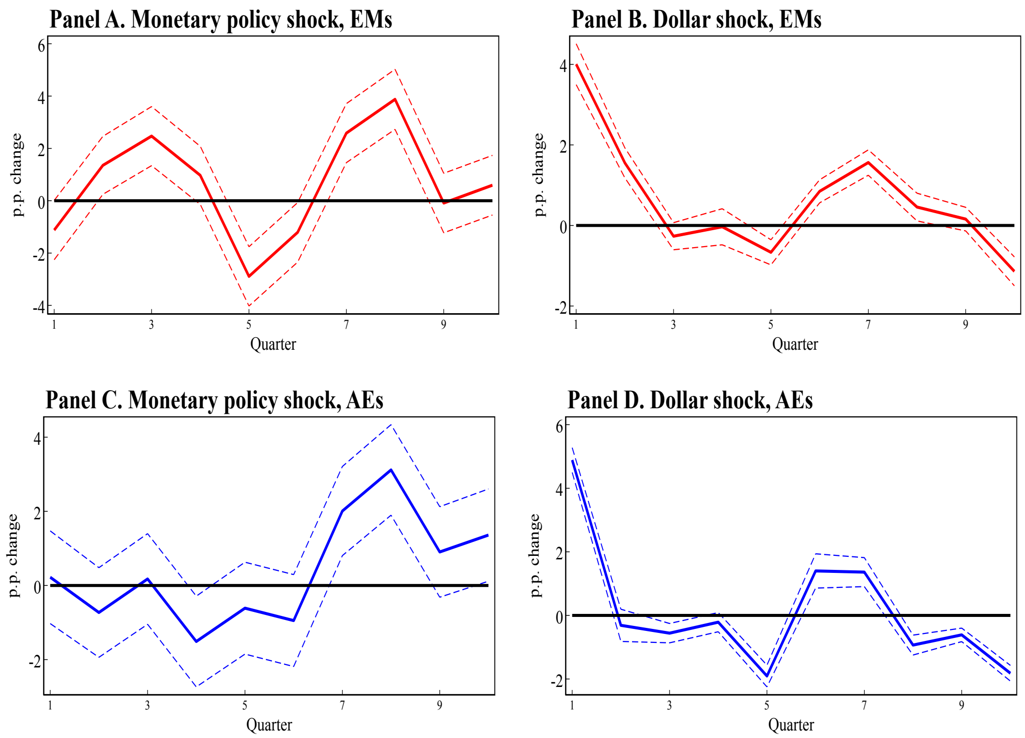
	mean	sd	min	max
GDP growth differential with US	0.003	0.022	-0.154	0.673
Inflation differential with US	0.013	0.026	-0.026	0.114
12m UIP deviation	0.023	0.042	-0.114	0.158
12m US treasury rate	0.032	0.023	0.001	0.083
GK(15) shock	-0.011	0.030	-0.179	0.056
Dollar shock	-0.005	0.334	-0.850	0.868

Notes: This table summarizes the descriptive statistics of the variables used in the empirical analysis for the period 1990q1-2019q4. Variables are as explained above.

A.2 Additional Results

We also study the dynamics effects on nominal exchange rate. We show results in Figure A1.

Figure A1: IRFs for Nominal Exchange rates for U.S. Monetary Policy and Dollar Shocks



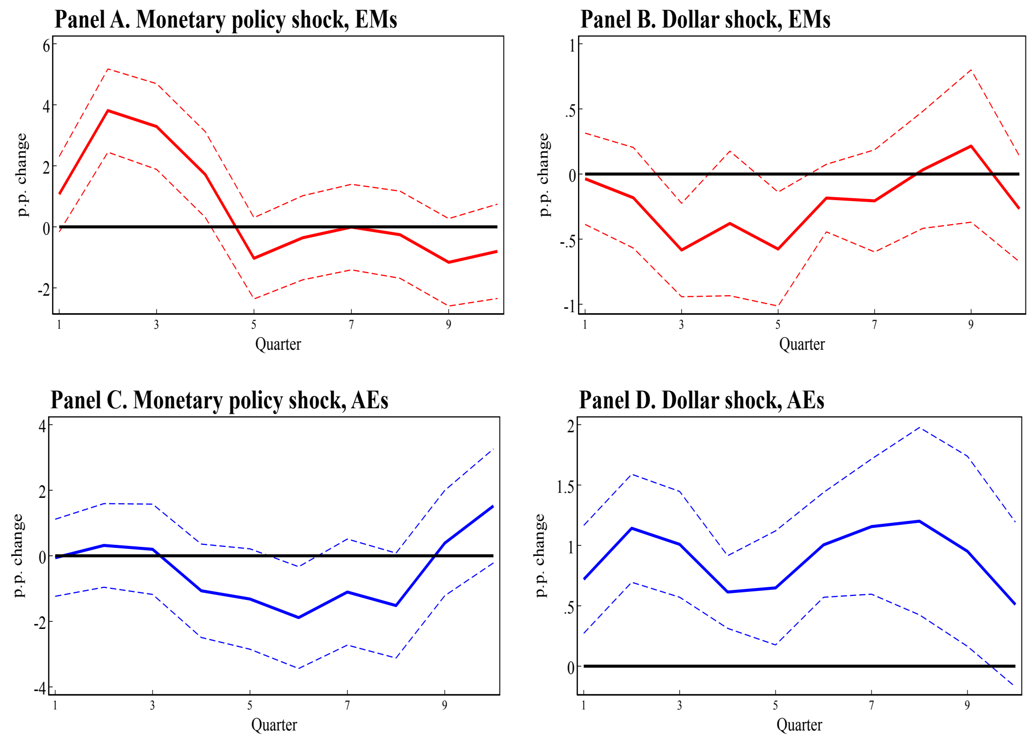
Notes: Figure shows the impulse response function of Exchange rate to the Monetary policy shock and the Dollar shock, following specifications 1 and 2 respectively. Dependent variable is defined as the growth rate of nominal exchange rate (quarter to quarter). Top row is for Emerging Economies, bottom row is for Advanced Economies.

A.3 Robustness

We include other global controls such as the oil price index from IMF, and the median of the trade balance within each group.[6].

[6] In particular we used POILAPSP index from IMF.

Figure A2: The UIP Premia: Response to U.S. Monetary Policy and Dollar Shocks w/Global Controls



Notes: Figure shows the impulse response function of UIP premia to the Monetary policy shock and the Dollar shock, following specifications 1 and 2 respectively. We include as controls the contemporaneous and four lags of: oil price index (logs) and the median trade balance within each group of countries. Top row is for EMs, bottom row is for AEs.