Global Footprint of US Fiscal Policy*

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ABSTRACT

The US fiscal condition is the most important fiscal determinant of global risky asset prices. Financial markets around the world pay closer attention to the US fiscal condition than to i) the local fiscal condition or ii) foreign fiscal conditions outside the US. To explain these striking results, I advance a novel mechanism that emphasises the special US role as the global innovation leader. This empowers the US fiscal policy with a large international transmission across the global innovation network, enabling it to influence i) global growth, ii) the global fiscal cycle, iii) global policy uncertainty and consequently iv) global risk-premia. The model qualitatively and quantitatively accounts for my empirical findings with the key testable predictions verified in the data.

Keywords: International Finance, US Fiscal Policy, Global Financial Cycle
JEL Codes: E0, F3, F4, G1

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1 Introduction

A growing literature in international macro-finance documents the existence of a global financial cycle (GFC): risky asset prices exhibit significant degrees of international comovement (Miranda-Agrippino and Rey (2020)). At the heart of the GFC are common variations in discount rates, not cash flows: equity return premiums move together whereas dividend growths do not (Jordá, Schularick, and Ward (2018)). Understanding the economic origins behind this global factor structure in risky asset prices is not only an important asset pricing question, but also a first order concern for policy-makers.

The policy-relevance of the GFC is easy to understand: it constitutes an external source of financial and macroeconomic volatility for countries with open capital accounts. During periods when global financial conditions are good, global risk-appetite is high and global risk premia is low, these countries experience capital inflows, buildups of credit and leverage, ultimately resulting in macroeconomic expansions. Conversely these countries suffer capital outflows, tightening credit and leverage conditions and consequently economic contractions during periods when global financial conditions are poor, global risk-appetite is low and global risk premia is high.

Conventional wisdom interprets the GFC as a purely ***monetary*** phenomenon: Miranda-Agrippino and Rey (2020) argue that US monetary policy shocks are the key economic driver behind this global factor structure in risky asset prices. In this paper I push back on this traditional view and demonstrate that the GFC is as much a ***fiscal*** phenomenon as it is a monetary one. Like US monetary policy, US fiscal policy has a global footprint. I highlight this important finding in a variety of ways.

Firstly, I use the US primary surplus-debt ratio as a proxy for the US fiscal condition. This choice varies from the existing literature: prior studies linking fiscal policy and asset prices have used the US debt-GDP ratio as the relevant proxy (Liu (2023); Croce, Nguyen, Raymond, and Schmid (2019)). The reason for my choice is simple: the US government debt to GDP ratio is an imperfect proxy for the US fiscal condition. Given the special US role as global safe asset provider, the supply of US government debt increases not only to finance US deficits but also to satiate increased foreign demand for dollar safe assets (Jiang, Krishnamurthy, and Lustig (2023)). Thus

the supply of US government debt can fluctuate wildly even during periods when the US fiscal condition has been relatively stable.

Conversely, the US surplus-debt ratio has a more direct link with the US fiscal condition because the US primary surplus is mechanically included in the measure. Moreover it has a natural economic interpretation: it captures the change in the net fraction of debt that the US government repays each year. Thus this variable is an ideal measure of changing US fiscal capacity: a decline (increase) in this value constitutes a deterioration (improvement) in the US ability to service its own debt. It is for this reason that I focus on the US surplus-debt ratio as the main fiscal proxy.

Using annualized (four quarter) changes in this measure, I show that deteriorations in the US fiscal condition i) coincide with depressed global risky asset valuations and ii) predict higher future global equity returns at short, medium and long-run horizons. These results are incredibly robust along many dimensions. Firstly, they are not driven by US monetary policy: using conventional high frequency approaches that investigate yield changes around central bank announcements (Gertler and Karadi (2015); Gürkaynak, Sack, and Swanson (2005); Jarocinski and Karadi (2020)), I identify US and foreign monetary policy shocks. Controlling for these monetary policy shocks does not attenuate my results in any meaningful way. Furthermore a Campbell and Shiller (1988) decomposition of the US fiscal transmission into global risky asset prices suggests that the risk-free rate component plays a negligible role, contributing close to zero percent of the variance decomposition.

Secondly they are not spanned by i) the global business cycle, ii) the US business cycle or iii) any other countries' business cycle. Orthogonalising the US surplus-debt ratio with respect to these macroeconomic variables does not dampen the tight connection between the US fiscal condition and global risky asset prices. Thirdly financial variables that are well known proxies for discount rates or latent global risk premia do not fully account for my results either.

Finally my results are not driven by alternative fiscal variables: in fact the US fiscal condition drives out i) the local fiscal condition and ii) the global fiscal cycle, a variable that captures foreign fiscal conditions outside the US, as explanatory variables for the local country's asset valuation. This suggests something rather striking: the US fiscal condition is the most important ***fiscal*** *determinant of global risky asset prices.* Financial markets around the world pay closer attention to the US fiscal condition than to i) the local fiscal condition or ii) foreign fiscal conditions outside the US. Thus

the global footprint of US fiscal policy is even more powerful than that of US monetary policy: financial markets still pay attention to the actions of the local central bank, even after controlling for the actions of the US federal reserve (Bekaert, Hoerova, and Xu (2024)).

Moving beyond the US surplus-debt ratio, I also confirm my results using identified US fiscal shocks. To extract these shock series, I follow conventional econometric techniques pioneered by the empirical macro-finance literature. Firstly, I identify orthogonalised US surplus shocks motivated by the approach of Ramey and Zubairy (2018). Secondly, I use US tax and spending shock series extracted using a narrative approach (Romer and Romer (2010); Ramey (2011)). Finally I investigate high frequency global asset pricing responses around US political events such as i) US presidential state of the union (SOTU) addresses and ii) US presidential debates. In each case, my results confirm the tight link between deteriorations in the US fiscal condition and i) depressed global risky asset prices and ii) higher global risk premia.

Given these results, a natural question arises: what is the underlying economic mechanism driving my results? Standard fiscal theory points to the role of expected global inflation. In the presence of nominal rigidities, increased US fiscal deficits are financed through a combination of i) a higher future path of distortionary US taxes or ii) higher expected future inflation (Leeper, Leith, and Liu (2021)). This can trigger contractionary global monetary policy responses which can distort global growth and increase global risk premia (Kekre and Lenel (2024)). Of course, an important implication of this mechanism is that there should be a tight empirical link between the US fiscal condition and i) lower future global growth and ii) higher future global inflation. Using a local projection approach, I demonstrate that this resolution is problematic. Whilst a US fiscal expansion distorts future global growth, it has a negligible impact on future global inflation.

Another possible resolution revolves around the special US role as the global safe asset provider (Jiang, Krishnamurthy, and Lustig (2023); Jiang (2021)). According to this view, positive shocks to US government spending can i) appreciate the dollar exchange rate and consequently ii) tighten the constraints of global intermediaries due to their exposure to dollar denominated liabilities (Bruno and Shin (2015)). Since these intermediaries are marginal in pricing global risky assets, this story qualitatively accounts for my empirical evidence linking the US fiscal condition with higher global risk premia. In addition, intermediaries respond to tightening constraints by increasing their

demand for dollar safe assets which have greater collateral value because of the dollar's role as the global safe asset of choice.

A direct test of this safe asset resolution is therefore that a tight empirical link exists between the US fiscal condition and i) dollar convenience yields, ii) intermediary risk bearing capacity and iii) the dollar risk premium. I provide suggestive evidence against this implication: in the data the US surplus-debt ratio and i) US intermediary portfolio returns extracted from He, Kelly, and Manela (2017), a proxy for US intermediary risk bearing capacity, and ii) the US treasury premium, a proxy for the convenience yields that foreigners attach to dollar safe assets (Du, Im, and Schreger (2018)), are largely uncorrelated in the data.

Given these results, I propose an alternative mechanism that emphasises another source of US specialness: her special role as the *global innovation leader*. When the US innovates, the rest of the world (ROW) follows by adopting her technology as an intermediate input into their own innovation and production. Conversely when a non-US country innovates, the outside world doesn't adopt her innovation to the same extent. This US centrality in global innovation enables the US fiscal policy to exert unique influence over i) global innovation and growth, ii) the global fiscal cycle, iii) global policy uncertainty and consequently iv) global risk premia.

This innovation mechanism can be empirically motivated by the fact that large US multinational firms (MNCs) and their foreign subsidiaries play a central role in global value chains and technology diffusion, especially in industries such as technology, pharmaceuticals and advanced manufacturing. A large share of global trade consists of intra-firm trade where US MNCs develop technologies domestically and transfer them to their foreign affiliates (Antras and Helpman (2004), Branstetter, Fisman, and Foley (2006)). Thus US fiscal policies can impact foreign growth through its influence over the rate at which new technologies developed by US MNCs are transferred abroad to their foreign affiliates via international trade (Dharmapala, Foley, and Forbes (2011)).

I formalise this mechanism by building a multi-country real business cycle (RBC) framework with three distinguishing features. Firstly fiscal policy is driven by exogenous fiscal rules and the intertemporal government budget constraint (IGBC) and is remitted back to the households. Secondly endogenous growth is driven by local R&D (Romer (1990)) and foreign technology adoption (Comin and Gertler (2006)). Finally, households have Epstein and Zin (1991) (EZ) preferences.

The model qualitatively and quantitatively accounts for my main empirical findings.

To communicate the economics behind the proposed mechanism, consider a positive US government spending shock. Assume that this fiscal expansion is financed through higher US government debt. Further assume that there is an intertemporal government budget constraint (IGBC) which requires that this debt eventually be repaid through a higher future path of US taxes.

Since a higher future path of US taxes depresses the present value of future profits in the local innovation sector, the fiscal expansion depresses local incentives to innovate. But it also has distortionary real impacts abroad because US intermediate goods are a critical input for the production of foreign intermediate goods. Thus depressed US innovation and growth also results in depressed innovation and growth overseas.

Confronted by this depressed global growth environment, foreign governments then seek to insure their households by following the US in adopting expansionary fiscal policies. Since these governments also smooth the local tax burden over time by accumulating more government debt that must eventually be repaid, these global fiscal deteriorations raise uncertainty over future global tax policy. This rise in global policy uncertainty then maps directly into higher global risk premia.

This results in lower global risky asset prices today and higher future global returns moving forward. Thus the model reproduces the unique mapping between US fiscal deteriorations and i) depressed global risky asset prices and ii) higher global risk premia implied by my empirical evidence. In addition to these general predictability patterns, this proposed mechanism can also explain why local financial markets pay more attention to the US fiscal stance than the local fiscal stance. Since the US fiscal policy is a primitive driver of global growth, US fiscal shocks constitute a large part of the underlying volatility in local fiscal conditions. Thus local fiscal policy drives local asset valuations in large part through the US fiscal policy in my model.

Notice that the model has several rich empirical implications. At it's core are the joint dynamics between the US fiscal condition, foreign innovation and growth, foreign fiscal conditions, foreign policy uncertainty and foreign risk premia. In particular, ***deteriorations*** in the US fiscal condition predict i) ***lower*** future global innovation and growth, ii) ***deteriorating*** fiscal conditions outside the US, iii) ***higher*** global policy uncertainty and consequently iv) ***higher*** global risk premia and future global equity returns. Each of these predictions are verified in the data.

Taken together, the model sheds new light on the sources of US specialness driving the international transmission of US policy shocks. Whilst the traditional focus has been on ***financial*** channels that emphasise the central role of the dollar as the global reserve currency (Jiang, 2021), I uncover a ***real*** channel based on the US leadership role in global innovation. Thus the sources of US specialness driving global financial markets are quite multi-faceted and extends beyond the dollar's global reserve currency status emphasised in previous literature.

Related Literature: This paper connects to a large literature documenting the existence of a global financial cycle (GFC) in equity prices. In a seminal contribution Miranda-Agrippino and Rey (2020) showed that the global factor structure driving equity returns is low dimensional: there is a single global factor driving equity prices that is closely related to global market uncertainty and global risk aversion. To explain the GFC, recent literature emphasises the role of the US FED: Brusa, Savor, and Wilson (2019) and Miranda-Agrippino, Nenova, and Rey (2020) document a large international transmission of US monetary policy shocks into global risky asset prices, a result that is unique to the US. My paper contributes to this literature by suggesting that the US fiscal policy also plays a role in driving the GFC.

My paper is also intimately connected to a vast asset pricing literature that explores the role of i) EZ preferences and ii) correlated growth prospects in an international context. This literature uses a multi-country framework with i) EZ preferences, ii) correlated growth prospects, or long-run risks, and iii) international trade to resolve many international finance puzzles such as the FX volatility puzzle (Colacito and Croce (2011); Bansal and Shaliastovich (2013)), Backus-Smith and UIP puzzles (Colacito and Croce (2013)), carry trade anomaly (Colacito, Croce, Gavazzoni, and Ready (2018)) and the volatility disconnect puzzle (Colacito, Croce, Liu, and Shaliastovich (2022)). This literature largely focuses on endowment economy settings: they exogenously impose a correlation structure in long-run risks: my paper unmasks this dark matter. My paper connects these correlated growth prospects to the US fiscal policy, an insight new to the literature.

My work is also connected to a growing literature studying the implications of network structures in global production for international asset pricing. Richmond (2019) links the cross-section of global currency risk to trade network centrality, a measure of a country's position in the global trade

network. In more related work, Jiang and Richmond (2023) decompose international co-movements in macro quantities and asset prices into a component capturing primitive TFP correlations and a measure of network closeness. They find that network closeness drives international asset pricing factor structures: in other words, the international transmission of country specific shocks across the global production network drives international co-movements in asset prices. My paper digs deeper into this result, demonstrating both empirically and theoretically that it is the international transmission of US fiscal shocks that ultimately matters.

My work also connects to a growing literature studying the link between fiscal policy and risk premia at the country level. It should be noted however this literature largely focuses on a different variable: a different fiscal variable: the US debt to GDP ratio (Liu (2023); Croce, Nguyen, Raymond, and Schmid (2019)). Liu (2023) documents strong predictive power of country level Debt-GDP ratios for future equity returns. This literature has also explored the link between the US debt-GDP ratio and the cross-section of stock returns (Belo, Gala, and Li (2013)), the cost of capital for R&D firms (Croce, Nguyen, Raymond, and Schmid (2019)), the term structure of interest rates (Bretscher, Hsu, and Tamoni (2023)).

There is also a related theoretical literature that studies the interaction between debt-GDP ratios, endogenous growth and risk premia. This framework study fiscal policy transmission inside a production economy framework that features Romer (1990) style endogenous growth and EZ preferences such as Kung and Schmid (2015). Croce, Nguyen, Raymond, and Schmid (2019) use a variation of this framework to explain the link between government debt, innovation and the cross-section of equity risk premia whereas Croce, Nguyen, and Raymond (2021) use it to explore the welfare implications of certain fiscal policy rules.

Conversely, my paper uses the US primary surplus-debt ratio as the main fiscal proxy. Furthermore my paper differs from these literatures by emphasising the international dimension of US fiscal policy transmission into risk premia across different countries. In this respect my paper is most similar to Jiang (2021): my evidence complements his findings tying the US fiscal condition to the dollar risk premium. However the theoretical mechanism is fundamentally different: Jiang (2021) emphasises the special role of the dollar as the global reserve currency. I advance a novel mechanism that emphasises the special US role as the global innovation leader.

2 Empirical Findings

Overview: Here I present my main stylised facts connecting deteriorations in the US fiscal condition to i) depressed global risky asset prices and ii) higher future global equity returns. These facts are confirmed using a variety of methods. Firstly, I use the US primary surplus-debt ratio as a proxy for the US fiscal condition. Secondly, I use the exogenous US spending and tax shocks from Romer and Romer (2010) and Ramey (2011) which are identified using a narrative approach. Finally, I adopt high-frequency identification approaches to study global asset price responses around US political events where news about future US fiscal policy is revealed.

2.1 Data

Overview: Here I briefly describe the financial and macroeconomic data I use for the empirical analysis. The raw version of each dataset covers a large panel of countries. However my main panel analysis will focus on the developed world. This involves the following 14 countries: Australia, Belgium, Canada, Denmark, France, Italy, Germany, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom and the United States. I do this to focus my analysis on fiscal risks, rather than default risks.[1]

Fiscal: To construct my fiscal proxy: the US primary surplus-debt ratio, I make use of quarterly government surplus and debt data from Oxford Economics (Datastream). The sample period is from 1980Q1-2018Q4 and covers the 14 developed countries mentioned previously. In addition to the fiscal proxy, I make use of fiscal shock series that are identified using a narrative approach. Romer and Romer (2010) uses this approach to identify exogenous shocks to the present value of future US taxes. On the spending side, Ramey (2011) similarly extract exogenous US military news shocks. identified using a narrative approach.

Financial Data: Raw dividend yields and total return market index data comes from the country

[1] In section A, I demonstrate my results are robust to the inclusion of EME countries where default risk is an issue.

level MSCI total return indices available via Thomson Datastream. Index data is denominated in local currency units and covers the 13 developed countries mentioned previously for the sample period: 1980Q1-2018Q4. To construct the monetary policy control variables in the analyses that follow, I also make use of all the publicly available data on the term structure of interest rates using global financial data (GFD) for the developed countries in the sample.

Macroeconomic Data: I obtain country level data for consumption, industrial production and GDP from the OECD at the quarterly frequency. Following (Colacito, Croce, Gavazzoni, and Ready (2018), I use the volume index of private consumption and GDP expenditure as the consumption and GDP series for each country. The coverage is comprehensive starting from January 1950 to present. The panel is unbalanced but once a country enters there are no missing observations. Consumption and GDP growths are defined as four quarter log-changes and global consumption and GDP growths are GDP weighted averages of country level consumption and GDP growths. Following Andrews, Colacito, Croce, and Gavazzoni (2024), I obtain GDP growth forecast data from the OECD which provides four quarter (one year ahead) forecasts at the country level.

2.2 Surplus-Debt Ratio

2.2.1 Variable Construction

US Fiscal Condition: I begin my analysis using a proxy for the US fiscal condition. In particular, I use the yearly (four quarter) change in the US surplus-debt ratio:

$$\Delta\text{US Surplus-Debt Ratio}_t = \frac{Surplus_t^{US}}{Debt_{t-1}^{US}} - \frac{Surplus_{t-4}^{US}}{Debt_{t-5}^{US}} \tag{1}$$

It is important to note that the prior literature studying the interaction between fiscal policy and asset prices has focused on a different proxy: the US debt to GDP ratio (Liu (2023); Croce, Nguyen, Raymond, and Schmid (2019)). The reason why I deviate from this approach is because the US government debt to GDP ratio is an imperfect proxy for the US fiscal condition. After all, US government debt levels can fluctuate for reasons that are orthogonal to the US fiscal condition.

Given the special role of the US dollar as the global safe asset, the supply of US government debt can increase to satiate enhanced foreign demand for dollar safe assets even during periods when the US fiscal deficit remains relatively stable.

Conversely, the US surplus-debt ratio has a more direct link with the US fiscal condition because the US primary surplus is mechanically included in the measure. Moreover it has a natural economic interpretation: it captures the change in the net fraction of debt that the US government repays each year. Thus this variable is an ideal measure of changing US fiscal capacity: a decline (increase) in this value constitutes a deterioration (improvement) in the US ability to service its own debt. It is for this reason that I focus on the US surplus-debt ratio as the main fiscal proxy.

Global Fiscal Cycle: As documented by Jiang (2022), there is a global fiscal factor driving common surplus fluctuations. I call this common factor the *Global Fiscal Cycle* and use it as a control in my analyses. It is defined as a GDP weighted average of local fiscal conditions across all countries in my sample where ω_i are the global GDP weights for country i:

$$\text{Global Fiscal Cycle}_{i,t} = \sum_{i \neq US, i} \omega_i \Delta \text{Country i's Surplus-Debt Ratio}_t \tag{2}$$

Broadly speaking $\text{Global Fiscal Cycle}_{i,t}$ captures information regarding foreign fiscal fluctuations outside of country i and the US.

Specification: I follow Muir (2017) and employ the following two proxies to track equity valuations: i) 1 year (four quarter) change in log dividend yields and ii) 1 year (four quarter) cum-dividend market excess returns. The baseline specification takes the form:

$$\begin{aligned} X_{i,t} =& \alpha + \beta_1 \Delta \text{US Surplus-Debt Ratio}_t + \beta_2 \Delta \text{Country i's Surplus-Debt Ratio}_t \\ &+ \beta_3 \text{Global Fiscal Cycle}_{i,t} + \gamma' \text{Monetary Policy Shocks}_t + \delta' \text{Macro}_t + \theta' \text{Financial}_t + \epsilon_{i,t} \\ X_{i,t} \in& \{\Delta DY_{i,t}, r_{i,t}\} \end{aligned} \tag{3}$$

Fiscal Controls: The key coefficient of interest is β_1. This captures the US fiscal condition's

explanatory power for global risky asset valuations, controlling for important confounding factors. Several controls are worth mentioning. Firstly, I control for alternative fiscal variables: i) the local fiscal condition: Country i's Surplus-Debt Ratio$_t$ and ii) Global Fiscal Cycle$_{i,t}$ in the specification. A key object of interest is the result of the fiscal horserace that pits the US fiscal condition (β_1) against these two other fiscal variables (β_2, β_3).

Monetary Policy Controls: As illustrated by Campbell and Shiller (1988), asset prices can fluctuate due to i) risk-free rates, ii) cash flows or iii) discount rates. Therefore it is important to control for confounding factors that correlate with these different components. To control for the risk free rate component, I follow traditional high frequency methods to identify monetary policy shocks. I identify two monetary policy shocks per country using these methods:

$$\text{Monetary Policy Shocks}_t = \left[\underbrace{\text{Target}_t^i, \quad \text{Path}_t^i}_{\text{Local}} , \underbrace{\text{Target}_t^G, \quad \text{Path}_t^G}_{\text{Global}} \right]^T \tag{4}$$

For the US, I do not identify shocks directly: I simply use the shock series from Jarocinski and Karadi (2020) and aggregate shocks by quarter.[2] For the non-US countries, I use i) all the publicly available data from the entire term structure of interest rates available via global financial data (GFD) and ii) central bank announcement dates that I personally hand collect. Information regarding the announcement dates and GFD term structure data are displayed below in table 1.

Using this data, I construct two monetary policy shocks for each country. The first monetary policy shock is a *target shock* which is the first principal component of interest rate changes around central bank announcement dates for that country. This captures the level and represents transitory monetary policy shocks in the same vein of the Romer and Romer (2004) US monetary policy shock.

[2]There are several other publicly available US monetary policy shock series (Romer and Romer (2004); Gürkaynak, Sack, and Swanson (2005); Nakamura and Steinsson (2018)) The reason I use the shock series from Jarocinski and Karadi (2020) is because they are cleaned from information effects, unlike these other series.

Table 1: Monetary Policy Data

Description: This table provides information on the GFD term structure data and announcement dates used for the construction of the monetary policy shocks. Panel A describes the announcement dates based on publicly available information on central bank websites. Panel B and C describes coverage of the short and long ends of the term structure for each of the countries.

Panel (a): MP Data

	MP Announcements		
Country	Period	Number	Source
Australia	Jan 1990 - Feb 2023	212	Reserve Bank of Australia
Canada	March 1999 - Jan 2023	187	Bank of Canada
Euro	Jan 1999 - Feb 2023	293	European Central Bank
New Zealand	March 1999 - Feb 2023	188	Reserve Bank of New Zealand
Norway	Jan 1999 - Jan 2023	193	Norges Bank
Sweden	Feb 1994 - Feb 2023	204	Sveriges Riksbank
Switzerland	Jan 2000 - Dec 2022	104	Swiss National Bank
United Kingdom	June 1997 - Feb 2023	293	Bank of England

Panel (b): Term Structure Data (Long End)

	Daily Continuous Series Length		
Country	2yr	5yr	10yr
Australia	10/03/1983 - 04/05/2023	10/03/1983 - 04/05/2023	10/03/1983 - 04/05/2023
Canada	10/01/1991 - 04/05/2023	01/02/1990 - 04/05/2023	04/05/1989 - 04/05/2023
Euro	03/02/1995 - 04/05/2023	09/11/1992 -04/05/2023	01/02/1986 - 04/05/2023
New Zealand	03/19/1985 - 04/05/2023	03/19/1985 - 04/05/2023	03/19/1985 - 04/05/2023
Norway	12/02/2003 - 05/14/2018	01/02/1986 - 04/05/2023	01/02/1986 - 04/05/2023
Sweden	01/07/1987 - 04/05/2023	01/02/1985 - 04/05/2023	01/07/1987 - 04/05/2023
Switzerland	01/07/1998 - 04/05/2023	02/02/1984 - 04/05/2023	01/05/1942 - 04/05/2023
United Kingdom	01/02/1979 - 04/05/2023	02/06/1979 - 04/06/2023	07/02/1934 - 04/05/2023

Panel (c): Term Structure Data (Short End)

	Daily Continuous Series Length		
Country	3mth	6mth	1yr
Australia	07/02/1980 - 04/05/2023	03/20/1986 - 04/05/2023	08/20/2001 - 04/05/2023
Canada	01/02/1990 - 04/06/2023	01/02/1990 - 04/06/2023	01/02/1990 - 10/19/2017
Euro	11/03/1982 - 04/05/2023	11/03/1982 - 04/05/2023	10/11/1994 - 09/30/2019
New Zealand	01/10/1985 - 02/15/2021	06/01/1994 - 04/05/2023	06/01/1994 - 02/15/2021
Norway	01/02/1986 - 04/05/2023	01/02/1986 - 03/12/2020	09/01/1988 - 10/02/2019
Sweden	01/02/1986 - 04/05/2023	01/02/1986 - 04/05/2023	01/02/1984 - 12/04/2020
Switzerland	01/07/1988 - 04/05/2023	01/02/1974 - 12/31/2021	01/06/1998 - 04/06/2023
United Kingdom	01/09/1975 - 04/05/2023	01/02/1975 - 04/05/2023	11/01/2011 - 04/05/2023

The second monetary policy shock is a *path shock* which is the second principal component of interest rate changes around the central bank announcements. This captures news about forward guidance in the same vein as the Gertler and Karadi (2015) identified monetary policy shock. To aid this interpretation, I follow Gürkaynak, Sack, and Swanson (2005) and rotate the orthogonalised bases of the principal component to ensure that the second principal component has zero loading on the short end of the term structure (1 month rate).

Finally the global monetary shocks: $\text{target}^G_{i,t}, \text{path}^G_{i,t}$ are defined analogously to the global fiscal cycle: they are a GDP weighted average of target and path shocks outside of the US and country i. They therefore capture the impact of foreign monetary policy outside the US and country i.

Macro Controls: To address distinct forces driving the cash flow component, I control for macroeconomic conditions. This is important because governments enact expansionary fiscal policies during periods of low economic growth. These controls can be either i) local, ii) global or iii) US macro variables:

$$\text{Macro}_t = \left[\underbrace{\Delta c^i_t, \Delta\text{GDP}^i_t, \mathbb{E}_t\Delta\text{GDP}^i_{t,t+4}}_{\text{Local}}, \quad \underbrace{\Delta c^{US}_t, \Delta\text{GDP}^{US}_t, \mathbb{E}_t\Delta\text{GDP}^{US}_{t,t+4}}_{\text{US}}, \right. \\ \left. \underbrace{\Delta c^G_t, \Delta\text{GDP}^G_t, \mathbb{E}_t\Delta\text{GDP}^G_{t,t+4}}_{\text{Global}} \right]^T \tag{5}$$

$\Delta c^i_t, \Delta\text{GDP}^i_t$ denote *realized* local consumption and GDP growth rates. Growth rates are defined as four quarter changes in local consumption and GDP in local currency units. $\mathbb{E}_t\Delta\text{GDP}^i_{t,t+4}$ is the one year (four-quarter) ahead local GDP forecast. Controlling for *ex-ante* growth expectations is also important, given that governments also institute expansionary fiscal policies during periods of low *expected* growth (Liu (2023)).

Finally I also control for US and global macroeconomic conditions in the panel regressions. Global consumption and GDP growths: $\Delta c^G_t, \Delta GDP^G_t$ are defined as a GDP weighted average of local consumption and GDP growth rates outside the US and country i. The one year (four-quarter ahead) global GDP growth forecast: $\mathbb{E}_t\text{GDP}^G_{t,t+4}$ is similarly defined as a GDP weighted average of local growth forecasts outside the US and country i.

Financial controls: I also control for distinct financial factors that proxy for time varying global discount rate or global risk premia. These factors can also spuriously drive a link between the US fiscal condition and global risky asset prices since fiscal policies may also be more expansionary during periods of heightened risk aversion. To rule this additional possibility out, I include a financial vector that is known to proxy for global risk premia and is motivated by Lilley, Maggiori, Neiman, and Schreger (2022):

$$\text{Financial}_t = \Big[\Delta BEX_t, \quad \Delta GZ_t, \quad \Delta\text{Premium}_t, \quad \Delta VIX_t, \quad INT_t\Big]^T \tag{6}$$

ΔBEX_t is the four-quarter change in the risk-aversion measure from Bekaert, Engstrom, and Xu (2022). ΔGZ_t is the four quarter change in the US corporate bond credit spread from Gilchrist and Zakrajšek (2012). $\Delta\text{Premium}_t$ is the four quarter change in the US treasury premium, defined as average covered interest parity deviation between developed country government bonds and U.S. Treasuries computed from Du, Im, and Schreger (2018). ΔVIX_t is the four quarter change in the logarithm of the VIX index. Finally INT_t is the value-weighted return on a portfolio of NY Fed primary dealers' holding companies and is taken from He, Kelly, and Manela (2017).

Valuation Results: Table 2 reports the results from estimating the main panel specification. To focus attention on the fiscal horserace, I only report the coefficients on the three fiscal variables. Panels A reports the pooled regression results whereas B incorporates country fixed effects. In all cases, all monetary (US and foreign), macroeconomic (US, local and global) and financial control vectors discussed previously have been included.

The results are clear: deteriorations in the US fiscal condition coincide with depressed global risky asset prices, as measured by i) increases in dividend yield changes and ii) lower cum-dividend returns. A 1 basis point (b.p) decline in ΔUS Surplus-Debt Ratio$_t$ is associated with an i) 7-14 b.p increase in dividend yield changes per annum and ii) 7-12 b.p increase in market excess returns on average across the world.

Table 2: *Fiscal Valuation Regressions*

Description: This table estimates the baseline panel specification 3. For monetary policy controls, they are identified using conventional high frequency identification methods. For the US, I use the shock series from Jarocinski and Karadi (2020). For the non-US countries, I define two separate shocks based on the first two principal component of interest rate changes around the central bank announcements. Panel A reports the pooled estimation results without country fixed effects. Panel B reports the results when country fixed effects are included. All specifications control for local and US risk-free rates, both in levels and growth rates. Columns 1 and 4 reproduce results when only macro controls, local, global and US, are used. Columns 2 and 5 add the financial control vector: $\Delta BEX_t, \Delta GZ_t, \Delta\text{Premium}_t, \Delta VIX_t, INT_t$. Finally, columns 3 and 6 account for both financial and macro controls. In all cases, standard errors contained in parentheses are clustered at the date (quarter) level. Data is from 1980Q1-2018Q4.

Panel (a): Pooled Regressions

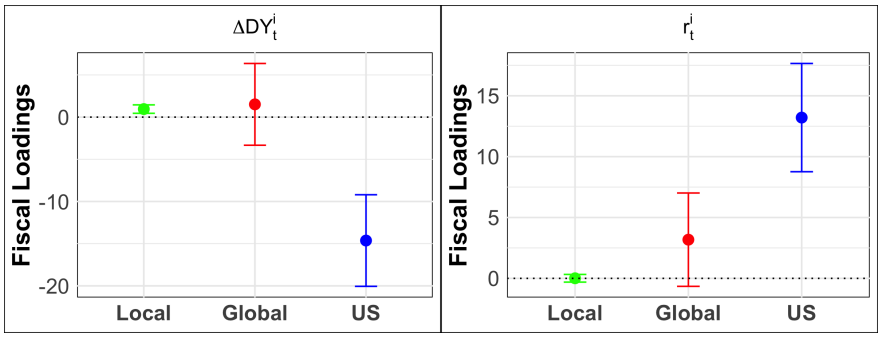
	Dependent Variable: $\Delta DY_{i,t}$			*Dependent Variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	−14.192***	−9.803***	−7.963***	12.202***	9.683***	7.477***
	(3.152)	(3.604)	(3.269)	(2.364)	(2.812)	(3.001)
ΔCountry i's Surplus-Debt Ratio$_t$	1.018***	0.889**	0.804**	-0.067	0.209	0.007
	(0.356)	(0.358)	(0.366)	(0.192)	(0.217)	(0.189)
Global Fiscal Cycle$_{i,t}$	2.745	-0.156	0.752	2.272	5.229**	3.726*
	(2.999)	(1.750)	(2.419)	(2.382)	(1.642)	(1.961)
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✓	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✗	✗	✗	✗	✗	✗
Observations	994	828	828	994	828	828
Adjusted R^2	0.290	0.420	0.461	0.377	0.471	0.511

Panel (b): Fixed Effect Regressions

	Dependent Variable: $\Delta DY_{i,t}$			*Dependent Variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	−14.019***	−9.718***	−7.784***	11.979***	9.619***	7.366***
	(3.151)	(3.572)	(3.243)	(2.347)	(2.794)	(2.987)
ΔCountry i's Surplus-Debt Ratio$_t$	0.959***	0.883**	0.781**	-0.001	0.163	0.009
	(0.353)	(0.355)	(0.363)	(0.192)	(0.212)	(0.182)
Global Fiscal Cycle$_{i,t}$	2.692	-0.141	0.681	2.356	5.256***	3.786**
	(3.000)	(1.737)	(2.201)	(2.372)	(1.486)	(1.903)
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✓	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Observations	994	828	828	994	828	828
Adjusted R^2	0.286	0.418	0.459	0.374	0.477	0.509

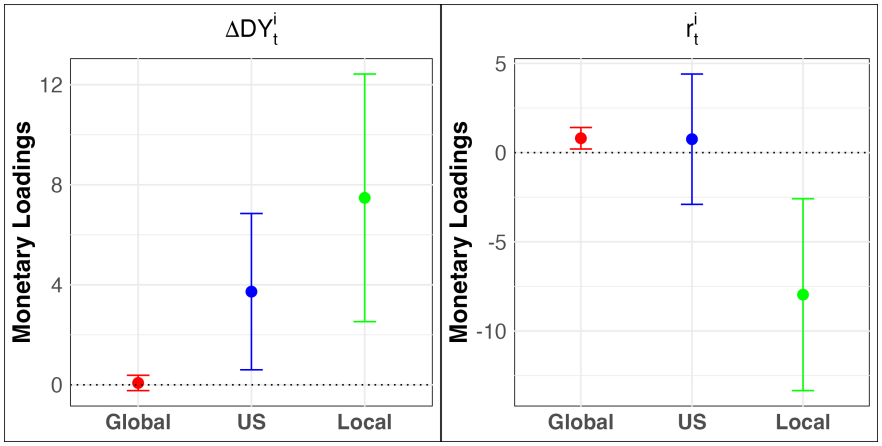
Note: *p<0.1; **p<0.05; ***p<0.01

Figure 1: Average Rolling Fiscal Betas



Description: This figure plots the results of computing rolling beta coefficients for panel specification 3 for the three fiscal variables. Local, Global and US denotes the results for Country i's Surplus-Debt Ratio$_t$, Global Fiscal Cycle$_{i,t}$ and US Surplus-Debt Ratio$_t$. A one year rolling window was used with a window size: $NT = 12 * 4 = 48$. The points represent the average rolling beta coefficient and the bars correspond to the 90% confidence intervals.

Figure 2: Monetary vs Fiscal Betas



Description: This figure computes average rolling beta coefficients for the panel specification 3 for the monetary variables. For the US, I use the shock series from Jarocinski and Karadi (2020). Local denotes the target shocks for the given country. Finally global denotes a GDP weighted average of foreign target shocks excluding the US and country i. A one year rolling window was used with a window size: $NT = 12 * 4 = 48$. The bars correspond to the 90% confidence intervals.

Notice that the relevance of the US fiscal condition for global risky asset prices is not driven by other fiscal variables: the explanatory power of the US fiscal condition for local risky asset prices is not diminished by the inclusion of i) local fiscal conditions (ΔCountry i's Surplus-Debt Ratio$_t$) or ii) foreign fiscal conditions outside the US (Global Fiscal Cycle$_{i,t}$). In fact the US fiscal condition drives out the local fiscal condition in the market return regressions (columns I-III of panels A and B) whereas the global fiscal cycle is driven out of the dividend yield regressions (columns IV-VI of panels A and B).

To further emphasise this last result, figure 1 plots the average rolling beta coefficient for the three fiscal variables with 90% confidence bands. In all cases the point estimate for the US surplus-debt ratio is far larger in magnitude and lies outside the confidence bands for the other two fiscal variables. All of this suggests something rather striking: the US fiscal condition is the most important ***fiscal*** *determinant of global risky asset prices.* Financial markets around the world pay closer attention to the US fiscal condition than to i) the local fiscal condition or ii) foreign fiscal conditions outside the US.

These results therefore suggest that the global footprint of US fiscal policy is even more powerful than that of US monetary policy: prior research suggests that financial markets still pay attention to the actions of the local central bank, even after controlling for the actions of the US federal reserve (Bekaert, Hoerova, and Xu (2024)). To make this point concrete, I also plot the corresponding rolling beta estimates for the US, foreign and global monetary policy variables in the baseline specification in figure 2. It makes clear that even after controlling for US monetary policy, local financial markets still pay attention to the actions of their local central bank.

US vs Global: It is worth digging deeper into the result regarding the global fiscal cycle. Does the fact that the global fiscal cycle is driven out of the dividend yield regressions imply that foreign fiscal conditions outside the US do not matter for country i's risky asset valuation? Not entirely: the global fiscal cycle is still an important driver of local equity returns even after controlling for the US fiscal condition. So how can one reconcile these differing results for the global fiscal cycle in the dividend yield regressions vs the market return regressions?

To fix ideas, note from Campbell and Shiller (1988) that dividend yield changes can be decom-

posed into the following three components:

$$\underbrace{\Delta dy^i_{t+1}}_{\text{Dividend Yield Changes}} \approx \underbrace{-r^i_{t+1}}_{\text{Returns}} + \underbrace{\Delta d^i_{t+1}}_{\text{Dividend Growth}} + (1-\rho) \underbrace{dy^i_{t+1}}_{\text{Dividend Yield Level}}$$

Here $\rho \approx 1$ is a constant coefficient of log-linearization associated with the approximation procedure applied by Campbell and Shiller (1988). What we know from our results in table 2 is that the global fiscal cycle is positively correlated with local equity returns (r^i_{t+1}). Thus the weak correlation between the global fiscal cycle and local dividend yield changes may simply be driven by the fact that it is also positively correlated with local dividend growths (Δd^i_{t+1}).

Conversely the strong negative (positive) correlation between local dividend yield changes (local equity returns) and the US fiscal condition may be explained by the fact that the US fiscal condition is just less correlated with local dividend growths than the global fiscal cycle. This interpretation is confirmed by table 3.

Table 3: *Dividend Yield Decomposition (Macro and Financial Controls Included)*

Description: This table decomposes the dividend yield changes into its constituent components and evaluates correlations with the US fiscal condition and the global fiscal cycle. As before, the control vectors: Macro_t and Macro_t are given by equations 5 and 6 respectively . In all cases, standard errors contained in parentheses are clustered at the date (quarter) level. Data is from 1980Q1-2018Q4.

	Dependent Variable: ΔDY^i_t		*Dependent Variable:* r^i_t		*Dependent Variable:* Δd^i_t	
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	−11.143***		14.794***		4.860**	
	(3.848)		(2.840)		(8.897)	
Global Fiscal Cycle$_{i,t}$		0.549		3.720**		8.179***
		(1.946)		(1.834)		(2.934)
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✓	✓	✓	✓	✓
US Macro Controls	✓	✓	✓	✓	✓	✓
Global Macro Controls	✓	✓	✓	✓	✓	✓
Financial Controls	✓	✓	✓	✓	✓	✓
Observations	828	828	828	828	828	828
Adjusted R^2	0.536	0.543	0.272	0.279	0.401	0.413
Note:			*p<0.1; **p<0.05; ***p<0.01			

Surplus vs Debt: One might also naturally wonder how my results relate to previous work linking US fiscal policy to asset prices. It is important to note however that this prior literature focuses on a different fiscal variable: the US debt to GDP ratio (Liu (2023); Croce, Nguyen,

Raymond, and Schmid (2019)). These two variables are related, as a mechanical decomposition of US Surplus-Debt Ratio$_t$ demonstrates:

$$\begin{aligned}\text{US Surplus-Debt Ratio}_t = \frac{\text{Surplus}_t^{US}}{\text{Debt}_{t-1}^{US}} &= \underbrace{(\frac{\text{Surplus}_t^{US}}{Y_t})}_{\text{Surplus-GDP Ratio}} \; / \; \underbrace{(\frac{\text{Debt}_{t-1}^{US}}{Y_t})}_{\text{Debt-GDP Ratio}} \\ &\approx \underbrace{(\frac{\text{Surplus}_t^{US}}{Y_t})}_{\text{Surplus-GDP Ratio}} \; / \; \underbrace{(\frac{\text{Debt}_t^{US}}{Y_t})}_{\text{Debt-GDP Ratio}} \end{aligned} \tag{7}$$

The second line approximation follows from the empirical observation that the level of US government debt is highly persistent (Leeper, Leith, and Liu (2021)). To evaluate which component is driving my results, I decompose the US surplus-debt ratio into these two components and rerun the baseline specification. The results are presented in table 4. Whilst both components are important, the results clearly indicate that the strong explanatory power for the US surplus-debt ratio for global risky asset prices is coming from the surplus-GDP component. Thus surplus fluctuations (tax or spending) are driving the global transmission of US fiscal policy, not fluctuations in US government debt emphasised in the previous literature.

Further Robustness: To accommodate space, I relegate further robustness analysis of these valuation results to the empirical appendix A. Firstly, I confirm my findings using alternative fiscal data from Jordà, Schularick, and Taylor (2017) which is annual but covers a longer time series. Secondly, I extend my cross-section by including emerging market (EME) countries. Finally, I rotate the financial control vector to include alternative proxies for risk premia such as local term spreads, local equity volatility and the local dividend yields in the market returns regressions and later predictability exercises. The baseline results are unaffected by any of these additional factors.

Table 4: *Surplus vs Debt*

Description: This table estimates the baseline panel specification 3 when the fiscal variable used is the US surplus-GDP ratio or US debt-GDP ratio. For monetary policy controls, they are identified using conventional high frequency identification methods. For the US, I use the shock series from Jarocinski and Karadi (2020). For the non-US countries, I define two separate shocks based on the first two principal component of interest rate changes around the central bank announcements. Panel A reports the results for US surplus-GDP ratio. Panel B reports the results for the US debt-GDP ratio. Columns 1 and 4 reproduce results when only macro controls, local, global and US, are used. Columns 2 and 5 add the financial control vector: $\Delta BEX_t, \Delta GZ_t, \Delta\text{Premium}_t, \Delta VIX_t, INT_t$. Finally, columns 3 and 6 account for both financial and macro controls. In all cases, standard errors contained in parentheses are clustered at the date (quarter) level. Data is from 1980Q1-2018Q4.

Panel (a): Surplus-GDP

	Dependent Variable: $\Delta DY_{i,t}$			*Dependent Variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-GDP Ratio$_t$	-5.489^{***}	-5.729^{***}	-5.919^{***}	5.751^{***}	5.757^{***}	5.845^{***}
	(0.631)	(0.566)	(0.598)	(0.463)	(0.437)	(0.462)
ΔCountry i's Surplus-GDP Ratio$_t$	0.110	0.264	0.209	0.631	0.561	0.635
	(0.354)	(0.317)	(0.330)	(0.260)	(0.248)	(0.258)
Global Surplus-GDP Ratio$_t$	2.016	0.004	0.308	1.334	4.002^{**}	3.928^{*}
	(0.983)	(0.005)	(0.286)	(0.778)	(0.678)	(0.843)
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✓	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✗	✗	✗	✗	✗	✗
Observations	994	828	828	994	828	828
Adjusted R^2	0.233	0.437	0.377	0.423	0.488	0.432

Panel (b): Debt-GDP

	Dependent Variable: $\Delta DY_{i,t}$			*Dependent Variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Debt-GDP Ratio$_t$	-0.155^{***}	-0.100^{***}	-0.005^{***}	-0.063^{***}	-0.316^{***}	-0.214^{***}
	(0.049)	(0.042)	(0.013)	(0.038)	(0.057)	(0.043)
ΔCountry i's Debt-GDP Ratio$_t$	-0.123^{***}	0.131^{**}	-0.137^{**}	-0.001	0.020	0.036
	(0.640)	(0.049)	(0.047)	(0.037)	(0.044)	(0.003)
Global Debt-GDP Ratio$_t$	-0.492^{***}	-0.413^{***}	-0.786^{***}	0.436^{***}	0.275^{***}	0.612^{***}
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✓	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Observations	994	828	828	994	828	828
Adjusted R^2	0.156	0.105	0.145	0.283	0.165	0.204

Note: *p<0.1; **p<0.05; ***p<0.01

Spending vs Tax: Digging even deeper, I decompose the US surplus-debt ratio into its constituent parts. Naturally, the US Surplus-Debt Ratio$_t$ can mechanically be decomposed into i) tax/debt ratio and ii) spending/debt ratio. To evaluate which component is driving my results, I also run the following panel specification:

$$\begin{aligned} X_{i,t} =& \alpha + \beta_1 \Delta \text{US Tax-Debt Ratio}_t + \beta_2 \Delta \text{US Spending-Debt Ratio}_t \\ &+ \tau' \text{Fiscal}_t + \gamma' \text{Monetary Policy}_t + \delta' \text{Macro}_t + \theta' \text{Financial}_t + \epsilon_{i,t} \\ X_{i,t} \in& \{\Delta DY_{i,t}, r_{i,t}\} \end{aligned} \tag{8}$$

The control vectors: $\text{Macro}_t, \text{Financial}_t, \text{Monetary Policy}_t$ are as before. In addition, the fiscal control vector takes the form:

$$\text{Fiscal}_t = \left[\begin{array}{c} \underbrace{\Delta \text{Country i's Tax-Debt Ratio}_t, \text{Global Tax-Debt Ratio}_t,}_{\text{Tax}} \\ \underbrace{\Delta \text{Country i's Spending-Debt Ratio}_t, \text{Global Spending-Debt Ratio}_t}_{\text{Spending}} \end{array} \right]^T \tag{9}$$

Here Global Tax-Debt Ratio$_t$ and Global Spending-Ratio$_t$ are defined analogously to Global Fiscal Cycle$_t$. They are equally weighted averages of tax-debt and spending-debt ratios outside the US:

$$\begin{aligned} \text{Global Tax-Debt}_t =& \frac{1}{N} \sum_{i=1}^{N} \Delta \text{Country i's Tax-Debt Ratio}_t \\ \text{Global Spending-Debt}_t =& \frac{1}{N} \sum_{i=1}^{N} \Delta \text{Country i's Spending-Debt Ratio}_t \end{aligned} \tag{10}$$

The results are reported in table 5. To focus on the horserace between the US spending to debt and US tax to debt ratios, I only report these coefficients. The results suggest that both components matter: deteriorations in the US fiscal condition caused by i) higher spending and ii) lower tax revenue both contribute to depressed global risky asset prices as measured by i) higher local dividend yield changes and ii) low local equity returns.

Table 5: *US Tax vs US Spending*

Description: This table estimates panel specification 8. Panel A reports the pooled estimation results without country fixed effects. Panel B reports the results when country fixed effects are included. the control vectors:
$\text{Macro}_t, \text{Financial}_t, \text{Monetary Policy}_t$ and Fiscal_t are given in the main text. All specifications have both fiscal and risk-free rate controls. In addition, columns 1, 4 add the macroeconomic control vector. Columns 2, 5 adds the financial control vector, but not the macroeconomic control vector. Finally columns 3 and 6 include both macroeconomic and financial controls. In all cases, standard errors contained in parentheses are clustered at the date (quarter) level. Data is from 1980Q1-2018Q4.

Panel (a): Pooled Decomposition Regressions

	Dependent Variable: $\Delta DY_{i,t}$			*Dependent Variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Spending-Debt Ratio$_t$	15.028***	7.566	11.499**	−16.682***	−8.803**	−10.071**
	(4.235)	(5.044)	(5.834)	(3.489)	(3.990)	(4.968)
ΔUS Tax-Debt Ratio$_t$	−3.280	−8.319**	−10.712**	7.371*	10.992***	11.193***
	(4.936)	(3.990)	(5.180)	(4.415)	(3.473)	(4.194)
Fiscal Controls	✓	✓	✓	✓	✓	✓
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✗	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✗	✗	✗	✗	✗	✗
Observations	994	828	828	994	828	828
Adjusted R^2	0.286	0.441	0.459	0.349	0.504	0.532

Panel (b): Fixed Effect Decomposition Regressions

	Dependent variable: $\Delta DY_{i,t}$			*Dependent variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Spending-Debt Ratio$_t$	14.862***	7.037	10.498**	−16.587***	−8.163**	−9.491**
	(4.237)	(4.985)	(4.771)	(3.506)	(3.967)	(4.000)
ΔUS Tax-Debt Ratio$_t^{US}$	−2.817	−9.997*	−8.870**	7.266	11.522***	10.954**
	(4.877)	(4.941)	(4.161)	(4.466)	(3.491)	(4.266)
Fiscal Controls	✓	✓	✓	✓	✓	✓
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✗	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Observations	994	828	828	994	828	828
Adjusted R^2	0.289	0.444	0.460	0.350	0.516	0.536

Note: *p<0.1; **p<0.05; ***p<0.01

Cross-Section: Table 6 reports the baseline specification (3) country-by-country. For both the dividend yield and market excess return regressions, the US fiscal condition remains statistically and economically significant for 11 out of the 12 countries. Again the economic magnitude of the US fiscal beta dwarfs the local and global fiscal betas.

To dig even deeper, I investigate the key economic determinants driving cross-sectional exposures of local financial markets to the US fiscal condition. As demonstrated by figure 6, this cross-section exhibits rich heterogeneity. On the one hand countries such as Australia, New Zealand and Canada seem to have the lowest exposures to the US fiscal condition. Conversely Germany, Switzerland and Japan seem to have the highest loadings. This speaks to the role of trade networks in driving the global transmission of US fiscal policy: countries with the highest (lowest) US fiscal loadings are those that are central (peripheral) to the global trade network. This trade connection is made clearer by figure 4 which links larger exposures to the US fiscal condition to i) trade network centrality, ii) larger US trade intensities.

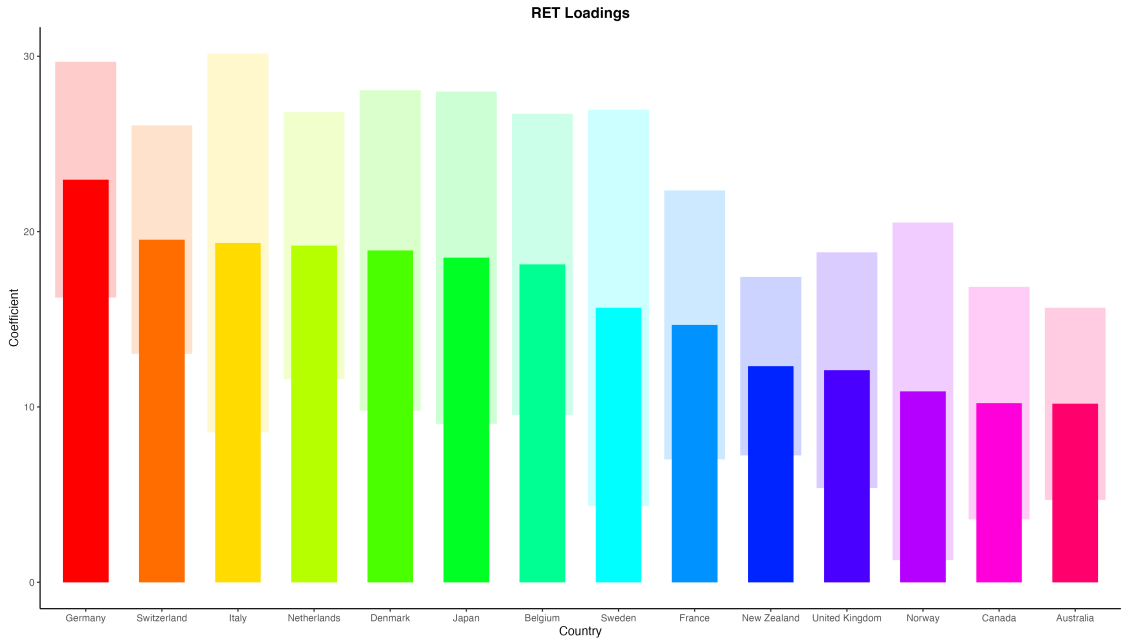


Figure 3: US Fiscal Loadings (Cross-Section)

Description: This figure plots the cross-sectional exposures of local equity returns to the US fiscal condition. This involves computing rolling beta coefficients for baseline panel specification for US Surplus-Debt Ratio$_t$ country by country. A five year rolling window was used with a window size: $NT = 12 * 5 = 60$. The endpoints of the bars capture point estimates, and the accompanying lightly shaded bars capture the confidence intervals for the coefficients.

Table 6: *US Fiscal Condition and Global Risky Asset Prices: Cross-Section*

Description: This table reports the estimation results for the baseline specification country-by-country. To focus on the fiscal horserace, I again report only the coefficients on the three fiscal variables. Standard errors are in parentheses and are Newey-West with four lags.

Dependent Variable: $\Delta DY_{i,t}$						
Country i	ΔCountry i's Surplus-Debt Ratio		ΔUS Surplus-Debt Ratio		Global Fiscal Cycle$_{i,t}$	
	Coefficient	(s.e)	Coefficient	(s.e)	Coefficient	(s.e)
Australia	-0.079	(0.429)	-11.030^{***}	(1.425)	5.759	(2.110)
Canada	3.060	(1.689)	-3.493	(1.993)	-5.420^{***}	(1.633)
Denmark	5.970	(2.450)	-11.423^{***}	(2.244)	0.9744	(3.954)
France	-2.698	(1.708)	-7.983^{***}	(1.554)	-3.290	(1.981)
Germany	-1.260	(0.526)	-21.688^{***}	(3.011)	-3.734	(2.221)
Italy	-19.410^{***}	(4.740)	-17.288^{***}	(2.444)	-0.831	(2.791)
Japan	-4.510	(2.412)	-12.115^{***}	(2.273)	2.087	(2.410)
Norway	2.403^{***}	(0.716)	-10.736^{**}	(4.501)	-0.255	(0.005)
New Zealand	1.182^{**}	(0.487)	-3.420	(2.494)	0.432	(1.231)
Sweden	-4.186^{**}	(1.976)	-12.664^{***}	(4.553)	5.068	(3.393)
Switzerland	14.185^{***}	(3.145)	-5.654^{***}	(1.449)	-3.124	(1.764)
United Kingdom	-1.837^{**}	(0.872)	-7.567^{***}	(1.444)	-0.007	(0.001)
Dependent Variable: r_t^i						
Country i	ΔCountry i's Surplus-Debt Ratio		ΔUS Surplus-Debt Ratio		Global Fiscal Cycle$_{i,t}$	
	Coefficient	(s.e)	Coefficient	(s.e)	Coefficient	(s.e)
Australia	-0.057	(0.310)	7.414^{***}	(1.455)	0.839	(1.559)
Canada	-2.733	(1.994)	2.865	(2.201)	8.702^{***}	(1.834)
Denmark	-1.503	(1.501)	13.887^{***}	(2.440)	6.203^{**}	(2.432)
France	1.542	(1.566)	8.632^{***}	(1.863)	3.523	(1.789)
Germany	1.255^{**}	(0.396)	22.208^{***}	(2.466)	0.877	(1.590)
Italy	5.867	(3.420)	11.312^{***}	(2.940)	2.154	(2.143)
Japan	8.443	(2.163)	15.621^{***}	(2.974)	2.840^{*}	(2.171)
Norway	-0.210	(0.477)	5.340	(3.115)	13.684^{***}	(3.601)
New Zealand	0.367	(0.226)	7.814^{***}	(2.000)	-2.300	(1.721)
Sweden	-0.828	(0.591)	4.992^{***}	(1.567)	0.0001	(0.0001)
Switzerland	5.762^{***}	(1.492)	11.833^{***}	(1.884)	3.983	(2.564)
United Kingdom	0.458	(0.792)	5.552^{***}	(1.998)	5.180	(3.471)

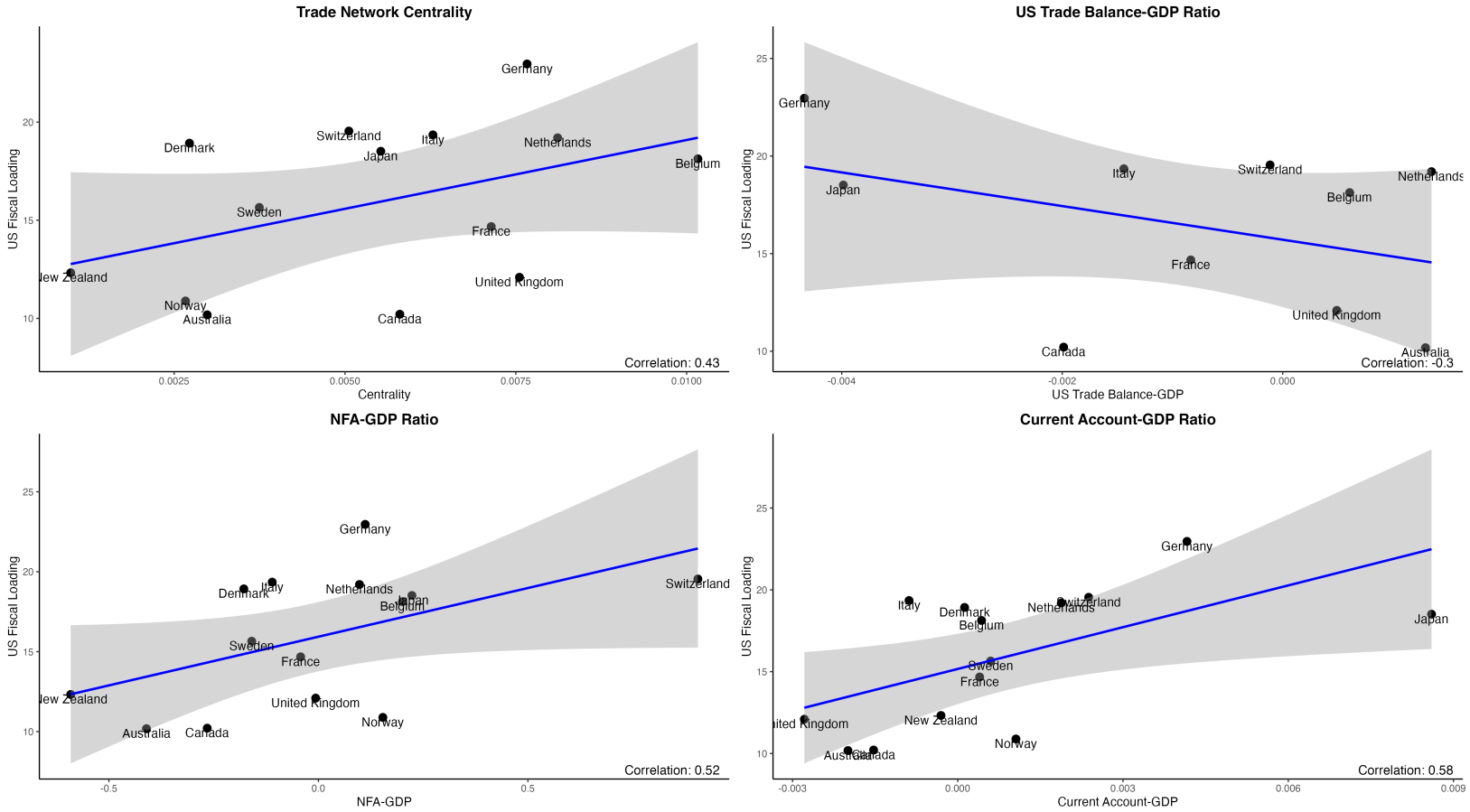


Figure 4: Economic Determinants of US Fiscal Loadings

Description: This figure plots the cross-sectional exposures of local equity returns to the US fiscal condition (y axis) against three economic variables. To compute US fiscal loadings, I compute rolling beta coefficients for panel specification 3 for US Surplus-Debt Ratio$_t$ country by country. A five year rolling window was used with a window size: $NT = 12 * 5 = 60$. The centrality measure comes from Richmond (2019). US Trade Balance-GDP is the difference between total US exports and US imports normalized by US GDP. NFA-GDP and Current-Account-GDP ratios are i) the country's net foreign assets minus net foreign liabilities and ii) current account normalised by GDP.

Predictability: The results thus far have been ***correlative***: deteriorations in the US fiscal condition ***coincide*** with depressed global risky asset prices. To provide a more direct connection between the US fiscal condition and time varying global risk premia, I now provide causal evidence linking the US fiscal condition to future global equity returns at short, medium and long-term horizons.

Firstly, I establish predictability in sample using a local projection (LP) approach. The empirical specification is the following:

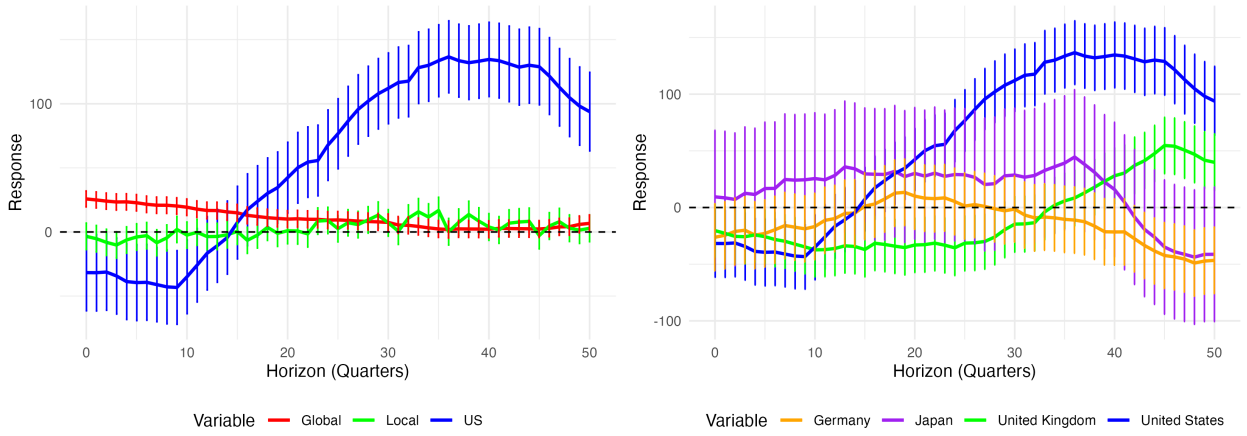
$$r^i_{t+j} = \alpha_j + \beta^{US}_j u^{US}_t + \beta^i_j u^i_t + \beta^{Global}_j u^{Global}_t + \Gamma X_t, \;\; j \in \{0, 1, 2, ..., N\} \tag{11}$$

The control vectors: Macro_t and $\text{Financial}_t, \text{Monetary Policy}_t$ are the same as before. Here u^i_t are local surplus-debt ratios orthogonalised with respect to relevant business cycle variables. To perform this orthogonalisation procedure, I adopt a variation of the macro-econometric approach of Ramey and Zubairy (2018). This involves orthogonalising the surplus-debt ratio in the following way:

$$\begin{aligned}\Delta\text{Country i's Surplus-Debt Ratio}_t = &\sum_{j=1}^{4} \beta_i \Delta\text{Country i's Surplus-Debt Ratio}_{t-j} + \sum_{j=1}^{4} \alpha_i \Delta \hat{y}^i_{t-j} \\ &+ \sum_{j=1}^{4} \gamma_{US} \Delta y^i_{t-j} + u^i_t \end{aligned} \tag{12}$$

Here $\hat{y}^i_t$ is potential output gap for country i which is extracted from projecting current GDP growth on a quartic trend. Applying this procedure I identify three orthogonalised surplus shocks: US (u^{US}_t) , local (u^i_t) and global (u^{global}_t). To extract the global fiscal shock I apply the procedure above to the global fiscal cycle and project it onto its past four lags, past four lags of global GDP growth and the past four lags of potential global output gap. The global output gap is similarly obtained by projecting current global GDP growth on a quartic trend.

Figure 5: Orthogonalised Surplus Shocks and Future Global Equity Returns



Description: This figure plots the panel impulse responses of future local equity returns to orthogonalised negative surplus shocks estimated using 11. The left panel compares the US fiscal shock against local and global fiscal shocks. The right panel compares the impulse response of future local equity returns to orthogonalised US, Japanese, British and German Fiscal shocks. As before, the bands represent 90% confidence bands.

These results confirm the earlier predictability results that a deterioration in the US fiscal condition predicts higher future global equity returns moving forward. The estimated predictability from the orthogonalised US surplus shock is incredibly long-lasting, still persisting after 50 quarters or more than 10 years. This is a much more persistent effect than those obtained from the earlier in-sample predictability regressions using the US surplus-debt ratio as the key fiscal variable, rather than the orthogonalised version used here.

Again, the global transmission of the US fiscal policy is special: orthogonalised surplus shocks for other important countries such as Japan, Germany and the United Kingdom induce much weaker predictability, both in terms of the magnitude of the response at each horizon as well as the overall persistence.

The in-sample predictability results are informative of the tight link between deteriorations in the US fiscal condition and i) depressed global risky asset prices, ii) higher future global equity returns and consequently iii) higher global risk premia. Nonetheless one may worry that the inference may be biased by the persistence of the predictor variable, especially in a framework with small samples and overlapping observations.

Notice from table 7 that the level of the US surplus-debt ratio is incredibly persistent, with significant autocorrelation even at the eighth lag (0.78). Conversely, the change in the US surplus-debt ratio has much weaker persistence: with the autocorrelation essentially dying out at the four quarter (1 year horizon). Nonetheless there is non-trivial persistence, especially at short-term horizons.

Table 7: US Surplus-Debt Ratio Summary Statistics

Statistic	US Surplus-Debt Ratio	Δ US Surplus-Debt Ratio
Mean Value (%)	-1.8%	0.18%
Stand Dev (%)	1.3%	0.45%
Skewness Value	0.17	-1.03
Autocorr (1 lag)	0.96	0.73
Autocorr (4 lag)	0.78	0.20
Autocorr (8 lag)	0.37	0.00

Note: Variables are quarterly from 1980Q1-2018Q4

Out of Sample: To alleviate some of these inference bias issues, I also establish out-of-sample global return predictability of the US fiscal condition. The results are summarized by table 8. In line with the empirical asset pricing literature, I use out of sample $R^2_{OS} = 1 - \frac{MSE_1}{MSE_0}$ to evaluate the predictive performance (Goyal and Welch (2008)). MSE_0 is the mean square error (MSE) from a benchmark model using the historical mean and MSE_1 is the MSE from using a univariate model with a single predictor variable. $R^2_{OS,US}$ compares the out of sample performance of a model that includes a given predictor variable and the US surplus-debt ratio. Finally I perform the test of equal predictability proposed by Clark and West (2007): this involves evaluating the null hypothesis that the MSE of a bivariate model including a given predictor variable and the US surplus-debt ratio is the same as the univariate version excluding it against the alternative that it is lower.

Table 8: *Out of Sample Global Predictability Tests*

Description: This table presents out-of-sample R^2 from panel predictive regressions of future excess local stock returns on the US fiscal condition and other predictors. The out-of-sample test is recursive, starting in 20 periods from the beginning of the sample. R^2_{OS} is from univariate regressions including only the listed predictor variable. $R^2_{US,OS}$ is from regressions with the US surplus-debt ratio included alongside each predictor. The last column shows the p-values from the Clark and West (2007) test of equal predictability. The p values are associated with testing the null that the MSE of a bivariate model including a given predictor variable and the US surplus-debt ratio is the same as the univariate version excluding it against the alternative that it is lower.

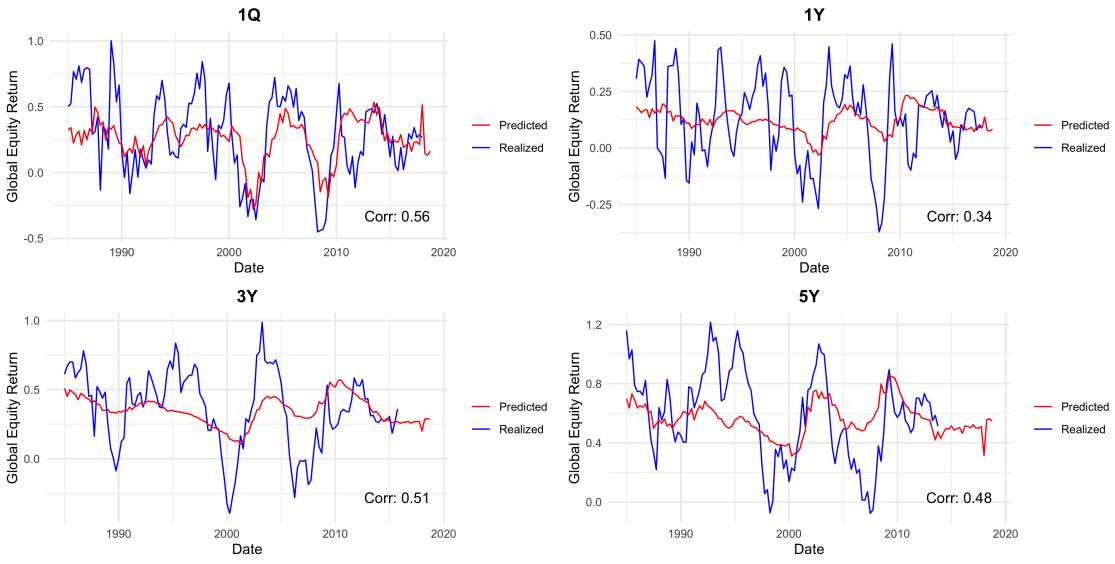
	1Q			*1Y*			*5Y*		
Predictor Variables	R^2_{OS}	$R^2_{US,OS}$	p-value	R^2_{OS}	$R^2_{US,OS}$	p-value	R^2_{OS}	$R^2_{US,OS}$	p-value
Country i's Consumption Growth$_t$	−0.59%	**21.42%**	0.00***	−0.61%	**7.07%**	0.00***	−0.91%	**11.78%**	0.00***
Country i's GDP Growth$_t$	−0.65%	**21.37%**	0.00***	−0.59%	**7.27%**	0.00***	−0.95%	**11.24%**	0.00***
Country i's GDP Growth Forecast$_t$	3.67%	**22.62%**	0.00***	−0.21%	**7.53%**	0.00***	1.11%	**11.33%**	0.00***
Global Consumption Growth$_t$	0.00%	**21.49%**	0.00***	0.00%	**6.65%**	0.00***	−0.21%	**10.82%**	0.00***
Global GDP Growth$_t$	0.00%	**21.40%**	0.00***	−0.25%	**6.61%**	0.00***	−0.45%	**10.83%**	0.00***
Global GDP Growth Forecast$_t$	6.25%	**22.30%**	0.00***	−0.36%	**8.67%**	0.00***	0.00%	**10.91%**	0.00***
US Consumption Growth$_t$	9.17%	**25.71%**	0.00***	0.10%	**8.79%**	0.00***	1.55%	**12.13%**	0.00***
US GDP Growth$_t$	12.95%	**24.45%**	0.00***	0.45%	**7.29%**	0.00***	1.51%	**11.39%**	0.00***
US GDP Growth Forecast$_t$	13.16%	**26.91%**	0.00***	0.00%	**6.86%**	0.00***	0.76%	**10.94%**	0.00***
US Risk-Free Rate$_t$	2.49%	**23.77%**	0.00***	−0.54%	**6.87%**	0.00***	0.18%	**11.53%**	0.00***
ΔUS Risk-Free Rate$_t$	−1.57%	**20.92%**	0.00***	0.00%	**7.37%**	0.00***	−0.88%	**10.99%**	0.00***
Country i's Risk-Free Rate$_t$	−0.37%	**21.84%**	0.00***	−0.28%	**7.05%**	0.00***	7.96%	**20.59%**	0.00***
ΔCountry i's Risk-Free Rate$_t$	−1.24%	**19.79%**	0.00***	−2.08%	**4.21%**	0.00***	−15.23%	**1.99%**	0.00***
ΔCountry i's Surplus-Debt Ratio$_t$	2.21%	**21.49%**	0.00***	−0.53%	**7.09%**	0.00***	2.30%	**11.46%**	0.00***
ΔGlobal Fiscal Cycle$_{i,t}$	12.07%	**22.21%**	0.00***	−0.53%	**7.26%**	0.00***	4.00%	**10.91%**	0.00***
ΔBEX$_t$	22.62%	**35.64%**	0.00***	−1.56%	**6.56%**	0.00***	−1.31%	**8.10%**	0.00***
ΔGZ$_t$	28.10%	**40.90%**	0.00***	1.74%	**6.87%**	0.00***	−1.15%	**8.04%**	0.00***
ΔPremium$_t$	−0.63%	**25.39%**	0.00***	0.91%	**8.38%**	0.00***	4.17%	**13.64%**	0.00***
ΔVIX$_t$	15.50%	**33.14%**	0.00***	1.69%	**7.59%**	0.00***	−0.98%	**8.64%**	0.00***
INT$_t$	10.33%	**33.29%**	0.00***	1.88%	**7.82%**	0.00***	−1.31%	**8.12%**	0.00***

Note: *p<0.1; **p<0.05; ***p<0.01

The results clearly illustrate that the US fiscal condition has strong out of sample predictability for global equity returns. In all cases, the Clark and West (2007) test of equal predictability implies that adding the US surplus-debt ratio to a given univariate model leads to MSEs that are statistically significantly lower.

Looking at the out-of-sample R^2 values generates the same conclusions. For all variables, macroeconomic, risk-free rates, fiscal and financial, adding the US surplus-debt ratio to the univariate model, dramatically improves the out of sample performance. Importantly, the US fiscal condition again outperforms the other fiscal variables. The local fiscal condition has relatively poor out of sample predictability on its own, with it's OOS R^2 ranging from -0.53% to 2.53% across all future horizons. Adding the US fiscal condition to the predictive model improves the range of OOS R^2 from 7.09% to 21.49%. The global fiscal cycle has better out-of-sample performance with the OOS R^2 reaching a high of 12.07% at the 1 quarter frequency. But again adding the US fiscal condition dramatically improves the model, increasing the OOS R^2 to as high as 22.62% at the 1 quarter frequency.

Figure 6: US Fiscal Condition and Global Predictability Out of Sample



Description: This figure plots realised future global equity returns against their predicted counterparts using a bivariate model that only includes the US surplus-debt ratio, in both levels and changes. Results are plotted up to a 5 year horizon. Correlation coefficients are reported in the bottom right of each figure.

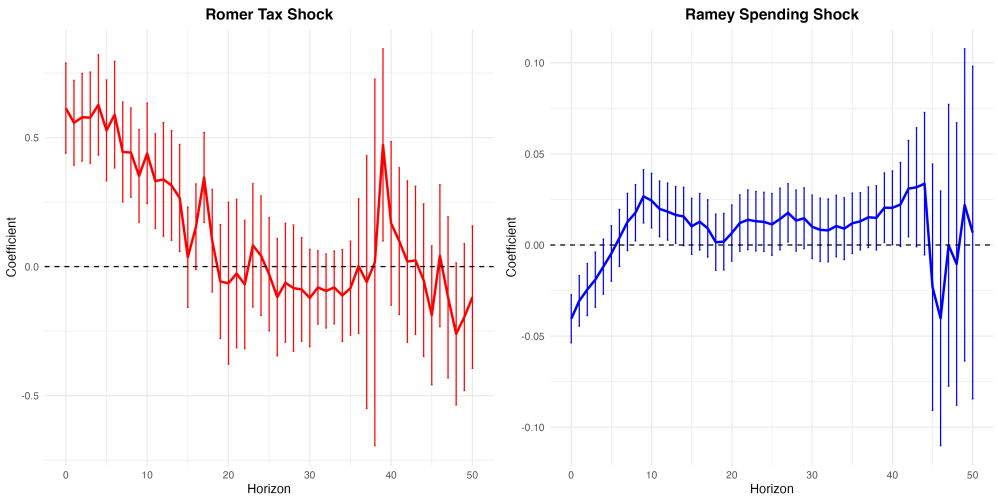
2.3 Identified US Fiscal Shocks

Overview: The predictability evidence thus far has used the US surplus-debt ratio as the main fiscal variable. I now confirm these results using identified US fiscal shocks.

Narrative Approach: I start with the narrative approach popular in the empirical macroeconomics literature. This approach involves carefully analysing historical documents such as presidential speeches, congressional reports and other governmental records. This allows for an identification of exogenous tax and spending changes driven by reasons unrelated to the business cycle such as: i) desire to reduce the deficit, ii) generate long-run growth and iii) ideological reasons. Romer and Romer (2010) uses this approach to identify exogenous shocks to the present value of future US taxes. On the spending side, Ramey (2011) extract exogenous US military spending shocks.

Using these narrative driven fiscal shock series, I also confirm my predictability evidence. I re-estimate 12 using these shocks series instead of the orthogonalised fiscal shocks. The results are displayed before, establishing that positive US spending shocks and positive shocks to the future path of US taxes predict higher future foreign equity returns moving forward.

Figure 7: Narrative Fiscal Shocks and Future Global Equity Returns

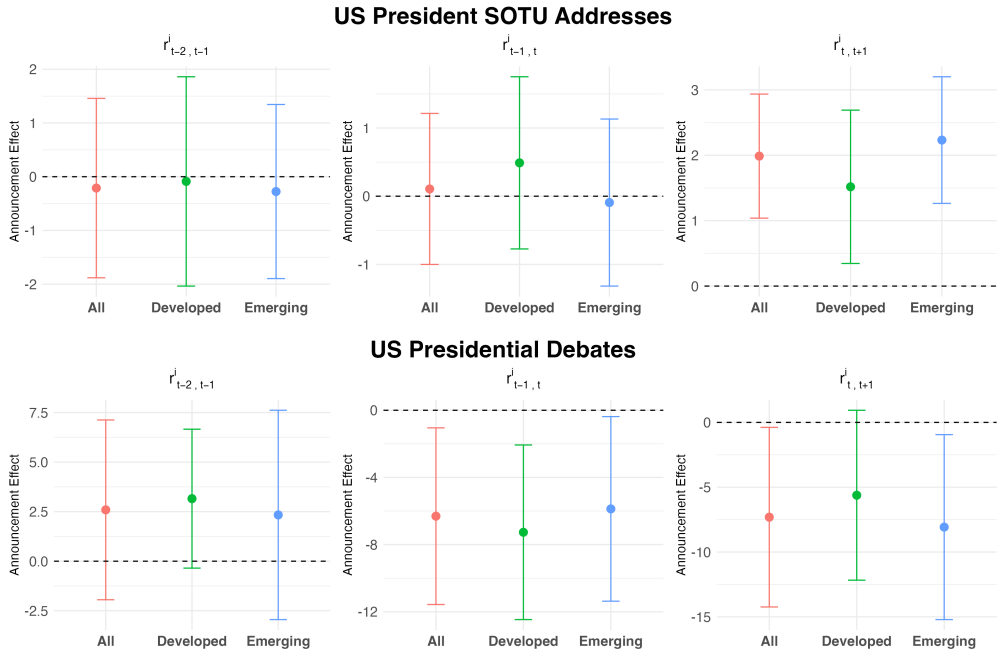


Description: This figure plots the impulse responses of future local equity returns to the narrative identified US exogenous fiscal shocks. The left hand side uses exogenous US tax shocks from Romer and Romer (2010). The right hand side uses at the US miliary news shock series from Ramey (2011). The red and blue lines are the impulse responses of foreign equity returns to these US tax shocks. As before, the bands represent 90% confidence bands.

Political Events Case Study: In addition to this macro-econometric approach, I also attempt to identify plausibly exogenous US fiscal shocks using high frequency approaches. Firstly, I follow Liu and Shaliastovich (2022) and use the US president's state of the union (SOTU) address. The SOTU is one of the most important event in US national politics and it's content is widely viewed as revealing information about governmental tax and spending activities which are distinct from US monetary policy or macroeconomic news. Thus analysing high frequency global asset price responses around SOTU addresses is another way of confirming the global return predictability of the US fiscal policy.

Secondly, I look at global asset pricing responses around US presidential debates. The performance of presidential candidates in these debates constitute exogenous shocks to election probabilities and hence communicate information about future US fiscal policy.

Figure 8: US Political Events and Global Asset Prices



Description: This figure plots the results of an event study panel regression that evaluates global asset returns in a three day window around US political events. The top panel investigates global price responses around SOTU announcements whereas the bottom panel looks at US presidential debates. A full list of dates are relegated to section 20. The left, middle and right panel reports the returns 1 days before, on the day of the announcement and finally the day after the SOTU address. The orange, green and blue points represent the point estimates from the event study regression when the panel includes all countries, the baseline sample with developed countries only and finally with emerging market countries only. The bands represent 90% confidence bands.

Table 9: *SOTU, SOTS and Foreign FP Announcement Effects and Global Risky Asset Prices*

This table reports summary statistics for excess local equity returns for foreign non-US equity markets around State of the Union (SOTU) and State of the State (SOTS) addresses. Means and standard deviations are in basis points. The t-statistics are associated with testing the null that the difference in mean returns on SOTU (SOTS) days and non-SOTU (SOTS) days is zero. The sample period is 1980Q1-2018Q4.

Panel (a): Local Equity Returns around SOTU

Country	*SOTU*			*SOTU+1*			*Non-SOTU Days*	
	Mean	SD	T-Stat	Mean	SD	T-Stat	Mean	SD
Australia	14.09	123.08	0.79	34.23	73.24	1.72*	2.90	109.23
Canada	11.80	88.30	0.72	1.71	80.10	0.13	1.48	98.2
Denmark	9.23	104.49	0.39	2.49	88.45	0.29	1.27	88.5
France	16.70	80.80	0.932	30.20	103.2	2.31**	1.97	149.2
Germany	38.20	78.10	3.21***	33.44	122.70	1.98**	3.08	135.67
Italy	30.91	88.10	1.89*	26.80	124.08	1.29	0.55	173.80
Japan	14.82	155.29	0.38	28.98	107.30	1.03	3.20	148.32
Norway	36.23	82.32	3.00***	28.12	109.23	1.60	2.74	120.82
New Zealand	19.09	100.23	1.49	24.10	110.23	1.32	2.00	113.51
Sweden	31.28	92.39	2.01**	38.12	97.13	1.88*	2.41	118.23
Switzerland	22.38	109.65	1.53	26.23	117.23	1.68*	2.40	153.80
United Kingdom	24.21	144.23	1.11	49.23	93.24	3.42***	2.80	105.32
Aggregate	23.43	72.80	2.04**	27.56	60.84	2.60***	2.18	107.19

Panel (b): Global Equity Returns around SOTU vs SOTS

Type	*Announcement*			*Announcement+1*			*Non-Announcement Days*	
	Mean	SD	T-Stat	Mean	SD	T-Stat	Mean	SD
SOTU	23.43	72.80	2.04**	27.56	60.84	2.60***	2.18	107.19
SOTS	4.23	83.98	0.09	2.89	73.24	0.05	2.58	89.81
Australia	4.02	43.98	0.53	4.11	43.28	0.28	1.91	79.22
Canada	3.01	43.33	0.42	4.87	48.20	0.30	2.23	80.80
New Zealand	3.47	49.42	0.61	4.89	43.19	0.32	1.22	89.20
United Kingdom	6.23	43.98	0.74	7.89	43.10	0.75	2.09	79.23

SOTU: The event study results are reported in figure 8 above. The top panels focus on the SOTU addresses. Notice that whilst there isn't a pre-announcement effect or a response on the day of the SOTU address, there is an elevation of global asset prices by approximately 2.6 basis points on the day after the announcement. This delayed response can be explained by time zone effects: SOTU addresses occur in the evening during the eastern time zone, which corresponds to the next business day for most non-US countries.

Given the daily frequency, the magnitude of the response the day after the SOTU address is sizeable. It roughly amounts to over 5% annualised elevation of asset prices on the day after the SOTU announcement date relative to non-announcement dates. These results regarding political addresses are unique to the US federal government: table 9 indicates that there is no differential price response around other fiscal announcements: foreign or US state level. Thus US fiscal news is special: such news resolves uncertainty about future US fiscal policy, which lowers global risk premia and consequently drives up global asset prices following SOTU days.

Presidential Debates: The bottom panels of figure 8 documents global equity responses around US presidential debate dates. Notice that there is a noticeable effect on the day of and the day after the presidential debates, though the sign is different. Whilst global asset prices are elevated around SOTU addresses, they are depressed around presidential debates. These results are consistent with a simple risk based interpretation. Whilst SOTU addresses resolve uncertainty about future US fiscal policy, presidential debates may add to it. This is especially true if candidates advocating for drastic changes to prevailing US fiscal policy are perceived to have won these debates. This is certainly the case for republican candidates such as Ronald Reagan in 1980, George W Bush in 2000 and Donald Trump in 2016, all of whom advocated for sweeping tax reductions during their successful presidential campaigns. Thus the prospect of a weaker US fiscal condition rises, driving up global risk premia and depressing global risky asset prices around these dates.

3 Mechanisms

3.1 Role of Expected Future Taxes

Overview: Taken together, the results in the previous section document a striking finding: like the US monetary policy, the US fiscal policy has a global footprint. Deteriorations in the US fiscal condition i) coincide with depressed global risky asset prices and ii) predict higher future global equity returns at short, medium and long-run horizons. I now investigate the mechanisms driving these results. I start by demonstrating the important role that the expected future path of US taxes plays in this regard.

Fiscal Decomposition: To demonstrate this, I perform a variance decomposition of the US surplus-debt ratio. To derive this decomposition, I start from the observation that the log US government debt return follows the identity:

$$\begin{aligned} r_{b,t}^{US} = log(\frac{B_t^{US} + S_t^i}{B_{t-1}^i}) =& \Delta b_t^{US} + log(1 + \frac{S_t^{US}}{B_t^{US}}) \\ =& \Delta b_t^{US} + s_t^{US} \end{aligned} \tag{13}$$

Here Δb_t^{US} is US govt debt growths and $s_t^{US} = log(1+\frac{S_t^{US}}{B_t^{US}}) \approx 2+log(\frac{S_t^i}{B_{t-1}^i})(1-\Delta b_t^i)$ for small $\frac{S_{t+1}^i}{B_{t+1}^i}$. Since $1 - \Delta b_t^i \geq 0$, s_t^{US} tracks the US primary surplus-debt ratio: $\frac{S_t^i}{B_{t-1}^i}$. Similar to Campbell, Gao, and Martin (2023), I log-linearize this return identity around the point where the US surplus-debt ratio is small ($s_t^{US} \approx 0$). This yields the approximation:

$$\begin{aligned} s_t^i \approx& (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \rho^j [\underbrace{r_{b,t+1+j}^i}_{\text{Discount Rates}} - \underbrace{[\frac{1}{1-\beta}\Delta\tau_{t+1+j}^i - \frac{\beta}{1-\beta}\Delta g_{t+1+j}^i]}_{\text{Cash Flows}}] \\ =& (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \rho^j [\underbrace{\Delta b_{t+1+j}^i}_{\text{Debt Growth}} + \underbrace{s_{t+1+j}^i}_{\text{Future Surplus-Debt}} - \frac{1}{1-\beta}(\underbrace{\Delta\tau_{t+1+j}^i}_{\text{Taxes}} - \beta\underbrace{\Delta g_{t+1+j}^i}_{\text{Spending}})] \end{aligned} \tag{14}$$

(14) illustrates that the US surplus-debt ratio is driven by cash flow and discount rate components. In response to a decline in the US surplus-debt ratio, one of two things can happen. Firstly there

can be a lower future path of discount rates: $\{r^i_{b,t+j+1}\}_{j=0}^{\infty} \downarrow$ through either i) lower debt growth or ii) lower future US surplus-debt ratios. Conversely cash flows can adjust through a higher future path of primary surpluses that can materialise through i) lower future spending or ii) higher future taxes. (14) therefore implies the following variance decomposition:

$$1 = \underbrace{\frac{\mathbb{COV}(s_t^{US}, (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \rho^j \Delta b_{t+1+j}^{US})}{\mathbb{VAR}(s_t^{US})} + \frac{\mathbb{COV}(s_t^{US}, (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \rho^j s_{t+1+j}^{US})}{\mathbb{VAR}(s_t^{US})}}_{\text{Discount Rates}}$$
$$\underbrace{- \frac{\mathbb{COV}(s_t^{US}, (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \frac{\rho^j}{1-\beta} \Delta \tau_{t+1+j}^{US})}{\mathbb{VAR}(s_t^{US})} + \frac{\mathbb{COV}(s_t^{US}, (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \frac{\rho^j}{1-\beta} \Delta g_{t+1+j}^{US})}{\mathbb{VAR}(s_t^{US})}}_{\text{Cash Flows}} \quad (15)$$

VAR: To estimate the variance decomposition, I follow Campbell et al (2023) and use a VAR approach. Motivated by (14), the VAR includes the US surplus-debt ratio, the US tax growth, US government debt returns and US debt growth:

$$z_{t+1} = \mu + \Gamma z_t + \Psi \xi_{t+1}$$
$$z_t^i = \left[s_t^{US}, \quad \Delta \tau_t^{US}, \quad \Delta b_t^{US} \right]$$

Define $e_1 = [1,0,0], e_2 = [0,1,0], e_3 = [0,0,1]$ as the vectors that selects the surplus-debt ratio, tax growth and debt growths from the VAR system. Then the expectation terms can be estimated as: $\mathbb{E}_t \sum_{k=1}^{\infty} s_{t+k}^{US} = e_1' \lambda \Gamma z_t$, $\mathbb{E}_t \sum_{k=1}^{\infty} \Delta \tau_{t+k}^{US} = e_2' \lambda \Gamma z_t$ and so on. Here $\lambda = \kappa \Gamma (I - \kappa \Gamma)^{-1}$. I is an $N \times N$ identity matrix and Γ is an $N \times N$ matrix of parameters associated with the VAR system. Finally κ is a log-linearization parameter that is calibrated to match the average surplus-debt ratio: $-log\kappa = \mathbb{E} log(1 + \frac{S_t^{US}}{B_{t-1}^{US}})$. I follow Campbell et al (2017) and set $\kappa = 0.995$. The results of the fiscal decomposition are presented below in table 10.

Table 10: Fiscal Variance Decomposition

Discount Rate Components			Cash Flow Components		
Component	**Share**	**C.I.**	**Component**	**Share**	**C.I.**
Debt Growth	7.4%	[-20%, 16%]	Taxes	57.99%	[32%, 94%]
Future Surplus-Debt	1.8%	[-14%, 88%]	Spending	32.99%	[18%, 62%]

The results clearly indicate that discount rates play a limited role in driving the US surplus-debt ratio. As for the cash flows, whilst both spending and taxes are important, the tax component accounts for a larger fraction of the variance. This speaks to the important role that the expected future path of US taxes plays in driving fluctuations in the US surplus-debt ratio.

3.2 Role of Cash Flows and the Real Channel

Overview: To complement these results, I now demonstrate that a ***real*** channel is the driving force behind the global transmission of US fiscal policy into global risky asset prices. To demonstrate this, I follow the methodology from Campbell and Shiller (1988) and decompose the global equity market response to US fiscal policy shocks into a i) risk-free rate, ii) cash flow and iii) risk premium component using the first-order approximation:

$$r_t^w - \mathbb{E}_{t-1} r_t^W \approx (\mathbb{E}_t - \mathbb{E}_{t-1})[\underbrace{\sum_{\tau=0}^{\infty} \rho^\tau r_{F,t+\tau}^W}_{\text{Risk Free Rate}} + \underbrace{\sum_{\tau=0}^{\infty} \rho^\tau \Delta d_{t+\tau}}_{\text{Cash Flow}} + \underbrace{\sum_{\tau=0}^{\infty} \rho^\tau (r_{t+\tau}^W - r_{F,t+\tau}^W)}_{\text{Risk Premium}}] \tag{16}$$

Following the approach of Campbell (1991) and Campbell and Ammer (1993), I use a p lag VAR to model the news terms:

$$z_{t+1} = \Lambda z_t + \phi \Delta \text{US Surplus-Debt Ratio}_t^{Orth} + w_{t+1} \tag{17}$$

ΔUS Surplus-Debt Ratio^{Orth} is the four quarter change in the US surplus-debt ratio orthogonalised w.r.t US and global business cycle and the global fiscal cycle. This implies that the revisions in

expectations for each component can be written as:

$$\begin{aligned}
\mathcal{N}_{R_F} &= \sum_{\tau=0}^{\infty} \rho^j r^W_{F,t+\tau} = s_r(1-\rho A)^{-1} w_{t+1} \\
\mathcal{N}_{R_P} &= \sum_{\tau=0}^{\infty} \rho^j (r^W_{t+\tau} - r^W_{F,t+\tau}) = s_y \rho A(1-\rho A)^{-1} w_{t+1} \\
\mathcal{N}_{R} &= r^W_t - \mathbb{E}_{t-1} r^W_t = s_r w_{t+1} \\
\mathcal{N}_{CF} &= \sum_{\tau=0}^{\infty} \rho^j \Delta d_{t+\tau} = \mathcal{N}_R - \mathcal{N}_{R_P} - \mathcal{N}_{R_F}
\end{aligned} \tag{18}$$

s_y, s_r are appropriate $1 \times np$ selection matrices that isolate the world excess return $r^W_t - r^W_{F,t}$ and the risk free rate $r^W_{F,t}$ from the VAR system. $\rho = 0.995$ is chosen in line with the literature (Campbell (1991)). Thus the transmission of US fiscal shocks can be decomposed into a i) risk-free rate component ($\mathcal{F}_{R_F}$), ii) cash flow component ($\mathcal{F}_{CF}$) and iii) risk-premium component ($\mathcal{F}_{R_P}$):

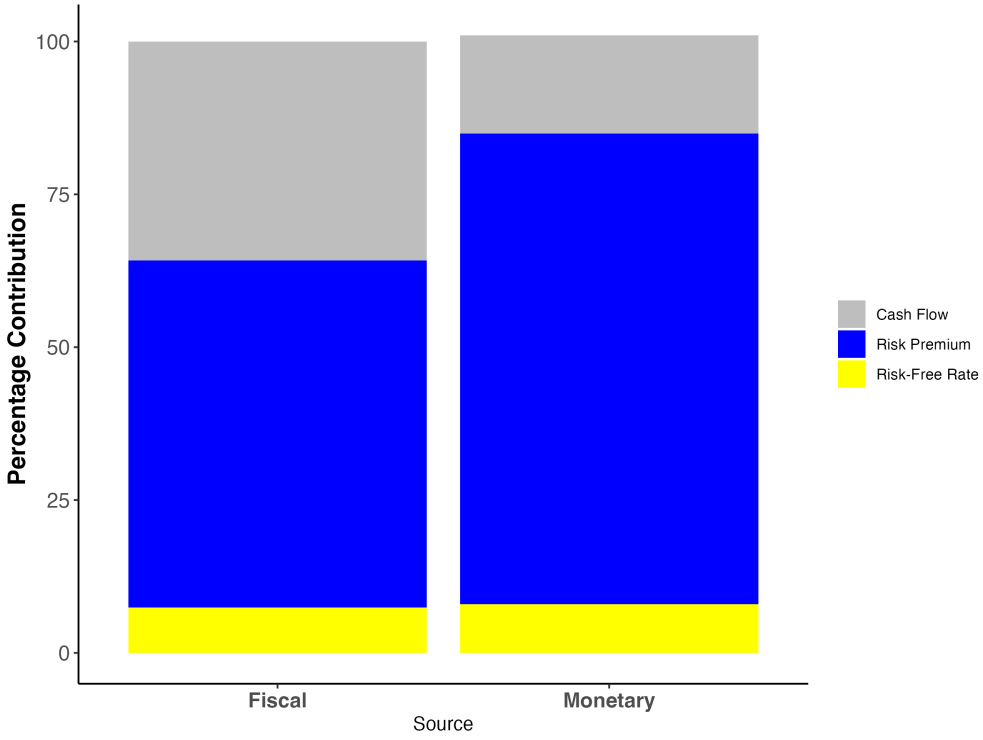
$$\begin{aligned}
\mathcal{F}_{R_F} &= s_r(1-\rho\Lambda)^{-1}\phi \\
\mathcal{F}_{R} &= s_y\phi \\
\mathcal{F}_{R_P} &= s_y \rho\Lambda(1-\rho\Lambda)^{-1}\phi \\
\mathcal{F}_{CF} &= \mathcal{F}_R - \mathcal{F}_{R_P} - \mathcal{F}_{R_F}
\end{aligned} \tag{19}$$

US FP vs US MP: The results of this decomposition are presented in table 11. Confidence intervals are constructed using the wild bootstrap methodology advanced by Gertler and Karadi (2015) and Merterns and Raven (2019). It shows that the risk-free rate component plays a rather muted role in the fiscal transmission (7%) versus the cash flow (35%) and the risk-premium component (58%). How do these results differ from that of US monetary policy? To explore this, table 11 also performs a similar decomposition for US monetary policy shocks, using the shock series from Jarocinski and Karadi (2020). These results demonstrate a key difference. Whilst the risk premium components dominates the US monetary policy transmission, the cash flow component also plays a key role in driving the global transmission of US fiscal policy.

Table 11: Global Shock Transmission Variance Decomposition (US FP vs US MP)

Component	Share (Fiscal)	C.I	Share (Monetary)	CI
Risk-Free Rate ($\mathcal{F}_{R_F}$)	7.4%	[-20%, 17%]	7.98%	[-8%, 14%]
Cash Flow ($\mathcal{F}_{CF}$)	35.8%	[17%, 62%]	16.03%	[4%, 30%]
Risk-Premium ($\mathcal{F}_{R_P}$)	56.8%	[32%, 95%]	76.99%	[39%, 98%]

Figure 9: Campbell-Shiller Decomposition: Fiscal vs Monetary

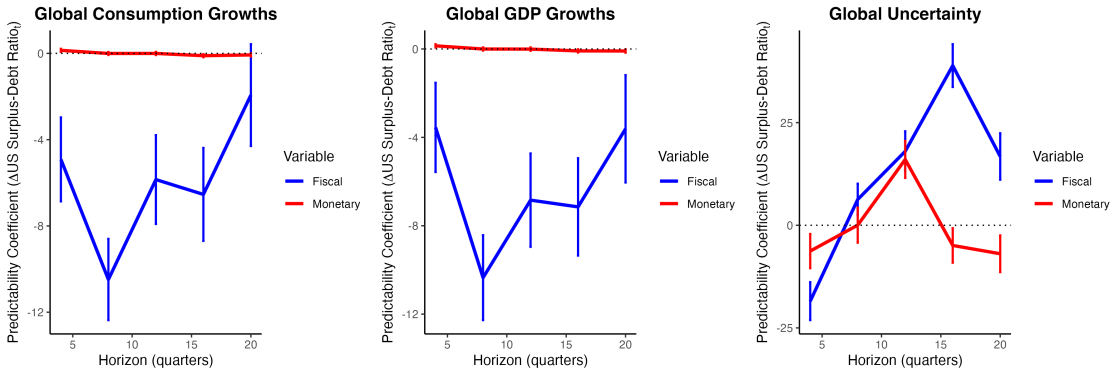


Description: This figure compares the results of the Campbell-Shiller decomposition for US fiscal and monetary shocks. The cash flow, risk-free rate and risk premium components are cumulatively plotted.

Real vs Financial Channel: The decomposition results communicate an important point: the global footprint of US fiscal and US monetary policy are two related but ultimately distinct economic phenomena. Whilst the global transmission of US monetary policy is largely a ***risk premium story*** that operates by disrupting global ***financial*** conditions (Miranda-Agrippino and Rey (2020)), the global footprint of US fiscal policy is also a ***risk*** story that operates by disrupting ***real*** conditions in the global economy. This is the natural interpretation for why cash flows play a larger role in driving the global transmission of US fiscal shocks into global risky asset prices.

To further support this argument, I perform local projections comparing the impulse responses of i) global consumption and GDP growths and ii) global uncertainty to US monetary policy and fiscal shocks. Again the US monetary shock is from Jarocinski and Karadi (2020). The results are presented below in figure 10. Whilst a deterioration in the US fiscal condition i) lower future global consumption and GDP growths up to a 20 quarter (5 year horizon) and ii) raises future global uncertainty, a US monetary tightening has no meaningful distortionary impact on fugure global growth or global uncertainty. This largely supports my hypothesis that US fiscal policy transmission is a risk story whereas US monetary policy transmission is not.

Figure 10: Macro Predictability Coefficients (Fiscal vs Monetary)



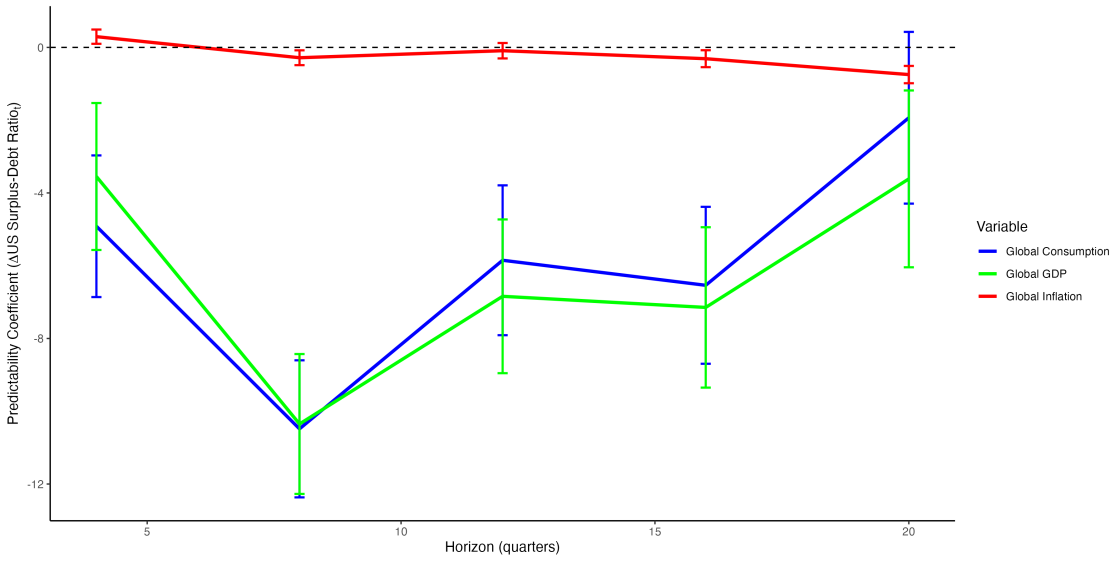
Description: This figure compares the global macro predictability of US monetary and US fiscal shocks.The object of prediction are i) future global consumption and GDP growths (black) and iii) future uncertainty. Realized stock market volatility is the proxy for uncertainty. Blue, red lines highlight impulse responses to one SD decline in ΔUS Surplus-Debt Ratio$_t$ and a one S.D positive US monetary policy shock, using the shock series from Jarocinski and Karadi (2020). I plot the responses at a 1 year (4 quarter), 2 year (8 quarter), 3 year (12 quarter), 4 year (16 quarter) and 5 year (20 quarter) horizon respectively. The bands correspond to the 90% confidence intervals for each of the predictive regressions. Magnitudes are in basis points (0.01%).

3.3 US Fiscal and Monetary Policies and Global Inflation

Overview: So far the results speak to the role of cash flows and expected future path of US taxes in driving the global transmission of US fiscal policy. Now I investigate the specific economic mechanism. Conventional fiscal theory implies that increased US fiscal deficits are financed through a combination of i) a higher future path of distortionary US taxes or ii) higher expected future inflation (Leeper, Leith, and Liu (2021)). This can trigger contractionary global monetary policy responses which can distort global growth and increase global risk premia (Kekre and Lenel (2024)).

Of course, an important implication of this mechanism is that there should be a tight empirical link between the US fiscal condition and i) lower future global growth and ii) higher future global inflation. Using a local projection approach, Figure 11 provides suggestive evidence against this hypothesis. Whilst a US fiscal expansion distorts future global growth, it has a negligible economic impact on future global inflation.

Figure 11: US Fiscal Condition, Future Global Growth and Future Global Inflation



Description: This figure plots local projections that evaluate the predictive power of the US fiscal condition for i) future global growth and ii) future global inflation. Similar to prior local projections, monetary policy and financial controls are included in the specification. Specifically, I look at the responses to a 1 S.D decline in ΔUS Surplus-Debt Ratio$_t$. I plot the responses at a 1 year (4 quarter), 2 year (8 quarter), 3 year (12 quarter), 4 year (16 quarter) and 5 year (20 quarter) horizon respectively. The bands correspond to the 90% confidence intervals for each of the predictive regressions. Magnitudes are in basis points (0.01%). The bands correspond to the 90% confidence intervals.

3.4 US Fiscal Policy and Dollar Convenience Yields

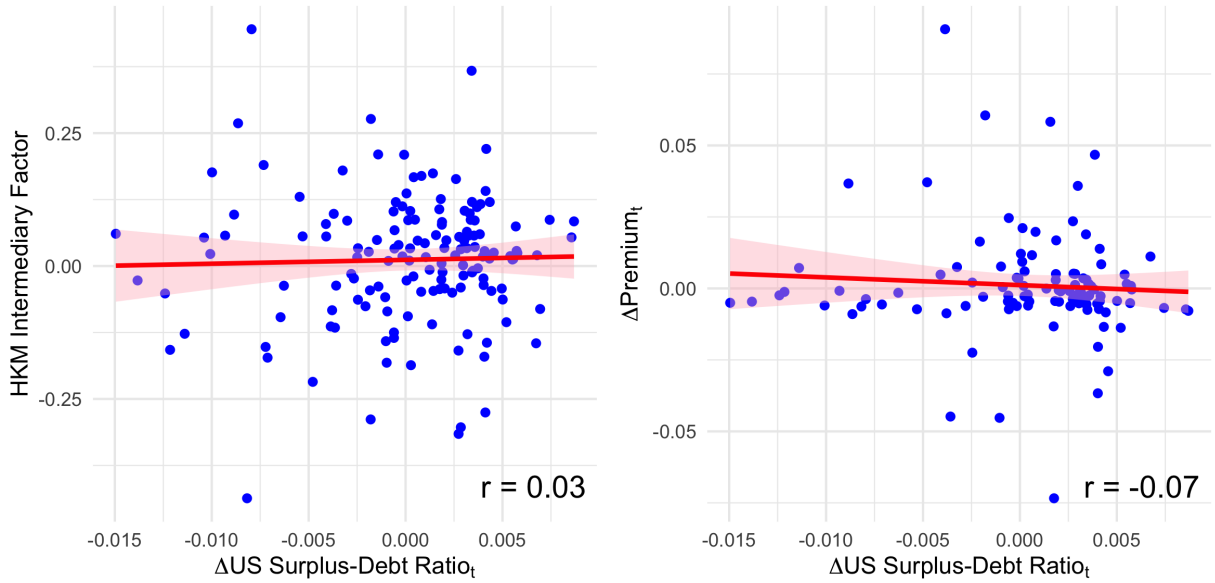
Overview: Another possibility is that the US fiscal policy drives up global risk premia through its impact on the dollar convenience yields. This is a popular view in recent international macro-finance literature that emphasises the US role as the global safe asset provider (Jiang, Krishnamurthy, and Lustig (2023); Jiang (2021)).

Under these frameworks, positive shocks to US government spending i) appreciates the dollar exchange rate and ii) tightens the constraints of global intermediaries. Since these intermediaries are marginal in pricing global risky assets, this story naturally links the US fiscal condition with higher global risk premia, consistent with my empirical results. In addition, intermediaries respond to tightening constraints by increasing their demand for dollar safe assets which have greater collateral value because of the dollar's role as the global safe asset of choice.

Of course, an important implication of this mechanism is that there should be a tight empirical link between the US fiscal condition, dollar convenience yields, intermediary risk bearing capacity, the dollar exchange rate and global equity returns. Figure 12 provides suggestive evidence against this hypothesis. Here I use i) US intermediary portfolio returns extracted from He, Kelly, and Manela (2017) to proxy for the US intermediary risk-bearing capacity and ii) the US treasury premium, the average covered interest rate parity (CIP) violation on G10 currencies, as a proxy for the convenience yields that foreigners attach to dollar safe assets (Du, Im, and Schreger (2018)).

The correlation between the US surplus-debt ratio and these proxies is relatively weak, with the pearson correlation coefficient statistically insignificant at the 10% level. This implies that my novel empirical evidence linking changes in the US surplus-debt ratio to global risk premia cannot be accounted for by the special US role as the global safe asset provider. Thus a different underlying economic mechanism is at play driving the global footprint of US fiscal policy.

Figure 12: US Fiscal Condition, Dollar Convenience Yields and Intermediary Risk Bearing Capacity

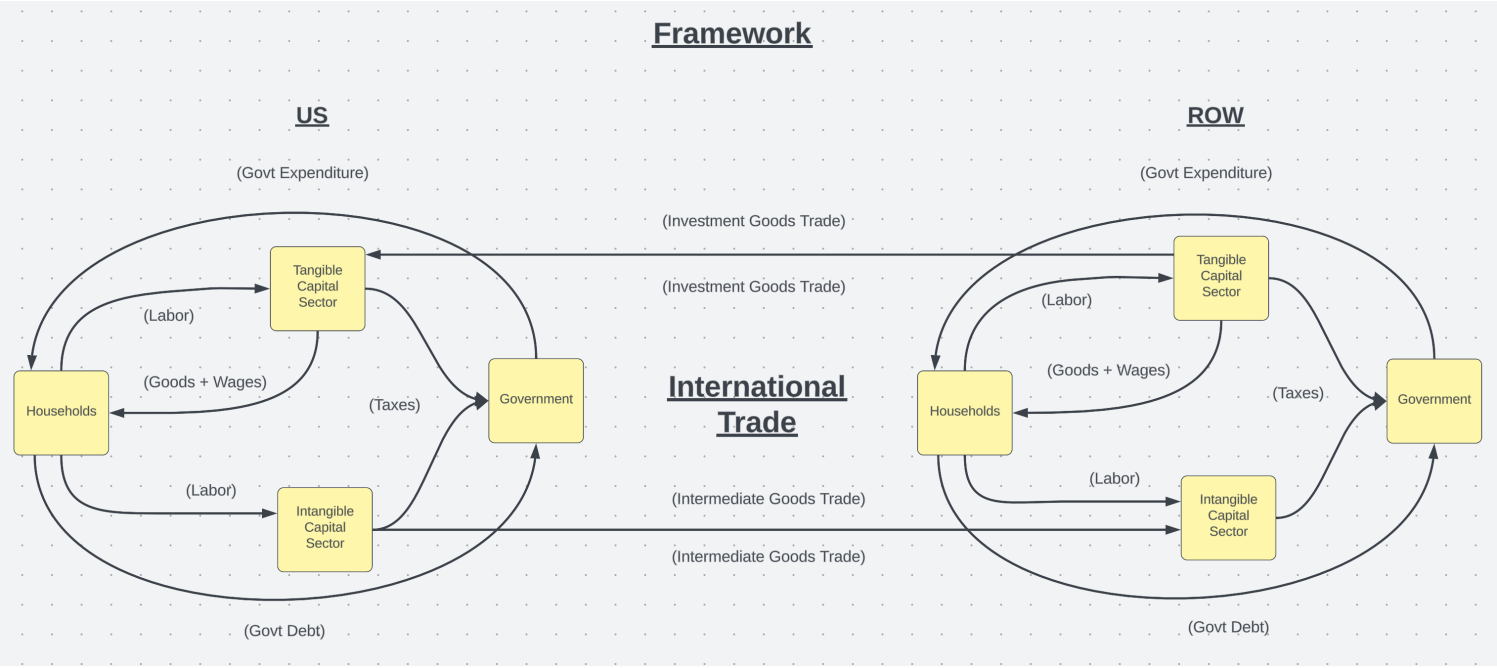


Description: This figure plots the US fiscal condition and i) value-weighted return on a portfolio of NY Fed primary dealers' holding companies from He, Kelly, and Manela (2017) and ii) the average covered interest parity deviation between developed country government bonds and U.S. Treasuries computed from Du, Im, and Schreger (2018). The former is a proxy for US intermediary risk bearing capacity and the latter is a proxy for the average convenience yield that foreigners attribute to dollar safe assets. A line of best fit is drawn for both plots and the correlation coefficient is reported in the bottom right hand corner. The red bands correspond to the 90% confidence intervals.

3.5 US Role as Global Innovation Leader

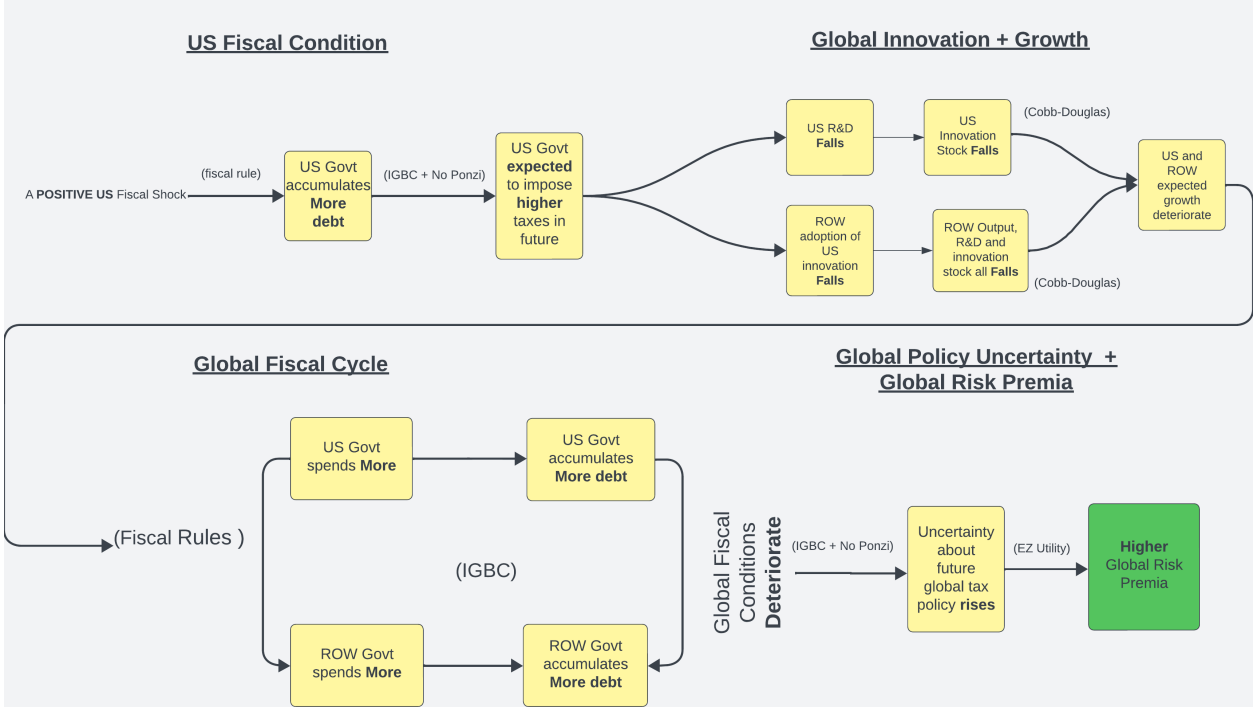
Overview: Given these results, I propose an alternative mechanism that emphasises another source of US specialness: her role as the *global innovation leader*. When the US innovates, the rest of the world (ROW) follows by adopting her technology as an intermediate input into their own innovation and production. Conversely when a non-US country innovates, the outside world doesn't adopt her innovation to the same extent. This US centrality in global innovation enables the US fiscal policy to exert unique influence over i) global innovation and growth, ii) the global fiscal cycle, iii) global policy uncertainty and consequently iv) global risk premia. To formalise this mechanism, I build a multi-country real business cycle framework with rich and realistic fiscal policy rules where the US is central to the global innovation network. This model framework is summarised in figures 13.

Figure 13: Model Design (Overview)



Description: This figure visualises the full quantitative model. It is a multi-country real business cycle (RBC) framework with three distinguishing features. Firstly fiscal policy is driven by exogenous fiscal rules and the intertemporal government budget constraint (IGBC) and is remitted back to the households. Secondly endogenous growth is driven by local R&D (Romer (1990)) and foreign technology adoption (Comin and Gertler (2006)). Finally, households have Epstein and Zin (1991) (EZ) preferences. To accommodate space, I relegate full technical details to the appendix.

Figure 14: US as Global Innovation Leader (Mechanism Overview)



Description: This figure visualizes the proposed mechanism. The key driving force is the special US role as the global innovation leader. Due to this role, distortionary US fiscal policies imposed to finance positive US government spending shocks can depress foreign incentives to adopt US innovation. This implies that a deterioration in the US fiscal condition predicts i) ***lower*** expected future global growth, ii) ***deteriorations*** in foreign fiscal conditions outside the US, iii) ***higher*** global policy uncertainty, and consequently iv) ***higher*** global risk premia.

The associated model mechanism is visualised in figure 14. To communicate the economics behind this proposed mechanism, consider a positive US government spending shock. Assume that this fiscal expansion is financed through higher US government debt. Further assume that there is an intertemporal government budget constraint (IGBC) which requires that this debt eventually be repaid through a higher future path of US taxes.

Since a higher future path of US taxes depresses the present value of future profits in the local innovation sector, the fiscal expansion depresses local incentives to innovate. But it also has distortionary real impacts abroad because US intermediate goods are a critical input for the production of foreign intermediate goods. Thus depressed US innovation and growth also results in depressed innovation and growth overseas.

Confronted by this depressed global growth environment, foreign governments then seek to insure their households by following the US in adopting expansionary fiscal policies. Since these governments also smooth the local tax burden over time by accumulating more government debt that must eventually be repaid, these global fiscal deteriorations raise uncertainty over future global tax policy. This rise in global policy uncertainty then maps directly into higher global risk premia.

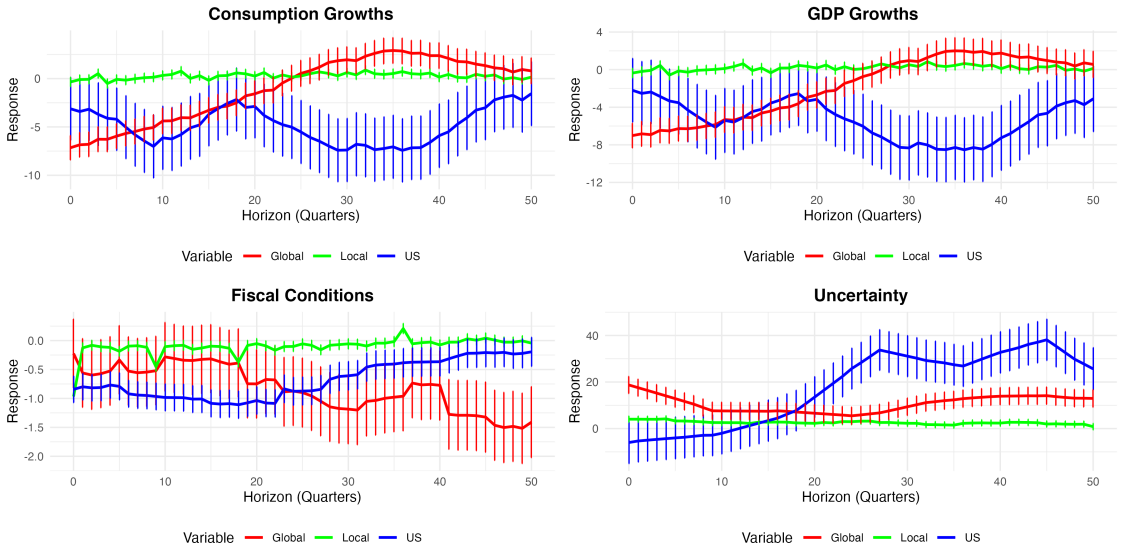
This results in lower global risky asset prices today and higher future global returns moving forward. Thus the model reproduces the unique mapping between US fiscal deteriorations and i) depressed global risky asset prices and ii) higher global risk premia implied by my empirical evidence. In addition to these general predictability patterns, this proposed mechanism can also explain why local financial markets pay more attention to the US fiscal stance than the local fiscal stance. Since the US fiscal policy is a primitive driver of global growth, US fiscal shocks constitute a large part of the underlying volatility in local fiscal conditions. Thus local fiscal policy drives local asset valuations in large part through the US fiscal policy in my model.

US FP and Global Growth: This novel mechanism has many rich testable predictions. The first part of the mechanism links the US fiscal condition to global growth. In particular, deteriorations in the US fiscal condition i) depress US and foreign innovation intensity and consequently predicts ii) ***lower*** global growth. I confirm these empirical predictions using panel local projections. Here I confirm my local projection analysis using identified fiscal shocks. The panel local projections now take the form:

$$X^i_{t,t+j} = \alpha + \beta^{US}_h u^{US}_t + \beta^i_h u^i_t + \beta^{Global}_h \Delta u^{Global}_t + \Gamma \text{Control}_t + \epsilon_{i,t}, j \in \{1, 2, ..., N\} \tag{20}$$

$u^i_t, u^{Global}, u^{US}_t$ are the local, global and US fiscal shocks identified using the earlier orthogonalisation procedure highlighted previously. Figure 15 plots the impulse responses when the orthogonalised surplus shocks estimated from 12 are used as the main fiscal variable. As a final step, figure 32 uses the narrative identified fiscal shocks. In all cases, the mechanism's key implications are supported.

Figure 15: Macro and Fiscal Predictability Coefficients (Orthogonalised Surplus Shocks)



Description: This figure estimates the panel macro local projection specification 20. The object of prediction are i) future global consumption and GDP growths (black), ii) future fiscal conditions and iii) future uncertainty. The local surplus-debt ratio and realized stock market volatility are the proxies for fiscal conditions and uncertainty. Blue, red and green highlight impulse responses to negative orthogonalised US, global and local fiscal shocks respectively.The bands correspond to the 90% confidence intervals for each of the predictive regressions. Magnitudes are in basis points (0.01%).

4 Model

Overview: Having validated my innovation story, I build a quantitative international macro-finance model to formalise it. The model is a multi-country real business cycle (RBC) framework with three distinguishing features. Firstly fiscal policy is driven by exogenous fiscal rules and the intertemporal government budget constraint (IGBC) and is remitted back to the households. Secondly endogenous growth is driven by local R&D (Romer (1990)) and foreign technology adoption (Comin and Gertler (2006)). Finally, households have Epstein and Zin (1991) (EZ) preferences.

The key model asymmetry is that the US is the global innovation leader. Whilst each country's production is home biased towards their own innovation as intermediate inputs, *they have a greater preference for US innovation relative to the innovation of other foreign countries.* Taking this asymmetry as given, my model qualitatively and quantitatively accounts for my empirical results regarding the global footprint of US fiscal policy. I summarise model details in table 12 below. To accommodate space, I relegate full technical model details to the online theory appendix section A.

Table 12: *Model Details*

Description: This table describes the full model details. It is a multi-country real business cycle (RBC) framework with three distinguishing features. Firstly fiscal policy is driven by exogenous fiscal rules and the intertemporal government budget constraint (IGBC) and is remitted back to the households. Secondly endogenous growth is driven by local R&D (Romer (1990)) and foreign technology adoption (Comin and Gertler (2006)). Finally, households have Epstein and Zin (1991) (EZ) preferences. To accommodate space, I relegate full technical details to the theory appendix A.

Panel (a): Model Ingredients

Fiscal	**Description**	**Included**
FP Rules	Exogenous Fiscal Rules	✓
IGBC + No Ponzi	Intertemporal Govt Budget Constraint (IGBC)	✓
Transfers	Fully remitted to Household (HH) sector	✓
Household		
Epstein-Zin (EZ) Utility	Recursive Preferences	✓
High IES ($\psi > 1$)	High intertemporal elasticity of substitution (IES)	✓
High RRA ($\gamma > 1$)	High relative risk aversion	✓
Consumption Home Bias	Preference for domestic goods	✓
Markets	Complete Financial Markets	✓
Physical Capital		
Cobb-Douglas Production Function	Production function form	✓
Investment Goods Trade	Trade in investment goods	✓
Endogenous Fiscal-Growth Link	Fiscal growth linkage	✓
Intangible Capital		
R&D	Research and development	✓
Foreign Adoption / Intermediate Goods Trade	Trade of intermediate goods	✓
Production Home Bias	Bias in production location	✓
Asymmetries		
US Centrality to Global Innovation	Larger US Production Home Bias	✓

Table 13: *Baseline Calibration*

Panel A: Preference Parameters		
Parameter	Description	Value
γ	Relative Risk Aversion	10
ψ	Intertemporal Elasticity of Substitution	2
β	Discount Factor	0.99
Panel B: Production Parameters		
Parameter	Description	Value
α	Capital Share	0.33
ξ	Intangible Capital Share	0.50
η	Intangible Capital Elasticity w.r.t R&D	0.83
δ	Physical Capital Depreciation Rate	0.02
ζ	Physical Capital Adjustment Costs, Elasticity	13.30
$\frac{1}{1-\frac{1}{\vartheta}}$	Investment Adjustment Cost	0.03
ν	Elasticity of Demand (Mark up)	0.4
h	Home Bias	0.99
Panel C: Exogenous Processes		
Parameter	Description	Value
φ	TFP Autocorrelation	0.98
ρ_{ec}	TFP Cointegration	0.01
σ	TFP Volatility	0.02
Panel D: Innovation and Adoption Parameters		
Parameter	Description	Value
χ	Innovation Scale	0.424
χ_a	Adoption Scale	1.428
ϕ	Innovation Depreciation Rate	0.05
ϑ_j^i	International Adoption (Steady State)	0.05
η_a	Elasticity of Adoption w.r.t R&D	0.30
Panel E: Fiscal Parameters		
Parameter	Description	Value
μ_τ	Average Global Tax Rate	0.20
ρ_T	Fiscal Persistence	0.70
ρ_G	Debt Persistence	0.70
ϕ_G	Debt elasticity w.r.t fiscal Shock	0.30
ν_ν	Fiscal Volatility Persistence	0.90
σ^G	Fiscal Volatility of Volatility	0.70

4.1 Calibration Choices

4.1.1 Preference Parameters

Consumption Home Bias: I follow Colacito, Croce, Gavazzoni, and Ready (2018) and set $\alpha_{i,i} = \alpha > \frac{1}{2}$ and $\alpha_{i,j} = \frac{1-\alpha}{N}$. Thus each agent i's preferences over foreign goods are symmetric. My chosen value of α is 0.98: this is in line with standard calibration choices for home bias used in the open economy macro literature (Lewis (2011)).

Elasticity of Substitution: I choose a low elasticity of substitution across goods ϕ of 0.2. This choice is motivated by empirical evidence documenting a low elasticity of substitution across consumption goods (Couerdacier and Rey (2013)).

IES and Risk Aversion: I choose a high IES value of $\psi = 2$. This choice is motivated by standard calibration choices made in the international asset pricing literature using recursive preferences (Colacito and Croce (2013); Colacito, Croce, Gavazzoni, and Ready (2018)). A risk-aversion coefficient of $\gamma = 10$ is also within the standard calibration choices of macro-finance literature (Mehra and Prescott (1985)).

Cointegration: I calibrate the cointegration parameter β to 0.01. This is larger than standard calibrations in the recursive utility literature, where β is set to a smaller number.[3] I motivate this choice due to the model asymmetry via the US fiscal exposure assumption. Thus to guarantee a well defined equilibrium where the pareto weight distribution is stable requires a higher level of cointegration. Calibrating β to 0.01, addresses this issue.

4.1.2 Production Parameters

Technology: Parameters related to the physical and intangible goods production are standard and follows Comin and Gertler (2006) and Kung and Schmid (2015). The output share of physical

[3] In Colacito and Croce (2013), $\beta = 0.005$. These calibration choices are also adopted by Colacito et al, 2018 and Colacito et al (2021)

and intangible capital shares $\alpha = 0.35, \xi = 0.5$ to match historical data on the average physical and intangible capital shares. The depreciation rate of physical capital is set to $\delta = 0.02$ to match the average capital investments rate and the parameter ζ is chosen to fix an elasticity of the investment rate with respect to Tobin's Q of 0.3. The elasticity of substitution across intermediate goods $\nu = 0.4$ and is the mark up in the model's innovation sector.

Adoption: Here I discuss the less standard parameters governing the adoption process. χ, χ_a are scaling factors and are set so that the steady state consumption and output growth is 2%, consistent with empirical data. The innovation depreciation rate $\phi = 0.04$ is chosen to match a 15% annualized R&D depreciation rate, in line with empirical data (Griliches (1990)). The calibration of the international adoption rate: $\vartheta_j^i = 0.05$ is motivated by empirical evidence from Gavazzoni and Santacreu (2020) suggesting that the average bilateral ratio of foreign to domestic varieties: $\frac{N_{i,t}^i}{N_{j,t}^i} = 0.36$ and the average R&D intensity ($\frac{S_{i,t}^i}{N_{i,t}^i}$) of 5%.

4.1.3 Fiscal Parameters

Fiscal Rule: Parameters governing fiscal processes are more standard. The persistence of the fiscal shock and government debt: ρ_T, ρ_G, the persistence and volatility of fiscal volatility: ν_v, ρ^G are set to match quarterly US data (Croce, Nguyen, Raymond, and Schmid (2019)). The calibration choice of debt elasticity w.r.t fiscal shocks: $\phi_G = 0.3$ is motivated by empirical evidence from Croce, Nguyen, Raymond, and Schmid (2019) regarding the elasticity of US government debt to productivity shocks. Calibration of the average global tax rate is based on evidence using data from Jordà, Schularick, and Taylor (2017).

Solution Method: I use third order perturbation methods to solve the model (Colacito, Croce, Gavazzoni, and Ready (2018); Gavazzoni and Santacreu (2020)). I approximate the equilibrium system to third order around a point close to the zero debt ($\overline{B}^i = 0, \ \forall i$), zero deficit ($\overline{\tau}^{*,i} = \overline{\tau}^i$) steady state where tax rates are at the average global rate: $\overline{\tau}^i = \overline{\tau}$. The baseline calibration is described in table 22. To keep the simulation exercise tractable, I set $N = 3$.

4.2 Quantitative Analysis

Overview: Having validated my model mechanism, I now evaluate the model's quantitative performance. Although the focus is on the US fiscal condition's predictability, I start by looking at traditional international finance moments. I do so to demonstrate that my model's ability to quantitatively account for my empirical findings does not come at the expense of contradicting other well known international finance facts. These results are presented in table 14.

4.2.1 Traditional Moments

Matched Moments: Panel A of table 14 captures US and global macro and fiscal moments that the model is calibrated to match. US and ROW consumption growths are roughly 2.5-3% on average, with average correlations being 30%. Finally corporate tax rates around the world are roughly 20%.

Financial Moments: Of greater interest are moments that the model calibration is not specifically designed to match. Panel B focuses on important financial moments emphasised in the international macro-finance literature. Broadly speaking my model can capture countercyclical fluctuations in global risk premia that characterises the global financial cycle Miranda-Agrippino and Rey (2020). This is captured by the positive correlation between global equity returns and global consumption growths ($corr_t(r_t^G, \Delta c_t^G) > 0$) in both the model and in the data. Secondly, the model captures the countercyclicality of the US global wealth share ($corr_t(\Delta\omega_t^{US}, \Delta c_t^G) > 0$), a new fact documented in recent work (Kim (2022); Penasse, Heyerdahl Larsen, Dahlquist, and Pavlova (2023)). Finally the model captures the countercyclicality of the dollar exchange rate, one of the hardest international finance facts to replicate in theoretical work (Maggiori (2017)).

Table 14: *Traditional Macro and Financial Moments*

Description: This table compares the quantitative performance of the full model in matching important international macro and financial moments. For the data moments, parentheses capture 90% bootstrapped CIs. Global variables are defined as an equally weighted world average of the relevant macro variables. Panel A captures the macro and fiscal moments. Panel B captures the financial moments. $corr_t(r_t^G, \Delta c_t^G), corr_t(\Delta\omega_t^{US}, \Delta c_t^G), corr_t(\Delta Dollar_t, \Delta c_t^G)$ captures the correlations between global consumption growths and i) global equity returns, ii) US wealth share growth rate and iii) dollar appreciation rate respectively. Finally Panel C captures moments related to the Backus-Smith and UIP puzzles. $corr_t(\Delta c_t^{US} - \Delta c_t^{ROW}, corr_t(i_{t+1}^{US} - i_{t+1}^{ROW}, \Delta Dollar_t)$ captures the correlations between the dollar appreciation rate and i) relative consumption growths and ii) relative interest rates.

	Original Data	*Baseline Model*
Panel (a): Macro and Fiscal Moments		
Mean US Consumption Growth	3.00	2.00
	[1.84, 4.57]	
Mean ROW Consumption Growth	2.50	2.00
	[1.10, 3.97]	
Average Consumption Growth Correlations	0.360	0.30
	[0.03, 0.44]	
Mean Global Tax Rate	0.200	0.200
	[0.03, 0.44]	
Panel (b): Financial Moments		
$corr_t(r_t^G, \Delta c_t^G)$	0.34	0.55
	[0.14, 0.55]	
$corr_t(\Delta\omega_t^{US}, \Delta c_t^G)$	-0.33	-0.55
	[-0.10, -0.41]	
$corr_t(\Delta Dollar_t, \Delta c_t^G)$	-0.40	-0.20
	[-0.08, -0.60]	
Panel (c): Backus-Smith + UIP Puzzles		
$corr_t(\Delta c_t^{US} - \Delta c_t^{ROW}, \Delta Dollar_t)$	-0.04	-0.37
	[-0.08, 0.29]	
$corr_t(i_{t+1}^{US} - i_{t+1}^{ROW}, \Delta Dollar_t)$	-0.07	-0.35
	[-0.24, 0.08]	

Finally panel C demonstrates that the model can capture evidence related to the Backus-Smith and UIP puzzles. This relates to the observed negative correlation between relative consumption growths, relative interest rates and exchange rates which is in contrast to conventional theory. My model broadly captures these negative correlation, though the strength of the negative correlation is somewhat too strong.

4.2.2 Valuation Results

Overview: As an external validity exercise, I have demonstrated that my model can broadly capture traditional international macro-finance facts that are well known to the literature Now I focus on the main event: the link between the US fiscal condition and global risky asset prices. To begin, I estimate the baseline panel specification 3 using model simulated data. As table 15 demonstrates, my model can explain why local financial markets pay more attention to the US fiscal stance than the local fiscal stance.

The reason is simple: under my mechanism, *the US leads the global fiscal cycle*. Since US fiscal policy drives global growth, foreign fiscal policy is an endogenous reaction to the US fiscal condition. This is why in the model, as in the data, the US fiscal condition drives out both i) the local fiscal condition and ii) the global fiscal cycle in explaining local risky asset prices.

Quantitatively, the model estimated US fiscal betas are smaller relative to the data but still well within the 90% confidence interval. This is illustrated in figure 16 which computes the average rolling fiscal betas extracted from estimating the baseline panel specification 3. The average rolling fiscal betas estimated using model simulated data lies within the 90% data confidence intervals, indicating that my model is able to broadly reproduce my earlier correlation evidence.

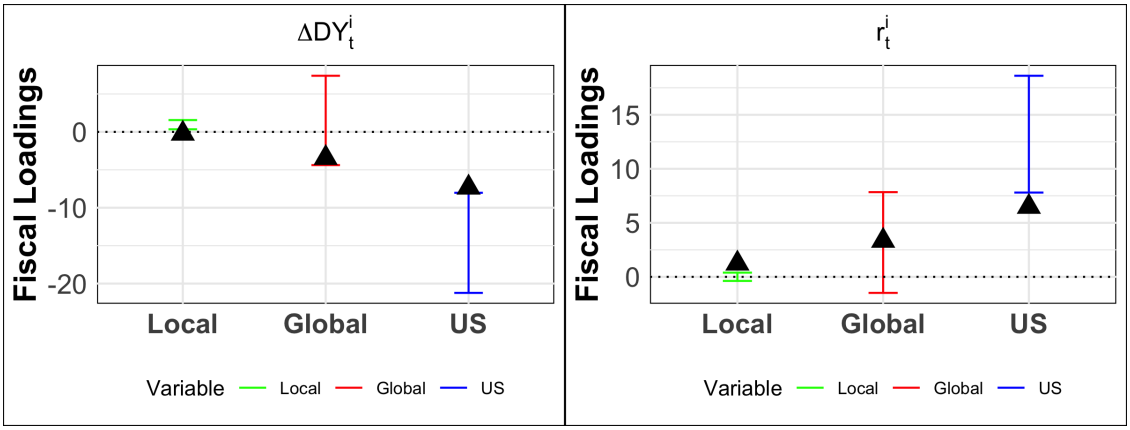
Table 15: *Data vs Model Regressions (Horserace Valuation Regressions)*

Description: Local, US consumption and output growths are computed as four quarter changes in log consumption and output. Global consumption and GDP growths are computed as the GDP weighted average of these variables. For the model regressions, $\frac{(\tau_t^{US} - \tau_t^{*,US})\text{Tax Transfer}_t^{US}}{B_{t-4}^{US}}$ represents the US surplus-debt ratio. To map the model regressions to the empirical counterparts, I control for local, US and global consumption, GDP growths. Global consumption and GDP growths. Model regressions are computed as the average results over 1,000 simulations for 1000 quarters each.

	Dependent variable: ΔDY_t^i		*Dependent variable:* r_t^i	
	Data	Model	Data	Model
ΔUS Surplus-Debt Ratio$_t$	−14.629	−7.343	13.201	6.485
	(1.719)		(1.261)	
ΔCountry i's Surplus-Debt Ratio$_t$	0.951	−0.232	0.007	1.232
	(0.388)		(0.285)	
Global Fiscal Cycle$_{i,t}$	1.512	−3.434	3.179	3.342
	(1.248)		(0.916)	

Note: $^*p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Figure 16: Data vs Model Panel Rolling Betas



Description: This figure plots the results of computing rolling beta coefficients for panel specification 3 for the three fiscal variables in the model and in the data. In both cases A one year (four quarter) rolling window was used. The left hand (right hand) panel reports the results for the dividend yield (return) regressions respectively. The black points represent the average rolling beta coefficient in the model and the bars correspond to the 90% confidence intervals for the data.

4.2.3 Predictability

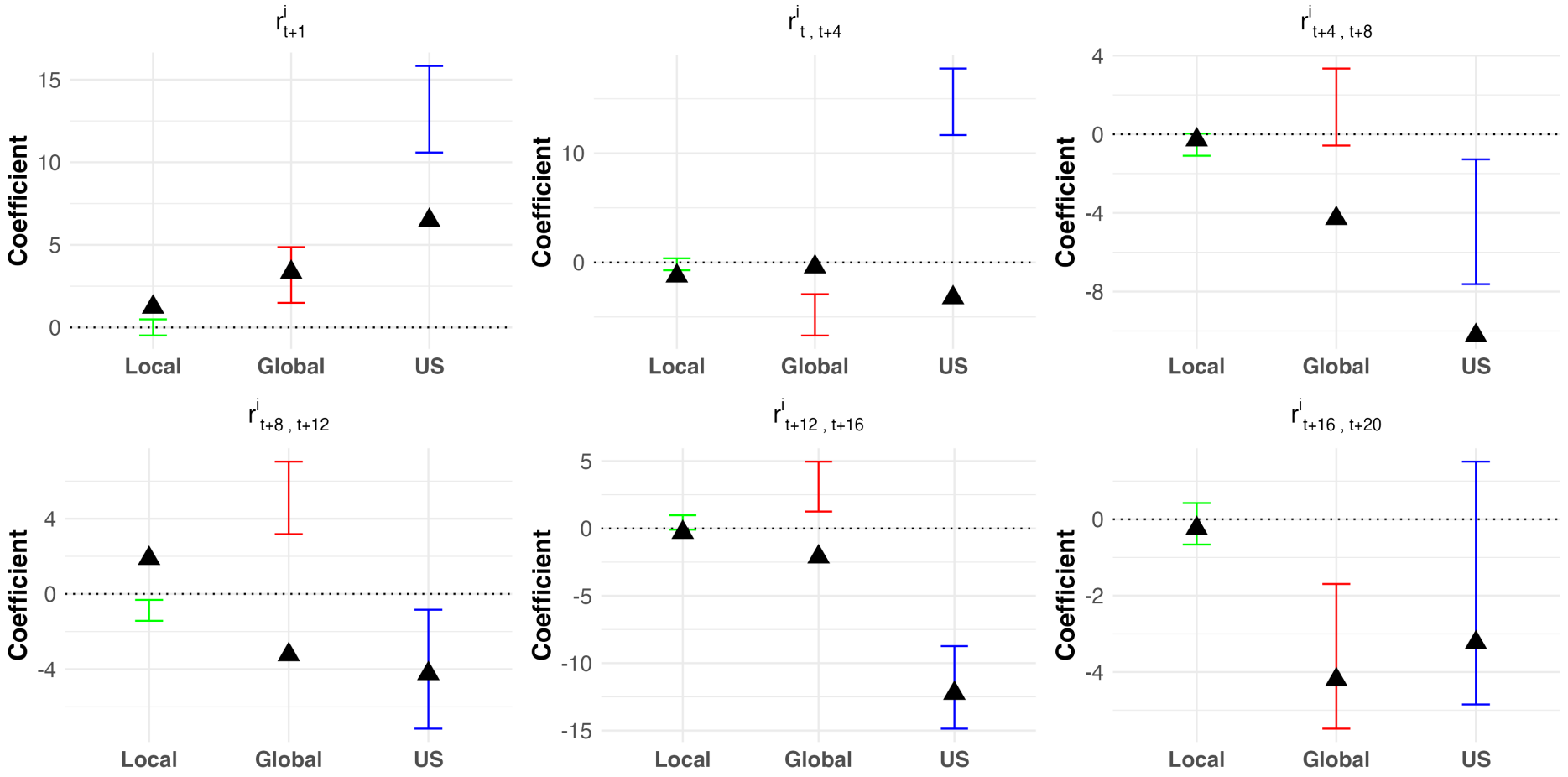
Regression: I now move onto evaluating the model implied predictability. To show that the my mechanism can quantitatively reproduce the US fiscal condition's predictive power for future global returns, I using simulated data to run predictive regressions. The model is a quarterly calibration where the average results over 1,000 simulations of 100 quarters each is used to estimate the model regressions. I compare these results to the predictability results documented in this paper.

Table 16: *Model vs Simulated Regressions (Return Predictability Regressions)*

Description: The empirical regressions use the total return for the MSCI world index excluding the US as the dependent variable. As in my empirical analysis, ΔUS Surplus-Debt Ratio$_t$ is used as the fiscal variable. For the model regressions, $\frac{(\tau_t^{US}-\tau_t^{*,US})\text{Tax Transfer}_t^{US}}{B_{t-4}^{US}}$ captures the US surplus-debt ratio. The last column computes results when the fiscal volatility shock is removed from the model (ω_t^i). Model regressions are computed as the average results over 1,000 simulations for 1000 quarters each.

	Coefficient	*Data*	*Model*	*No Vol*
Panel (a): Global Equity Return Predictability				
$r_{t,t+4}^i = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	15.271	-3.233	-1.231
		(0.800)		
$r_{t+4,t+8}^i = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	-8.589	-10.234	-1.80
		(0.821)		
$r_{t+8,t+12}^i = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	-4.989	-4.234	-0.68
		(0.721)		
$r_{t+12,t+16}^i = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	-14.864	-12.232	-0.32
		(0.758)		
$r_{t+16,t+20}^i = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	-10.803	-3.883	0.00
		(0.152)		
Note:		*p<0.1; **p<0.05; ***p<0.01		

Figure 17: Data vs Model Predictability Regressions



Description: This figure plots the results of computing rolling beta coefficients for panel specification 3 for the three fiscal variables in the model and in the data. In both cases A one year (four quarter) rolling window was used. The black points represent the average rolling beta coefficient in the model and the bars correspond to the 90% confidence intervals for the data.

5 Conclusion

In conclusion, this paper sheds new light on the economic origins of the global financial cycle, establishing that it is as much a fiscal phenomenon as it is a monetary one. Like US monetary policy, the US fiscal policy has a global footprint: deteriorations in the US fiscal condition i) coincide with depressed global risky asset valuations and ii) predict higher future global equity returns moving forward.

These results are incredibly robust along many dimensions. Firstly, they are not driven by US monetary policy: a Campbell and Shiller (1988) decomposition of the US fiscal transmission into global risky asset prices suggests that the risk-free rate component plays a negligible role, contributing close to zero percent of the variance decomposition. Secondly they are not spanned or attenuated in any way by i) the global business cycle, ii) the US business cycle or iii) any other countries' business cycle. Thirdly financial variables that are well known proxies for discount rates or latent global risk premia do not account for my results either.

Finally they are not driven by alternative fiscal variables: in fact the US fiscal condition drives out the local fiscal condition as an explanatory variable for the local country's asset valuation. Moreover, whilst the global fiscal cycle remains an important driver of all risky asset prices, it's economic importance is again dwarfed by the US fiscal condition. Thus my results suggest something rather striking: the US fiscal condition is the most important ***fiscal*** *determinant of all risky asset prices.*

To explain these results, I propose a novel mechanism that emphasises the special US role as the *global innovation leader*. When the US innovates, the rest of the world (ROW) follows by adopting her technology as an intermediate input into their own innovation and production. This empowers the US fiscal policy with a large international transmission across the global innovation network, enabling it to uniquely influence i) foreign growth, ii) foreign fiscal conditions, iii) foreign policy uncertainty and consequently iv) global risk-premia.

To formalise this argument, I study the international transmission of US fiscal shocks inside a quantitative multi-country real business cycle (RBC) framework where the US is the global innovation leader. Taking this asymmetry as given, my model, both quantitatively and qualitatively,

accounts for my empirical results linking the US fiscal condition to the global financial cycle.

At the heart of the model mechanism is a tight connection between the US fiscal condition, global innovation and growth, global policy uncertainty and global risk premia. Firstly, expansionary US fiscal policy depresses global innovation and growth through its distortionary impact on US innovation adopted overseas. Secondly, foreign countries respond by adopting expansionary fiscal policy as well. Finally through its influence over foreign fiscal conditions, US fiscal expansions increase global policy uncertainty and consequently global risk premia. Each of these predictions are verified in the data.

Taken together, the model sheds new light on the sources of US specialness driving the international transmission of US policy shocks. Whilst the traditional focus has been on ***financial*** channels that emphasise the central role of the dollar as the global reserve currency (Jiang, 2021), I uncover a ***real*** channel based on the US leadership role in global innovation. Thus the sources of US specialness driving global financial markets are quite multi-faceted and extends beyond the dollar's global reserve currency status emphasised in previous literature.

Moving forward, this novel fiscal mechanism can be extended to explain other puzzling features of the global financial system beyond the global financial cycle. In a related work (Kim, 2022a), I use a two country version of this framework with excess US fiscal capacity vis-a-vis the ROW to simultaneously resolve i) the reserve currency paradox (Maggiori (2017)), ii) relative US safety during global downturns and iii) the countercyclical US wealth share, a set of facts I refer to as the US safety puzzle in that paper. In another related work, I extend this multi-country framework to include defaultable debt to explain the common global factor in credit spreads uncovered by Bai, Kehoe, and Perri (2019). Thus the big picture takeaway from this agenda is the following simple idea: the US fiscal policy plays a central role in driving many puzzling features of modern international finance. This is a simple but ultimately novel idea that has received surprisingly little emphasis thus far.

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A Online Empirical Appendix

Table 17: *Fiscal Valuation Regressions (EME Countries Included)*

Description: This table estimates the baseline panel specification when the sample is expanded to include emerging market (EME) countries as well. As before, all specifications control for local and US risk-free rates, both in levels and growth rates. Columns 1 and 4 reproduce results when only macro controls, local, global and US, are used. Columns 2 and 5 add the financial control vector: $\Delta BEX_t, \Delta GZ_t, \Delta \text{Premium}_t, \Delta VIX_t, INT_t$. Finally, columns 3 and 6 account for both financial and macro controls. In all cases, standard errors contained in parentheses are clustered at the date (quarter) level. Data is from 1980Q1-2018Q4.

Panel (a): Pooled Regressions

	Dependent Variable: $\Delta DY_{i,t}$			*Dependent Variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	-19.083^{***}	-15.634^{***}	-14.673^{***}	16.083^{***}	10.579^{***}	9.959^{***}
	(5.552)	(4.971)	(4.139)	(2.808)	(2.899)	(2.621)
ΔCountry i's Surplus-Debt Ratio$_t$	-0.288	-0.209	-0.194	0.327	0.187	0.410
	(0.277)	(0.247)	(0.366)	(0.189)	(0.182)	(0.309)
Global Fiscal Cycle$_{i,t}$	-0.111^{**}	-0.109^{**}	-0.108^{***}	0.059	0.056	0.063
	(0.045)	(0.043)	(0.034)	(0.046)	(0.046)	(0.057)
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✓	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✗	✗	✗	✗	✗	✗
Observations	2545	2505	2505	2545	2505	2505
Adjusted R^2	0.036	0.042	0.038	0.162	0.201	0.5274

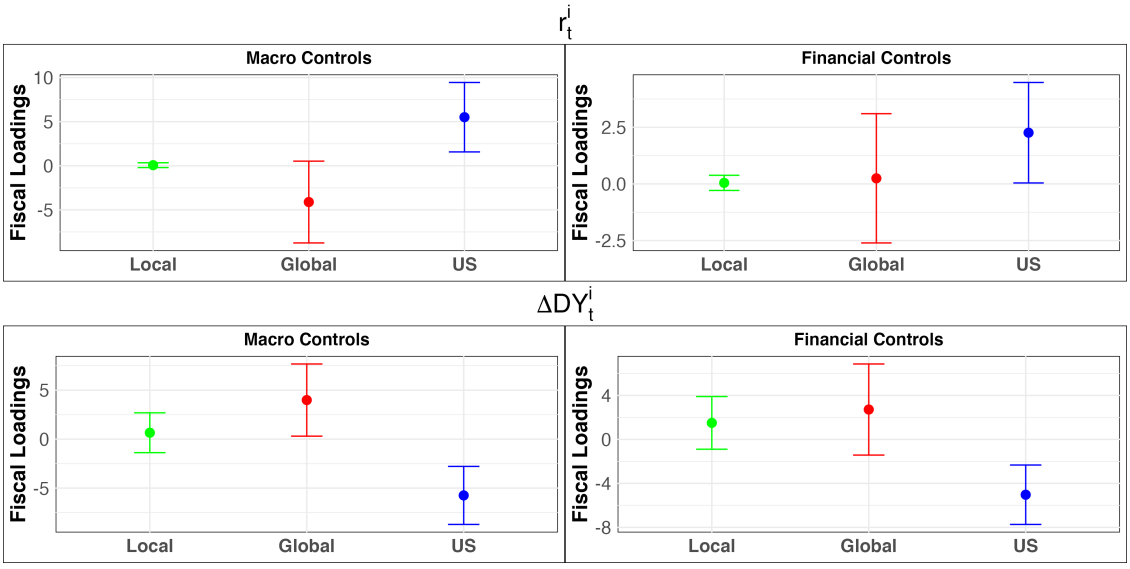
Panel (b): Fixed Effect Regressions

	Dependent Variable: $\Delta DY_{i,t}$			*Dependent Variable:* $r_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	-16.672^{***}	-13.014^{***}	-12.987^{***}	14.423^{***}	11.800^{***}	10.239^{***}
	(5.130)	(4.200)	(4.883)	(2.611)	(3.289)	(3.499)
ΔCountry i's Surplus-Debt Ratio$_t$	-0.194	-0.209	0.298	-0.191	0.322	0.710
	(0.246)	(0.247)	(0.366)	(0.233)	(0.200)	(0.443)
Global Fiscal Cycle$_{i,t}$	-0.109^{**}	-0.109^{**}	-0.133^{***}	0.023	0.103	0.082
	(0.034)	(0.043)	(0.034)	(0.068)	(0.089)	(0.067)
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✗	✓	✓	✗	✓
US Macro Controls	✓	✗	✓	✓	✗	✓
Global Macro Controls	✓	✗	✓	✓	✗	✓
Financial Controls	✗	✓	✓	✗	✓	✓
Country FE	✗	✗	✗	✗	✗	✗
Observations	2545	2505	2505	2545	2505	2505
Adjusted R^2	0.038	0.041	0.035	0.150	0.168	0.209

Note: *p<0.1; **p<0.05; ***p<0.01

JST Data: As a first robustness check, I confirm my baseline results using alternative fiscal data from Jordà, Schularick, and Taylor (2017). Plotted below are the panel regression coefficient estimates for the US, local and global fiscal cycles, with the 90% confidence bands shown.

Figure 18: Valuation Regressions (JST Data)



Description: This figure plots the estimated coefficients estimating 3 using alternative data from Jordà, Schularick, and Taylor (2017). The top panel reports the results for the market return regressions whereas the bottom two reports the results for the dividend yield regressions. *Macro Controls* uses local, US and global macroeconomic variables as the controls. *Financial Controls* uses the financial controls. In all cases, risk-free rates are controlled for, as in the baseline specification 3 .

Cross-Section: Table 6 reports the baseline specification (3) country-by-country. For both the dividend yield and market excess return regressions, the US fiscal condition remains statistically and economically significant for 11 out of the 12 countries. Again the economic magnitude of the US fiscal beta dwarfs the local and global fiscal betas. This is illustrated by 18 and **??** which demonstrates that in almost all cases, the local and global fiscal betas lie outside the 90% confidence bands of the US fiscal beta.

In Sample Predictability: To complement the local projections in the main text, I also provide panel predictive regressions here. The panel predictive regression framework is similar to 3. The empirical specification is the following:

$$\begin{aligned} r^i_{t,t+j} =& \alpha + \beta_1 \Delta \text{US Surplus-Debt Ratio}_t + \beta_2 \Delta \text{Country i's Surplus-Debt Ratio}_t \\ &+ \beta_3 \text{Global Fiscal Cycle}_t + \gamma' \text{Monetary Policy}_t + \delta' \text{Macro}_t + \theta' \text{Financial}_t + \epsilon_{i,t} \end{aligned} \quad (21)$$

As before, the control vectors: Macro_t and Financial_t are given by equations 5 and 6 respectively. Table 18 reports the results for these panel predictive regressions for the three fiscal variables for horizons up to 5 years (20 quarters) ahead. The results are clear: table 18 clearly indicates that deteriorations in the US fiscal condition predict higher global equity returns over the short, medium and long run. In response to a decline in the US surplus-debt ratio, global equity returns initially decline over the next year, captured by the positive coefficient on $r^i_{t,t+4}$, before subsequently rising sharply over the next four years, as captured by negative coefficients on $r^i_{t+4,t+8}, r^i_{t+8,t+12}, r^i_{t+12,t+16}$ and $r^i_{t+16,t+20}$.

Again, the economic magnitude of the US fiscal condition dwarfs that of the local and global fiscal cycles. To further illustrate this point, figure 19 plots the rolling fiscal betas over time. The local and global fiscal betas invariably always lie outside the confidence bands of the US fiscal betas across most of the sample.

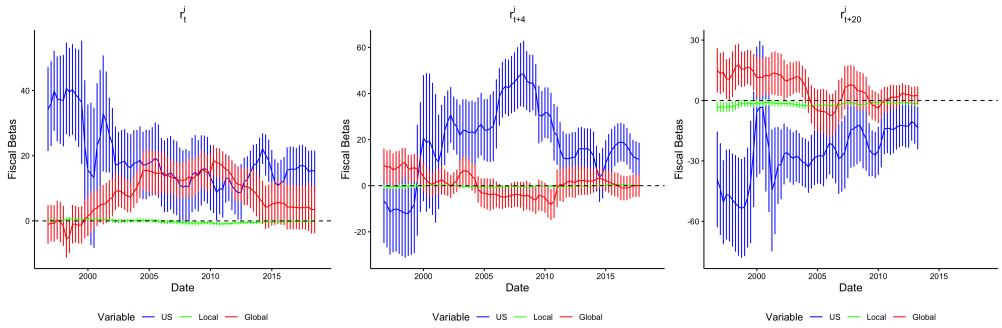
Note that each of these regressions carefully control for local, global, US macroeconomic conditions and other financial variables proxying for latent global risk premia. Thus the predictive power of the US fiscal condition is not by risk-free rates, the business cycle or traditional risk controls that are also known to predict global equity returns.

Table 18: *Panel Predictive Regressions*

Description: This table estimates the panel specification 21. Predictability horizons chosen are 0, 1 year and 5 year ahead. Columns 1, 3, 5 are pooled specifications, whereas columns 2, 4 and 6 control for country fixed effects.The control vectors: Macro_t and Macro_t are given by equations 5 and 6 respectively . In all cases, standard errors contained in parentheses are clustered at the date (quarter) level. Data is from 1980Q1-2018Q4.

	Dependent Variable: r^i_t		*Dependent Variable:* $r^i_{t,t+4}$		*Dependent Variable:* $r^i_{t,t+20}$	
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	9.450***	9.003***	14.076***	12.908***	−18.860**	−19.236**
	(3.015)	(5.297)	(2.703)	(5.134)	(8.897)	(8.645)
ΔCountry i's Surplus-Debt Ratio$_t$	0.237	0.253	0.004	0.323	0.002	0.004
	(1.689)	(1.642)	(0.212)	(0.213)	(0.313)	(1.689)
Global Fiscal Cycle$_{i,t}$	4.614**	4.346**	−1.464	−1.701**	−2.806	4.212
	(1.921)	(1.946)	(2.653)	(2.604)	(2.727)	(5.934)
Monetary Policy Controls	✓	✓	✓	✓	✓	✓
Local Macro Controls	✓	✓	✓	✓	✓	✓
US Macro Controls	✓	✓	✓	✓	✓	✓
Global Macro Controls	✓	✓	✓	✓	✓	✓
Financial Controls	✓	✓	✓	✓	✓	✓
Country FE	✗	✓	✗	✓	✗	✓
Observations	946	946	906	906	746	746
Adjusted R^2	0.536	0.543	0.272	0.279	0.401	0.413
Note:			*p<0.1; **p<0.05; ***p<0.01			

Figure 19: Rolling Fiscal Betas (Predictive Regressions)



Description: This figure plots the results of computing rolling beta coefficients for panel predictive regressions 21 for the three fiscal variables. Local, Global and US denotes the results for Country i's $\text{Surplus-Debt Ratio}_t$, $\text{Global Fiscal Cycle}_{i,t}$ and $\text{US Surplus-Debt Ratio}_t$. A one year rolling window was used with a window size: $NT = 12 * 4 = 48$. The results are reported for the 0, 1 and 5 year horizons respectively. The grey bands capture the 90% confidence intervals for the US fiscal beta.

Cross-Sectional Predictability: Here I investigate the predictability dimension of the cross-section. As before,the empirical specification for the predictability regressions is the following:

$$r^i_{t+j,t+j+4} = \alpha + \beta_1 \Delta\text{US Surplus-Debt Ratio}_t + \beta_2 \Delta\text{Country i's Surplus-Debt Ratio}_t + \beta_3 \text{Global Fiscal Cycle}_{i,t} + \gamma' \text{Monetary Policy Shocks}_t + \delta' \text{Macro}_t + \theta' \text{Financial}_t + \epsilon_{i,t} \tag{22}$$

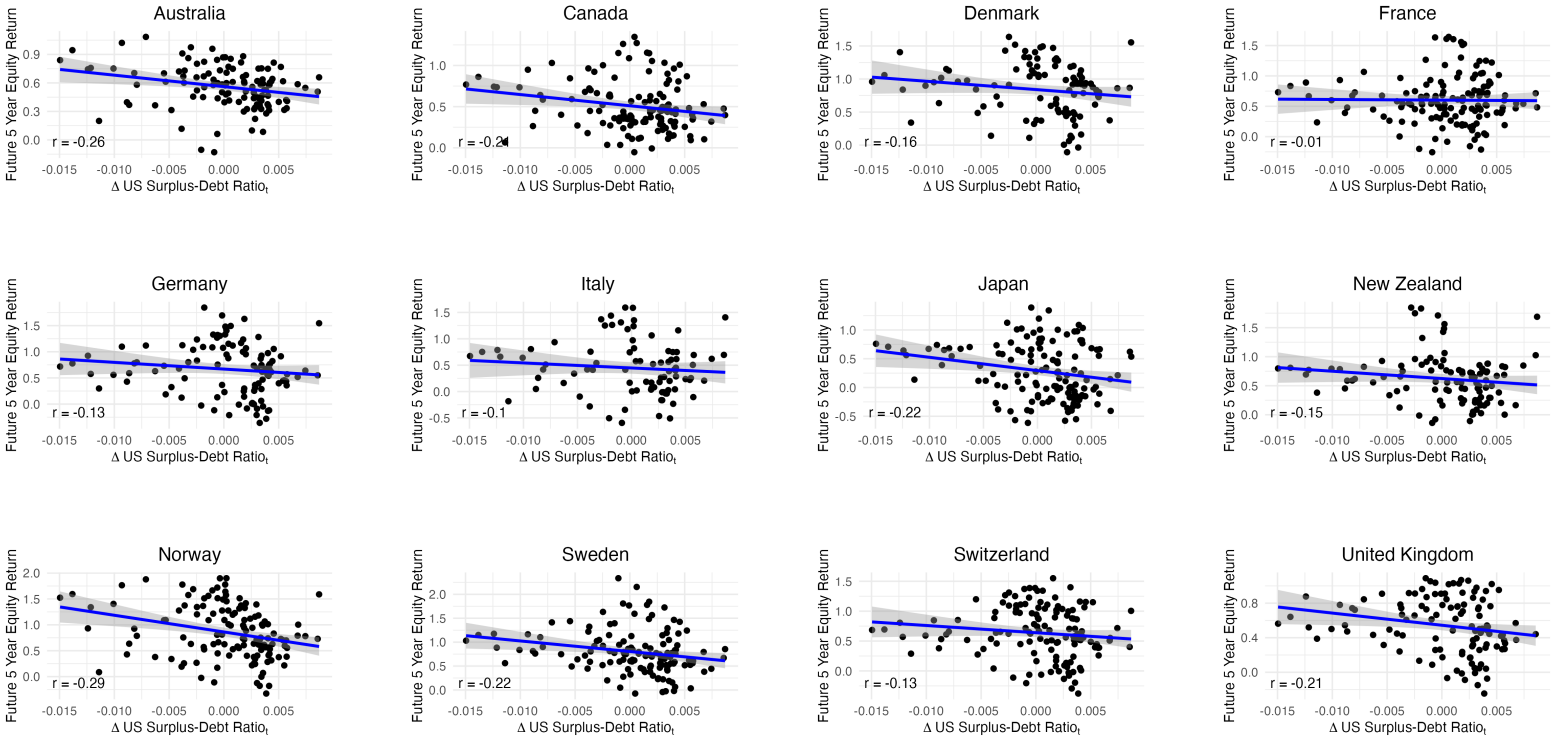
Interpretation: The results are clear: table 19 clearly indicates that deteriorations in the US fiscal condition predict higher global equity returns over the short, medium and long run. In response to a positive US fiscal shock, global equity returns initially decline over the next year, captured by the positive coefficient on $r^i_{t,t+4}$, before subsequently rising sharply over the next four years, as captured by negative coefficients on $r^i_{t+4,t+8}, r^i_{t+8,t+12}, r^i_{t+12,t+16}$ and $r^i_{t+16,t+20}$. These predictability patterns are robust across a range of different countries: the time series predictability regressions reported in table 19 indicate that these predictability patterns are pervasive across all global equity markets.

Table 19: *US Fiscal Condition and Cross-Sectional Predictability*

Description: This table documents results associated with estimating (22) at the country level for each country i. Coefficient for ΔUS Surplus-Debt Ratio$_t$ are reported in this table. For each time series regression, standard errors are Newey-West with four lags.

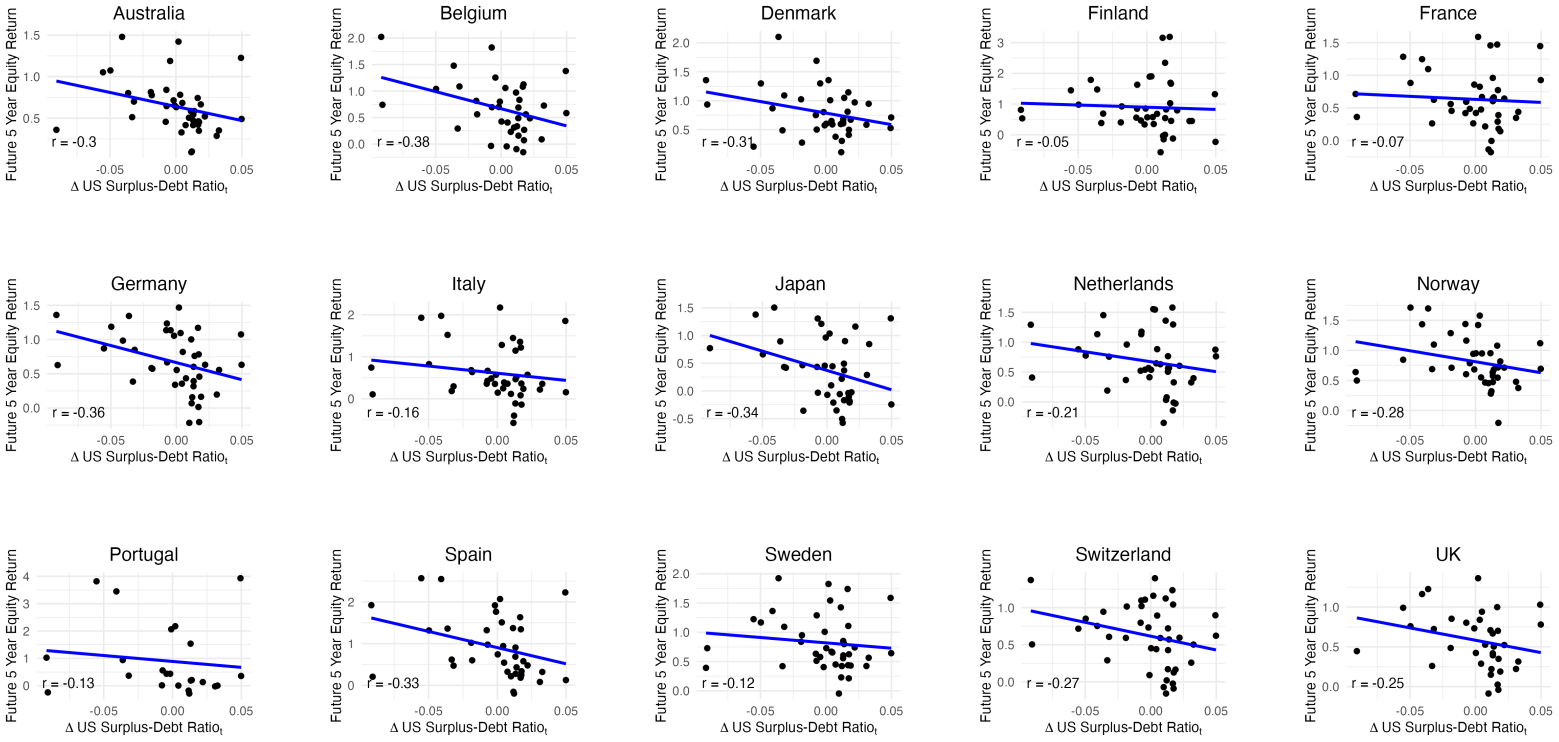
Developed Countries										
Country	$r_{t,t+4}$		$r_{t+4,t+8}$		$r_{t+8,t+12}$		$r_{t+12,t+16}$		$r_{t+16,t+20}$	
	Coefficient	(t-stat)	Coefficient	(t-stat)	Coefficient	(t-stat)	Coefficient	(t-stat)	Coefficient	(t-stat)
Australia	10.130***	(2.63)	-0.66	(-0.03)	−6.192**	(-2.46)	−9.760***	(-2.89)	−3.73	(-1.01)
Belgium	9.627*	(1.78)	−5.506*	(-1.63)	−15.11***	(-3.10)	−14.015**	(-2.23)	−0.39	(-0.11)
Canada	9.504*	(1.91)	−7.144**	(-2.00)	−5.430**	(-1.86)	−8.900**	(-2.01)	−1.780	(-0.70)
Denmark	8.901	(1.08)	−7.083	(-1.03)	−7.929*	(-1.94)	−3.950	(-0.99)	−3.950	(-1.12)
France	10.973*	(1.78)	−1.900	(-0.02)	−6.344*	(-1.72)	−14.630**	(-2.230)	−6.86**	(-2.00)
Germany	12.567**	(2.01)	−2.121	(-0.32)	−13.650**	(-2.32)	−13.819**	(-2.34)	−2.759	(0.84)
Italy	15.220**	(2.10)	−6.95*	(-1.66)	−16.476***	(-2.72)	−19.646***	(-3.00)	−2.12	(-0.59)
Japan	6.862	(0.11)	−2.359	(-0.56)	−8.617**	(-2.041)	−23.874***	(-4.00)	−7.303*	(-1.87)
Netherlands	9.774	(1.08)	−1.781	(-0.48)	−5.723*	(-1.70)	−16.810***	(-2.400)	−2.02	(-0.57)
Norway	20.668**	(2.38)	−1.900	(-0.41)	−5.055	(-1.26)	−23.315***	(-3.87)	−5.460	(-1.22)
New Zealand	2.704	(0.66)	−3.820*	(-1.73)	−2.833	(-1.360)	−6.430***	(-2.86)	−2.171	(-0.77)
Sweden	20.637***	(2.52)	−3.310	(-0.67)	−14.760***	(−3.280)	−14.09**	(-2.40)	−3.88	(-0.96)
Switzerland	14.519**	(2.01)	−5.520*	(-1.601)	−10.04***	(-3.42)	−14.860***	(-3.01)	−2.73	(0.91)
United Kingdom	5.876	(0.87)	−3.703	(-1.08)	−6.211**	(-2.01)	−12.300***	(-2.78)	−1.946	(-0.46)

Figure 20: Cross-Sectional 5 Year Predictability



Description: This figure plots ΔUS Surplus-Debt Ratio$_t$ against the future 5 year equity return. A line of best fit is drawn in blue and 2 SE bands are drawn in grey bars. The correlation coefficient is reported in the bottom right corner.

Figure 21: Cross-Sectional 5 Year Predictability (JST Data)



Description: This figure plots ΔUS Surplus-Debt Ratio$_t$ against the future 5 year equity return using alternative data from Jordà, Schularick, and Taylor (2017). A line of best fit is drawn in blue and 2 SE bands are drawn in grey bars. The correlation coefficient is reported in the bottom right corner.

SVAR: To complement the predictability regression results, I also demonstrate predictability using a structural vector autoregression (SVAR) approach. I estimate a four variable, one lag system that is recursively ordered as follows:

$$z_t^i = \left[Fiscal_t^i, \quad \Delta c_t^W, \quad \Delta IP_t^W, \quad r_t^w - r_t^f \right]^T \tag{23}$$

State System: Δc_t^W, ΔIP_t^W are global consumption and industrial production growth respectively. $r_t^w - r_t^f$ is the global market excess return using the 1 year US treasury bill rate as the reference global risk-free asset. Finally $Fiscal_t^i$ is identified as the residuals (ϵ_t^i) from the following regression:

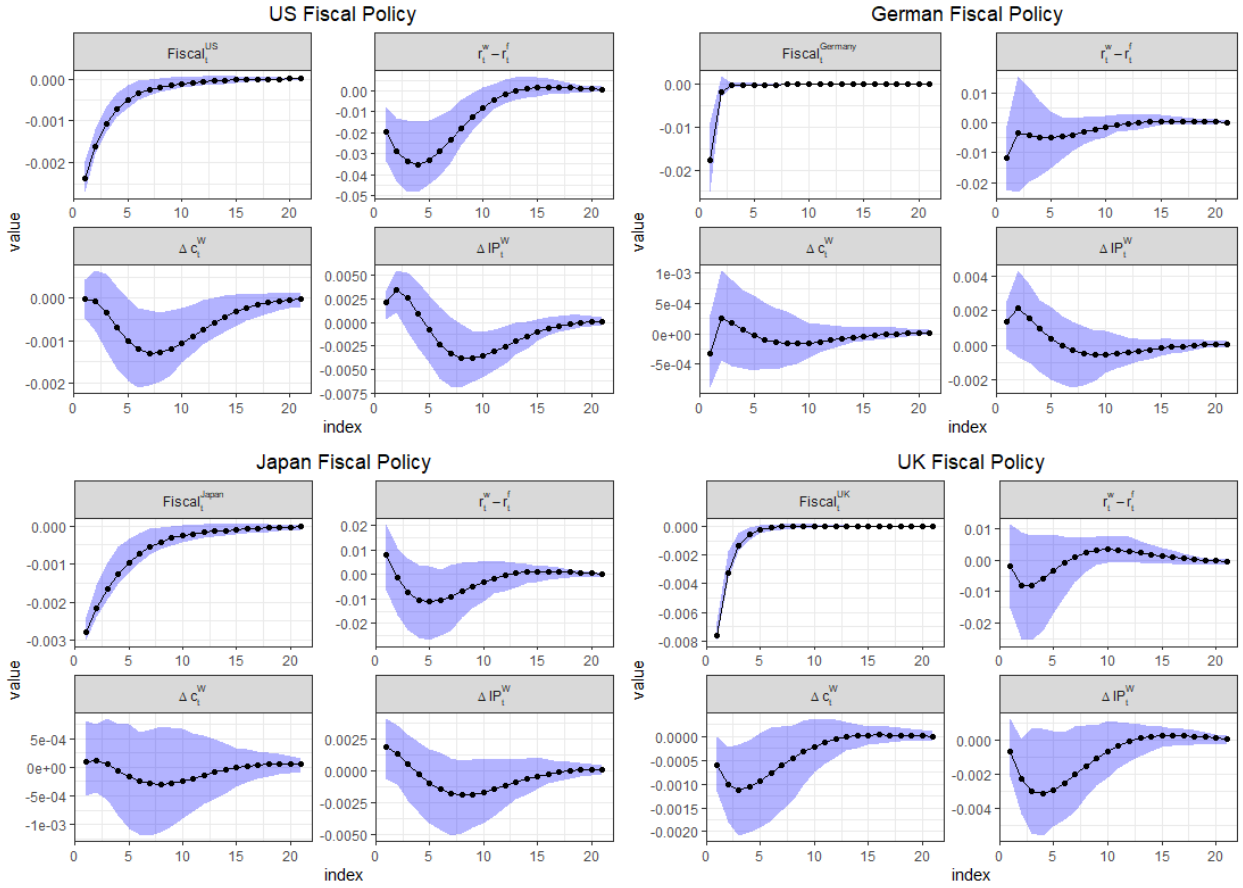
$$\Delta\text{Country i's Surplus-Debt Ratio}_t = \alpha + \beta_1 \Delta IP_t^i + \beta_2 \Delta IP_t^W + \epsilon_t^i \tag{24}$$

In other words, $Fiscal_t^i$ captures the component of country i's surplus fluctuations that is orthogonal to the local and global business cycles. Thus it captures a pure fiscal shock for country i, validating the timing restriction imposed by the SVAR that $Fiscal_t^i$ moves first and thus does not respond contemporaneously to the macroeconomy. The timing restriction also assumes that $Fiscal_t^i$ drives asset prices contemporaneously but only responds to asset prices with a lag. This restriction is likely to be satisfied for two reasons. Firstly, the denominator of Country i's Surplus-Debt Ratio$_t$: fiscal policy (surplus) is implemented with a lag, so it is unable to respond to large asset price fluctuations such as the global financial crisis (GFC) contemporaneously (Blanchard and Perotti (2002)). Moreover the denominator of Country i's Surplus-Debt Ratio$_t$ is the lagged, not concurrent, government debt market value: B_{t-1}^i, not B_t^i. Thus it also does not respond contemporaneously to concurrent asset price valuation shocks either. Thus the estimated orthogonalised impulse responses to this variable provide another way to confirm my predictability results.

IRFs: The orthogonalised impulse responses to a negative 1 standard deviation shock to $Fiscal_t^i$ are produced in figure 22 for four large countries: US, Germany, Japan and UK. The VAR confirms that global return predictability is unique to the US fiscal condition: pure fiscal shocks to other large countries such as Germany, Japan or the UK do not exert the same influence over future global

equity returns. The impulse response of global equity returns to these foreign fiscal shocks always contains zero in the confidence intervals. This supports my earlier correlation evidence suggesting that the international transmission of US fiscal policy into global risky asset prices is unique.

Figure 22: IRFs to a 1 SD fiscal shock for US, Germany, Japan and UK



Description: The figure plots IRFs to a ***negative*** 1 SD shock to $Fiscal_t^i$ for US, UK, Germany, Japan and UK. The blue areas indicate 95% confidence intervals. Standard errors were generated using 10,000 Monte Carlo simulations. Sample is from 1980Q1-2018Q4.

Table 20: *US State of the Union (SOTU) Addresses*

Description: This table list US SOTU addresses, the incumbent president and the themes of the address from 1989-2023.

Panel A: 1989-2023		
Year and Date	President	Themes
2023/02/07	Biden	Addressed key policy issues: economy, foreign policy
2022/03/01	Biden	Economic recovery from pandemic
2021/04/28	Biden	Introduced American Jobs Plan
2020/02/04	Trump	Economy and national defense
2019/02/05	Trump	Border security and economy
2018/01/30	Trump	Tax reform and immigration
2017/02/28	Trump	National security and military
2016/01/12	Obama	Legacy and future challenges
2015/01/20	Obama	Middle-class economy focus
2014/01/28	Obama	Immigration reform and economy
2013/02/12	Obama	Economy and healthcare
2012/01/24	Obama	Economic recovery post-recession
2011/01/25	Obama	Job creation and infrastructure
2010/01/27	Obama	Healthcare and job market recovery
2009/02/24	Obama	Financial crisis response
2008/01/28	Bush	War in Iraq and economic growth
2007/01/23	Bush	Iraq war, healthcare, immigration
2006/01/31	Bush	Economy and global terrorism
2005/02/02	Bush	Social Security reform and Iraq
2004/01/20	Bush	War on terror, national security
2003/01/28	Bush	War on terror, homeland security
2002/01/29	Bush	Post-9/11 focus on security
2001/02/27	Bush	Economic challenges and tax reform
2000/01/27	Clinton	Budget surplus and economy
1999/01/19	Clinton	Budget reform and healthcare
1998/01/27	Clinton	Economy and education
1997/02/04	Clinton	Social security reform
1996/01/23	Clinton	Welfare reform and tax cuts
1995/01/24	Clinton	Middle-class economy recovery
1994/01/25	Clinton	Economic reform and healthcare
1993/01/05	Bush	Budget deficit and economy
1992/01/28	Bush	Post-Cold War foreign policy
1991/01/29	Bush	Gulf War and domestic policy
1990/01/31	Bush	Economic policy and military
1989/01/25	Bush	Domestic policy and education

Table 21: *US State of the Union (SOTU) Addresses*

Description: This table lists US SOTU addresses, the incumbent president and the themes of the address from 1949-1988.

Panel B: 1949-1988		
Year and Date	President	Themes
1988/01/25	Reagan	Cold War and economy
1987/01/27	Reagan	Economic recovery and defense
1986/02/04	Reagan	Tax reform and military
1985/02/06	Reagan	Cold War focus and economy
1984/01/25	Reagan	National security and economy
1983/01/25	Reagan	Military buildup and taxes
1982/01/26	Reagan	Economy and global leadership
1981/01/16	Carter	Economic recession focus
1980/01/23	Carter	Energy crisis and foreign policy
1979/01/23	Carter	Economic policy and defense
1978/01/19	Carter	Energy policy and economy
1977/01/12	Carter	Middle-class economic reforms
1976/01/19	Ford	Inflation control and economy
1975/01/15	Ford	Inflation and unemployment
1974/01/30	Nixon	Watergate scandal focus
1973/02/02	Nixon	Vietnam War and domestic policy
1972/01/20	Nixon	Domestic reforms and economy
1971/01/22	Nixon	Economic reform and foreign policy
1970/01/22	Nixon	National security and economy
1969/01/14	Johnson	Civil rights and economy
1968/01/17	Johnson	War on poverty and civil rights
1967/01/10	Johnson	Great Society programs
1966/01/12	Johnson	Vietnam and civil rights
1965/01/04	Johnson	Civil rights and poverty
1963/01/14	Kennedy	Space program and civil rights
1962/01/11	Kennedy	Cold War, economy, civil rights
1961/01/12	Eisenhower	Economic challenges and Cold War
1960/01/07	Eisenhower	Cold War and civil rights
1959/01/09	Eisenhower	National security focus
1958/01/09	Eisenhower	Economy and national security
1957/01/10	Eisenhower	National security and economy
1956/01/05	Eisenhower	Military and space program
1955/01/06	Eisenhower	Economy and global peace
1954/01/07	Eisenhower	Economic recovery
1953/01/07	Eisenhower	Cold War and economy
1952/01/09	Truman	Economic challenges
1951/01/08	Truman	Korean War and economy
1950/01/04	Truman	Cold War and national security
1949/01/05	Truman	Civil rights and economy

Table 22: *US Presidential Debate Dates*

Description: This table lists US Presidential Debate Dates, perceived winner of the debates and the candidates. The dates start in 1960, which coincides with the first publicly televised presidential debate.

Panel B: US Presidential Debates			
Year and Date	Perceived Winner's Party	Candidates	Number of Debates
2020/09/29	Trump vs. Biden	Democratic	2
2020/10/22	Trump vs. Biden	Democratic	2
2016/09/26	Trump vs. Clinton	Democratic	3
2016/10/09	Trump vs. Clinton	Republican	3
2016/10/19	Trump vs. Clinton	Democratic	3
2012/10/03	Obama vs. Romney	Republican	3
2012/10/16	Obama vs. Romney	Democratic	3
2012/10/22	Obama vs. Romney	Democratic	3
2008/09/26	Obama vs. McCain	Democratic	3
2008/10/07	Obama vs. McCain	Democratic	3
2008/10/15	Obama vs. McCain	Democratic	3
2004/09/30	Bush vs. Kerry	Republican	3
2004/10/08	Bush vs. Kerry	Republican	3
2004/10/13	Bush vs. Kerry	Democratic	3
2000/10/03	Bush vs. Gore	Republican	3
2000/10/11	Bush vs. Gore	Republican	3
2000/10/17	Bush vs. Gore	Democratic	3
1996/10/06	Clinton vs. Dole	Democratic	2
1996/10/16	Clinton vs. Dole	Democratic	2
1992/10/11	Clinton vs. Bush vs. Perot	Independent	3
1992/10/15	Clinton vs. Bush vs. Perot	Democratic	3
1992/10/19	Clinton vs. Bush vs. Perot	Democratic	3
1988/09/25	Bush vs. Dukakis	Republican	2
1988/10/13	Bush vs. Dukakis	Republican	2
1984/10/07	Reagan vs. Mondale	Republican	2
1984/10/21	Reagan vs. Mondale	Republican	2
1980/10/28	Reagan vs. Carter	Republican	1
1976/09/23	Ford vs. Carter	Republican	3
1976/10/06	Ford vs. Carter	Democratic	3
1976/10/22	Ford vs. Carter	Democratic	3
1960/09/26	Kennedy vs. Nixon	Democratic	4
1960/10/07	Kennedy vs. Nixon	Republican	4
1960/10/13	Kennedy vs. Nixon	Democratic	4
1960/10/21	Kennedy vs. Nixon	Democratic	4

B Online Theory Appendix (Model Details)

B.1 Fiscal Policy Block

B.1.1 Fiscal Processes and Fiscal Rules

Tax Base: Tax Base$_{i,t}$ constitutes the profits from all production sectors in country i including i) final good sector (D_t^i), ii) intermediary good sector across all local varieties j ($\sum_{j=1}^{N_{i,t}^i} \Pi_{j,t}^i$). $N_{i,t}^i$ is the number of local intermediate good varieties. g_t^i is an exogenous spending rate process that captures a lump-sum transfer to the household:

$$\begin{aligned} TR_t^i =& g_t^i * \text{Tax Base}_{i,t} \\ =& g_t^i (D_t^i + \sum_{j=0}^{N_{i,t}^i} \Pi_{j,t}^i) \end{aligned} \tag{25}$$

Fiscal Rule: Government spending is exogenous in my model. The exogenous fiscal rules governing g_t^i take the following form:

$$\begin{aligned} g_t^i &= \frac{1}{1+e^{-\omega_t^i}} \\ \omega_t^i &= (1-\rho)\mu_\tau + \rho_T \omega_{t-1}^i - \sigma_{t-1}^i (\underbrace{\beta_t^i \epsilon_t^G}_{\text{Cyclicality}} + \underbrace{\mu - \mathbb{E}_t \Delta c_{t+1}^i}_{\text{Growth}} + \underbrace{\epsilon_{s,t}^i}_{\text{Spending}}) \\ \sigma_t^i &= \nu_\nu \sigma_{t-1}^i + \sigma^i w_t^i \\ \epsilon_t^i, \epsilon_{s,t}^i, w_t^i &\sim i.i.d\ N(0,\ 1),\ \ i \in \{0, 1, 2, ..., N\} \end{aligned} \tag{26}$$

The formulation of g_t^i guarantees that it lies in the open interval (0,1). ω_t^i is the exogenous local fiscal process which has persistence ρ_T. μ_r captures the average tax rate and will be calibrated to equal the average global tax rate. μ is the mean growth rate of the economy. $\sigma_t^i, \sigma_{s,t}$ are the fiscal volatility shocks with persistence ν_ν.

An interpretation of the exogenous fiscal rule captured by the second line of (25) is in order. Government spending is driven by three key forces. Firstly, there is *fiscal cyclicality*: government

spending increases during troughs in the global business cycle, proxied by the global TFP shock ϵ_t^G, to insure local households during these periods of global stress.Secondly there is a *growth incentive*: local governments seek to support local economic growth by pursuing expansionary policies during periods of low expected growth, captured by $\mathbb{E}_t \Delta c_{t+1}^i$. Finally, there are exogenous fiscal shocks ($\epsilon_{s,t}^i$): this captures *the role of local political cycles* in driving fiscal policy and is orthogonal w.r.t the state of the economy.

Fiscal Cyclicality: Since ϵ_t^G is the global TFP shock, β_t^i captures the degree of countercyclicality in country i's fiscal policy. This follows a slow-moving AR(1):

$$\beta_t^i = \beta_i + \lambda \beta_{t-1}^i + \epsilon_{\beta,t}^i \tag{27}$$

B.1.2 Tax and Debt Policy

IGBC: Define by τ_t^i the local tax rate. Further define the total tax flow T_t^i as:

$$T_t^i = \tau_t^i * \text{Tax Base}_t^i, \;\; i \in \{0, 1, 2, .., N\} \tag{28}$$

Further define by B_t^i the stock of real government debt. Given exogenous government spending, the IGBC below jointly determines taxes and debt:

$$\begin{aligned} B_t^i =& R_{b,t-1}^i B_{t-1}^i + TR_t^i - T_t^i \\ =& R_{b,t-1}^i B_{t-1}^i + \underbrace{(g_t^i - \tau_t^i) * \text{Tax Base}_t^i}_{\text{Country } i\text{'s Deficit}}, \;\; i \in \{0, 1, ..., N\} \end{aligned} \tag{29}$$

$R_{b,t}^i$ is the return on government debt and is pinned down by the following return identity:

$$R_{b,t}^i = \frac{B_t^i + s_t^i}{B_{t-1}^i} \tag{30}$$

s_t^i is the local primary surplus: $s_t^i = (\tau_t^i - g_t^i) * \text{Tax Base}_t^i$.

Debt Process: To close the fiscal policy block, I now define an exogenous debt accumulation

process. To rule out unsustainable paths for the debt to output ratio $\frac{B_t^i}{Y_t^i}$, I impose the following debt accumulation rule to guarantee stationarity of the debt to output ratios (Bi and Leeper (2010)):

$$\frac{B_t^i}{Y_t^i} = \rho_G \frac{B_{t-1}^i}{Y_{t-1}^i} - \phi_G(\beta_t^i \epsilon_t^G + \mu - \mathbb{E}_t \Delta c_{t+1}^i), \ i \in \{0, 1, 2, .., N\} \tag{31}$$

The parameter $\rho_G \in (0, 1)$ measures the speed of repayment of debt: the higher the value of ρ_G, the slower the repayment of debt relative to output. Furthermore $\phi_G \in (0, 1)$ captures the fraction of the fiscal expansion financed by higher debt. Together, (29) and (31) pin down optimal tax and debt in this model, given exogenous government spending g_t^i. The key parameter determining how much of government spending shocks are financed via distortionary taxes (T_t^i) and government debt (B_t^i) is the parameter ϕ_G.

If $\phi_G = 0$, the government chooses a zero deficit policy ($g_t^i = \tau_t^i, \forall t$) where there is no tax smoothing: taxes are raised immediately to finance the entire fiscal expansion and there is no accumulation of government debt: $B_t^i = 0, \ \forall t$.[4] Since $\phi_G \in (0, 1)$, the government does not pursue a zero-deficit strategy in this model, choosing to smooth the tax burden over time by accumulating government debt in the process. As will become evident, the accumulation of government debt is essential to the operation of the model's fiscal theory mechanism.

Fiscal Variables: Country i's fiscal capacity is measured by the surplus-debt ratio:

$$\text{Country } i\text{'s Surplus-Debt Ratio} = \frac{(\tau_t^{i,*} - \tau_t^i)\text{Tax Transfer}_t^i}{B_{t-1}^i} \tag{32}$$

Global Fiscal Cycle$_{i,t}$ is the common surplus factor as defined earlier:

$$\text{Global Fiscal Cycle}_{i,t} = \frac{1}{N} \sum_{i \neq US, i} \Delta\text{Country } i\text{'s Surplus-Debt Ratio} \tag{33}$$

A further comment is in order about the global fiscal cycle. Since both countries enact expan-

[4] To see this note that if $\phi_G = 0$ then only $B_t^i = 0 \ \forall t$ satisfies (31). Combining this with (29) then implies that $g_t^i = \tau_t^i \ \forall t$. In other words $\phi_g = 0$ corresponds with a zero-deficit policy where all fiscal expansions ($\epsilon_{s,t}^i \uparrow$ are financed via tax increases). For any $\phi_G \in (0, 1)$, the accumulation of government debt (B_t^i) forms a part of the mechanism.

sionary fiscal policies during global downturns ($\epsilon_t^G \downarrow$) and when future growth prospects are also deteriorating ($\mathbb{E}_t \Delta c_{t+1}^i \downarrow$), my model reproduces empirical evidence from Jiang (2022) documenting the existence of a global fiscal cycle: common fluctuations in surplus-debt ratios worldwide. This variable will be important as the interaction between the US fiscal condition, the global fiscal cycle and global policy uncertainty drives predictability in the model.

B.2 Final Goods Sector

Production Function: Final goods production is perfectly competitive. Country i's final good producer uses physical capital (K_t^i), labor (L_t^i) and a composite of intermediate goods (G_t^i) to produce a nontraded final good Y_t^i. The production function is Cobb-Douglas:

$$Y_t^i = [(K_t^i)^\alpha (\Omega_t^i L_t^i)^{1-\alpha}]^{1-\xi} (G_t^i)^\xi \tag{34}$$

α: Physical Capital Share

ξ: Intangible Capital Share

Intangible Capital: The composite of intermediate goods G_t^i is defined as:

$$G_t^i = [\sum_{i=1}^{N_{i,t}^i} (h_j^i)^{\frac{1}{\nu}} (X_{j,t}^i)^{1-\frac{1}{\nu}})]^{\frac{\nu}{\nu-1}}, \;\; i,j \in \{0,1,...,N\} \tag{35}$$

$N_{i,t}^i$ are the number of intermediate good varieties in local country i that endogenously varies in accordance with the process of innovation and foreign adoption described later. ν is the elasticity of substitution across intermediate good varieties. h_j^i denotes country i's preference for country j's intermediate good. $h_i^i > \frac{1}{2}$ imposes production home bias where by construction: $h_i^i + \sum_{i \neq j} = 1$. $X_{j,t}^i$ capture the amount of foreign produced intermediate goods emanating from foreign country j that is used for country i's final production. $X_{j,t}^i$ is an intermediate goods bundle that aggregates all inputs from country j used for country i's final good production:

$$X_{j,t}^i = \Pi_{k=1}^{N_{j,t}^j} (X_{j,k,t}^i)^{\iota_i} \tag{36}$$

$X^i_{j,k,t}$ is the amount of intermediate good variety k produced in country j that is used for country i's final production. $N^j_{j,t}$ is the number of intermediate good varieties produced in country j that is endogenously generated by the process of innovation and international technology adoption described in the R&D and adoption block of the model. By construction $\sum_{k=1}^{N^i_{j,t}} \iota_k = 1$.

US as Global Innovation Leader: By assumption, $h^i_{US} > h^i_j, \ \forall i, j$. Whilst each country's production is home biased towards their own innovation as intermediate inputs ($h^i_i > \frac{1}{2}$), *they have a greater preference for US innovation relative to the innovation of other foreign countries.* This places the US at the center of the global innovation network which is the key asymmetry in my model.

Shocks: The exogenous TFP $a^i_t = log(\Omega^i_t)$ follows an AR(1):

$$a^i_t = \psi a^i_{t-1} + \rho_{ec}(a^i_{t-1} - \sum_{i \neq j} a^j_{t-1}) + \sigma \epsilon^i_t \tag{37}$$

ρ_{ec} captures the degree of cointegration between country i's TFP and TFP abroad. This assumption is necessary to ensure the stability of the higher order perturbation method I use to solve the model.

Problem: Final good producers own the physical capital stock and choose physical capital, labor, investment and intermediate goods to maximise shareholder value subject to the production technology (34):

$$\begin{aligned} &\max_{\{I^i_{i,t}, L^i_t, K^i_{t+1}, X^i_{i,j,t}\}^\infty_{t=0}} \mathbb{E}_0[\sum_{t=0}^{\infty} M^i_t D^i_t] \\ s.t. D^i_t &= Y^i_t - I^i_t - w^i_t L^i_t - \sum_{j=1}^{N} P^i_{j,t} X^i_{j,t} \end{aligned} \tag{38}$$

M^i_t is the stochastic discount factor (SDF). D^i_t are profits from the final goods sector. I^i_t is investment in physical capital and $P^i_{j,t}$ is the price of an intermediate good produced in country j that is used in country i's final production. The local numeraire is units of the local final good. Law of

motion for physical capital is standard:

$$K^i_{t+1} = (1-\delta)K^i_t + \Lambda(\frac{I^i_t}{K^i_t})K^i_t \tag{39}$$

$\delta \in (0,1)$ is the depreciation rate and $\Lambda(\frac{I^i_t}{K^i_t})$ denotes convex capital adjustment costs that follows Jermann (1998):

$$\Lambda(\frac{I^i_t}{K^i_t}) = (\frac{\alpha_1}{\zeta})(\frac{I^i_t}{K^i_t})^\zeta + \alpha_2 \tag{40}$$

As in Kung and Schmid (2015), α_1, α_2 are chosen to ensure there are no adjustment costs in the deterministic steady state and $\frac{1}{1-\frac{1}{\zeta}}$ is the investment elasticity w.r.t Tobin's Q.

B.3 Intermediate Goods Sector

Overview: Intermediate good producers in each country use a specific patent accumulated by the independent R&D sector described later to build one unit of intermediate good using one unit of the local final good. They face a downward-sloping demand curve implied by the cost-minimization of the final goods producer.

Profits: The maximising profit level for intermediate good firm in country i producing variety k who sells this variety across all foreign countries indexed by N solves:

$$\Pi^i_{k,t} = \max_{\{P^i_{j,t}\}^\infty_{t=0}} \sum_{j=1}^{N} P^i_{j,k,t}\mathcal{E}^i_{j,t}(X^i_{j,k,t})[X^i_{j,k,t} - 1] \tag{41}$$

Notice that US intermediate good producers sell to all $N+1$ foreign markets outside the US but foreign producers can only sell to N foreign markets excluding the US. This is a result of my assumption that the US does not adopt foreign technology but each foreign country adopts US innovation. $P^i_{j,k,t}\mathcal{E}^i_{j,t}$ is the price of country i's intermediate good variety k sold in country j in units of the local final good. $\mathcal{E}^i_{j,t}$ is the real exchange rate: country i's consumption good per units of country j's consumption good. In a symmetric equilibrium, $P^i_{j,k,t} = \frac{1}{\nu}\frac{1}{\mathcal{E}^i_{j,t}}$. This implies that

equilibrium profits are:

$$\pi^i_{k,t} = (\frac{1}{\nu} - 1) \sum_{j=1}^{N} X^i_{j,k,t} \tag{42}$$

B.4 Innovation and Adoption Process

Innovation: In each country, endogenous growth is driven by two sources. Firstly innovation is conducted in a local R&D sector that features perfect competition. Innovators use the local final good to conduct R&D expenditure S^i_t and accumulate stock of intermediate goods or patents:

$$N^i_{i,t+1} = \vartheta^i_t S^i_{t+1} + (1 - \phi) N^i_{i,t} \tag{43}$$

ϕ: Innovation Depreciation Rate

ϑ^i_t: local innovation productivity

Innovation Productivity: Following Jermann (1998), ϑ^i_t follows:

$$\vartheta^i_t = \chi(\frac{S^i_t}{N^i_{i,t}})^{\eta - 1} \tag{44}$$

$\chi > 0$ is a scale parameter and $\eta \in (0, 1)$ is the elasticity of patents (new intermediate goods) w.r.t R&D. This specification is intuitive: it indicates a love of variety effect for innovation ($\frac{\partial \vartheta^i_t}{\partial N^i_{i,t}} > 0$) and decreasing returns to scale for R&D expenditure ($\frac{\partial \vartheta^i_t}{\partial S^i_t} < 0$).

Adoption Process: The second source of endogenous growth is the process of international technology adoption that makes foreign intermediate good varieties available to local final good producers for use as intermediate inputs. This process is conducted by an independent foreign adoption sector that is perfectly competitive. Foreign adopters in country j invests $h^j_{i,t}$ units of the local final good to adopt 1 unit of local innovation from country i and are successful with

probability $\vartheta^j_{i,t}$. Following Santacreu (2015), this follows:

$$\vartheta^j_{i,t} = \chi_a(\frac{h^j_{i,t}(N^i_{i,t+1} - N^j_{i,t+1})}{N^j_{i,t+1}})^{\frac{\eta}{1-\eta}} \tag{45}$$

$\chi_\alpha > 0$ is a scaling parameter and $\eta \in (0,1)$ is the elasticity of adoption w.r.t investment in adoption. The law of motion for home produced intermediate goods that can be adopted by the foreign final good producer evolves according to:

$$N^j_{i,t+1} - (1-\phi)N^j_{i,t} = \vartheta^j_{i,t}(1-\phi)(N^i_{i,t+1} - N^j_{i,t}),\ \forall i,j \in \{1,2,...,N\} \tag{46}$$

B.4.1 Households

Preferences: Each country is populated by a representative household who have EZ utility:

$$U^i_t = [(1-\delta)(C^i_t)^{1-\frac{1}{\psi}} + \delta(E_t(U^i_{t+1})^{1-\gamma})^{\frac{1-\frac{1}{\psi}}{1-\gamma}}]^{\frac{1}{1-\frac{1}{\psi}}} \tag{47}$$

SDF: As shown by Epstein and Zin (1991), the stochastic discount factor (SDF) is:

$$M^i_{t+1} = \beta(\frac{C^i_{t+1}}{C^i_t})^{\theta-1}(\frac{U^i_{t+1}}{\mathbb{E}_t[(U^i_{t+1})^{1-\gamma}]^{\frac{1}{1-\gamma}}})^{1-\theta-\gamma} \tag{48}$$

Budget Condition: They are subject to the following budget constraint:

$$C^i_t + P^i_t s^i_t + B^i_t = (P^i_t + D^i_t)s^i_{t-1} + B^i_{t-1}R^i_{b,t} + (1-\tau^i_t)w^i_t L^i_t + TR^i_t \tag{49}$$

s^i_t is the local equity holding.[5] w^i_t is the local wage, L^i_t is labour supply and C^i_t is local consumption. TR^i_t is the tax transfer remitted from government sector defined earlier.

[5]Since the local output is non-traded, $s^i_t = 1$ in equilibrium.

B.4.2 Asset Prices

Stock Market: The stock market is a risky claim to the combined production of all sectors. Thus the dividend $\mathcal{D}_t^i$ is the after-tax combined profits across all sectors:

$$\mathcal{D}_t^i = (1-\tau_t^i)[D_t^i + \sum_{j=0}^{N_t^j} \Pi_{j,t}^i] - S_t^i - \sum_{j=1}^{N} h_{j,t}^i \tag{50}$$

Each stock market is priced by the local SDF through the standard euler equation:

$$P_t^i = \mathbb{E}_t[M_{t+1}^i(P_{t+1}^i + \mathcal{D}_{t+1}^i)] \tag{51}$$

Bonds: Interest rate pinned down by:

$$\frac{1}{R_{f,t}^i} = \mathbb{E}_t M_{t+1}^i \tag{52}$$

Exchange Rate: Frictionless benchmark pins down exchange rate dynamics for $\mathcal{E}_{0,t}^i$:

$$\Delta\mathcal{E}_{0,t}^i = log(M_t^i) - log(M_t^0) \tag{53}$$

Pareto Weight and Risk Sharing: Underpinning these exchange rate dynamics is an endogenous state variable: Υ_t^i: country i's relative pareto weight. This captures country i's relative share of global resources vs country 0 (US) and follows the endogenous law of motion:

$$\Upsilon_t^i = \Upsilon_{t-1}^i(\frac{M_t^0}{M_t^i})(\frac{C_t^0/C_{t-1}^0}{C_t^i/C_{t-1}^i}) \tag{54}$$

Υ_t^i governs the risk-sharing scheme that is operative in the intermediate goods market in the model. When US marginal utility rises relative to country i and the dollar appreciates ($\Delta\mathcal{E}_{0,t}^i \uparrow$), the ROW transfers intermediate goods to the US ($X_{i,t}^0 \uparrow$). Conversely the transfer of intermediate goods goes the other way when ROW marginal utility is adversely impacted.[6]

[6]This risk-sharing arrangement is a common feature of international long-run risk models with international trade (Colacito and Croce, 2013; Colacito et al, 2018). The difference here is that the risk-sharing takes place in the intermediate goods market, not the consumption market. These previous models are cast

B.4.3 Equilibrium System

Resource Constraint: The local final good Y_t^i is used for i) consumption (C_t^i), investment in ii) physical capital (I_t^i), iii) R&D (S_t^i), iv) adoption ($h_{j,t}^i$) and v) intermediate inputs ($X_{i,t}^i, X_{j,t}^i$):

$$Y_t^i = C_t^i + I_t^i + S_t^i + \sum_{j=1}^{N} h_{j,t}^i + \sum_{j=1}^{N} N_{j,t}^i X_{j,t}^i \tag{55}$$

FOCs for Consumption and Labor: Optimal labor and investment follow:

$$W_t^i = (1-\tau_t^i)(1-\alpha)(1-\zeta)\frac{Y_t^i}{L_t^i} \tag{56}$$

$$q_t^i = \frac{1}{(\alpha_1)(\frac{I_t^i}{K_t^i})^{\zeta-1}} \tag{57}$$

$$1 = \mathbb{E}_t[M_{t+1}^i(\frac{1}{q_t^i}(\alpha(1-\zeta)\frac{Y_{t+1}^i}{K_{t+1}^i} + q_{t+1}^i(1-\delta) - \frac{I_{t+1}^i}{K_{t+1}^i} + q_{i,t+1}\Lambda_{t+1}^i))] \tag{58}$$

Demand for local and foreign intermediate goods for country $i \in \{0, 1, 2, ..., N\}$ follow:

$$X_{i,t}^i = (h^i \nu Y_t^i (G_t^i)^\nu)^{\frac{1}{1-\nu}} \tag{59}$$

$$X_{j,t}^i = X_{i,t}^i (\mathcal{E}_t^i \frac{h^i}{h^j})^{\frac{1-\nu}{\nu}} \tag{60}$$

FOCs for Optimal Innovation and Adoption: The free entry conditions pins down optimal local investment in R&D:

$$S_t^i = \mathbb{E}_t[M_{t+1}^i \mathcal{V}_{i,t+1}^i](N_{i,t+1}^i - (1-\phi)N_{i,t}^i) \tag{61}$$

The first order condition for investment in adopting country i's technology by country j is:

$$h_{i,t}^j(N_{i,t+1}^i - N_{i,t}^j) = \eta_a(1-\phi)\vartheta_{i,t}^j \mathbb{E}_t[M_{t+1}^j(\mathcal{V}_{i,t+1}^j - \mathcal{J}_{i,t+1}^j)] \tag{62}$$

in endowment economy setting where there is no intermediate good sector.

Pareto Weight and Risk Sharing: Risk-sharing in intermediate goods markets is driven by the US pareto weight, or US share of global resources Υ_t^i. This follows the law of motion:

$$\Upsilon_t^i = \Upsilon_{t-1}^i(\frac{M_t^0}{M_t^i})(\frac{C_t^0/C_{t-1}^0}{C_t^i/C_{t-1}^i}) \tag{63}$$

Value Functions: $\mathcal{V}_{i,t}^i$ is the value for country i's local innovation and $\mathcal{V}_{i,t}^j$ is the value to adopter in foreign country j that adopts a technology developed in the country i:

$$\mathcal{V}_{i,t}^i = (1-\tau_t^i)\Pi_{i,t}^i + (1-\phi)\mathbb{E}_t[M_{t+1}^i \mathcal{V}_{i,t+1}^i] \tag{64}$$

$$\mathcal{V}_{i,t}^j = \Pi_{i,t}^j(1-\tau_t^j) + (1-\phi)\mathbb{E}_t[M_{t+1}^j \mathcal{V}_{i,t+1}^j] \tag{65}$$

$\mathcal{J}_{i,t}^j$ is the value of country i's innovation that has yet to be adopted by the country j:

$$\mathcal{J}_{i,t}^j = \underset{h_{i,t}^j}{max} - h_{i,t}^j + [(1-\phi)\mathbb{E}_t(M_{t+1}^j(\vartheta_{i,t}^j V_{i,t+1}^j + (1-\vartheta_{i,t}^j)\mathcal{J}_{i,t+1}^j))] \tag{66}$$

Innovation Stock: Optimal R&D (S_t^i) and adoption investment ($h_{i,t}^j$) and the following laws of motion pins down stocks of local innovation ($N_{i,t}^i$) and foreign adoption ($N_{i,t}^j$):

$$N_{i,t+1}^i = \vartheta_t^i S_t^i + (1-\phi)N_{i,t}^i \tag{67}$$

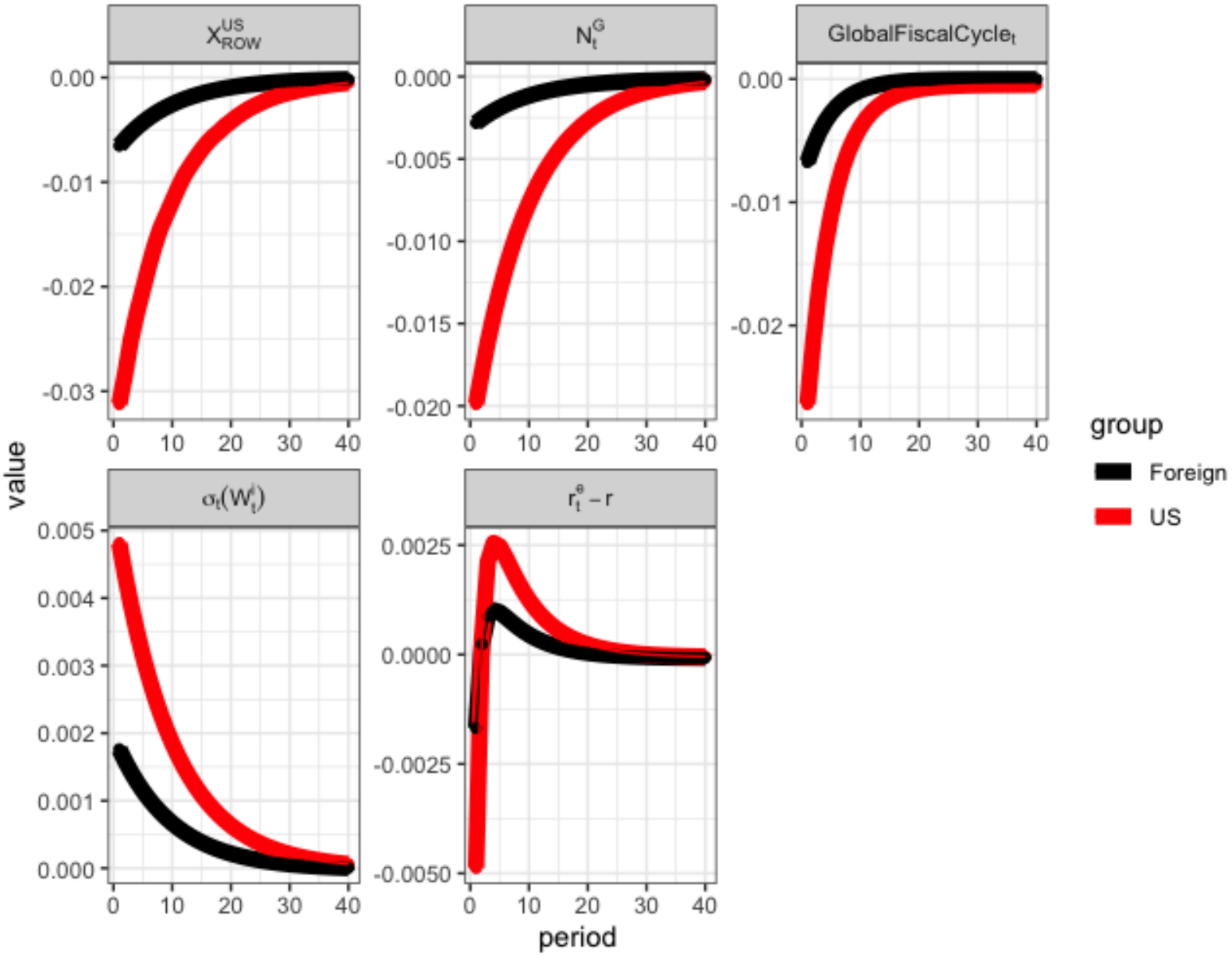
$$N_{i,t+1}^j - (1-\phi)N_{i,t}^j = \vartheta_{i,t}^j(1-\phi)(N_{i,t+1}^i - N_{i,t}^j) \tag{68}$$

Local innovation productivity $\vartheta_{i,t}^i$ and rate of foreign adoption $\vartheta_{i,t}^j$ is:

$$\vartheta_t^i = \chi(\frac{S_t^i}{N_{i,t}^i})^{\eta-1} \qquad \vartheta_{i,t}^j = \chi_\alpha(\frac{h_{i,t}^j(N_{i,t+1}^i - N_{i,t}^j)}{N_{i,t}^j}) \tag{69}$$

Solution Method: I use third order perturbation methods to solve the model (Colacito, Croce, Gavazzoni, and Ready (2018); Gavazzoni and Santacreu (2020)). I approximate the equilibrium system to third order around a point close to the zero debt ($\overline{B}^i = 0,\ \forall i$), zero deficit ($\overline{\tau}^{*,i} = \overline{\tau}^i$) steady state where tax rates are at the average global rate: $\overline{\tau}^i = \overline{\tau}$. The baseline calibration is described in table 22. To keep the simulation exercise tractable, I set $N = 3$.

Figure 23: US as Global Innovation Leader (Mechanism Overview)



Description: This figure visualises the model mechanism. Key driving force is the special US role as the global innovation leader. This enables the US fiscal policy to exert unique influence over i) global innovation and growth, ii) the global fiscal cycle, iii) global policy uncertainty and consequently iv) global risk premia. This figure plots the impulse responses of key model variables to a 1 S.D positive government spending shock ($\epsilon^i_{s,t} \uparrow$). Red (black) are impulse responses to a US (foreign) spending shock. Variables are Foreign adoption of US innovation (X^{US}_{ROW}), global innovation stock (ΔN^G_t), global fiscal cycle (Global Fiscal Cycle$_t$) and global excess returns ($r^W_t - r_t$)..

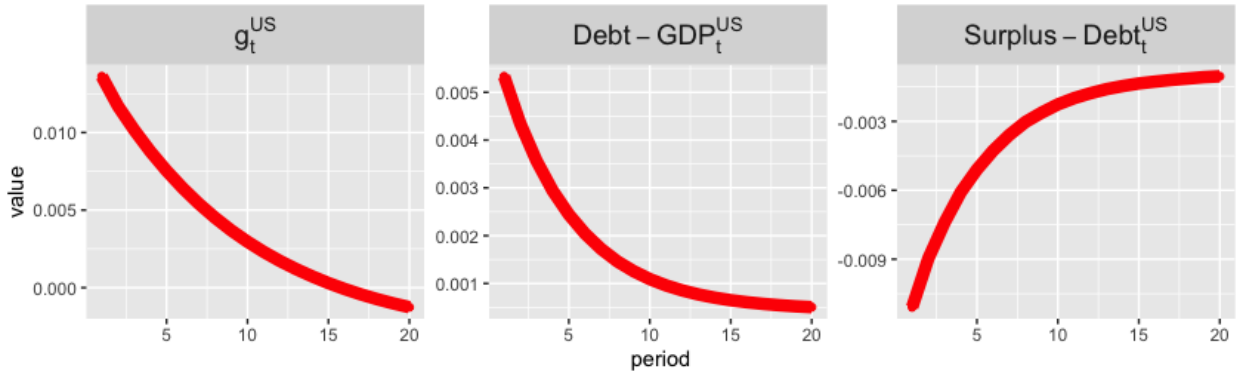
B.5 Fiscal Mechanism

Overview: My model is able to explain, both qualitatively and quantitatively, the tight link between the US fiscal condition and the global financial cycle implied by my empirical results. Driving this success is the interaction between the fiscal theory, global innovation and growth, the global fiscal cycle and global policy uncertainty. This mechanism is visualised in figure 23. To communicate the economics clearly, I walk through the mechanism step-by-step, describing in detail how model dynamics evolve in response to a positive US government spending shock.

B.5.1 Part I: Government Debt and the Fiscal Theory

IGBC: The model's exogenous fiscal rules (equation 25) stipulate that the US government chooses to finance more spending at least partially through more government debt. Thus the US fiscal condition, proxied by the US surplus-debt ratio, deteriorates. This fiscal response is depicted below in figure 24.

Figure 24: Fiscal Rules and US Government Debt



Description: This figure plots the impulse responses to a 1 S.D positive US government spending shock ($\epsilon_{s,t}^{US} \uparrow$) for US government spending (g_t^{US}), US debt-GDP ratios ($DGDP_t^{US}$) and surplus-debt ratios (Surplus-$Debt_t^{US}$).

Fiscal Theory: The deterioration in the US fiscal condition has important implications for long-run US fiscal policy. To see this clearly, note that by definition that the local government debt portfolio is a claim to the path of future primary surpluses: $\{s_{t,t+k}^i = (\tau_t^i - g_t^i) * \text{Tax Base}_t^{US}\}_{k=0}^{\infty}$.

Thus the log gross return on the local government debt portfolio $R^i_{b,t}$ follows the identity:

$$\begin{aligned} r^i_{b,t} = log(\frac{B^i_t + S^i_t}{B^i_{t-1}}) =& \Delta b^i_t + log(1 + \frac{S^{US}_t}{B^{US}_t}) \\ =& \Delta b^i_t + s^i_t \end{aligned} \tag{70}$$

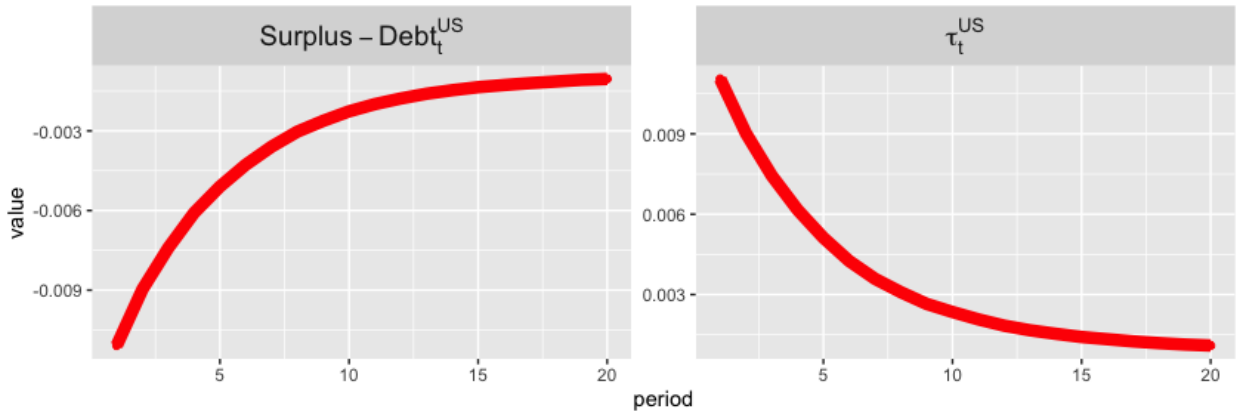
Here Δb^i_t is the local debt growth rate and $s^i_t = log(1 + \frac{S^i_t}{B^i_t}) \approx 2 + log(\frac{S^i_t}{B^i_{t-1}})(1 - \Delta b^i_t)$ for small $\frac{S^i_{t+1}}{B^i_{t+1}}$. Since $1 - \Delta b^i_t \geq 0$, s^i_t tracks the local primary surplus-debt ratio: $\frac{S^i_t}{B^i_{t-1}}$, the relevant measure of the local fiscal condition in the model. Similar to Campbell, Gao, and Martin (2023), I log-linearize this return identity around the model's deterministic steady state where the local surplus-debt ratio is small using techniques similar to Campbell and Shiller (1988). Thus s^i_t can be expressed as:

$$\begin{aligned} s^i_t \approx& (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \rho^j [\underbrace{r^i_{b,t+1+j}}_{\text{Discount Rates}} - \underbrace{[\frac{1}{1-\beta}\Delta\tau^i_{t+1+j} - \frac{\beta}{1-\beta}\Delta g^i_{t+1+j}]}_{\text{Cash Flows}}] \\ =& (1-\rho)\mathbb{E}_t \sum_{j=0}^{t-1} \rho^j [\underbrace{\Delta b^i_{t+1+j}}_{\text{Debt Growth}} + \underbrace{s^i_{t+1+j}}_{\text{Future Surplus-Debt}} - \frac{1}{1-\beta}(\underbrace{\Delta\tau^i_{t+1+j}}_{\text{Taxes}} - \beta\underbrace{\Delta g^i_{t+1+j}}_{\text{Spending}})] \end{aligned} \tag{71}$$

(71) is analogous to the Campbell-Shiller decomposition for the dividend yield if we interpret the local surplus-debt ratio to be the dividend yield on the local government debt portfolio. This equation illustrates the sources of fiscal adjustment in response to a decline in the local surplus-debt ratio. Firstly there can be a lower future path of discount rates can adjust: $\{r^i_{b,t+j+1}\}_{j=0}^{\infty} \downarrow$. Conversely there can be an actual fiscal correction: cash flows can adjust through a higher future path of primary surpluses.

In my model the cashflow component is quantitatively more relevant. Due to EZ preferences and an EIS larger than unity, the volatility of risk-free rates is low, generating low overall discount rate volatility on the government debt portfolio. This leaves the cash flow component as the key source of fiscal adjustment. Since US government spending is exogenous in my model, higher future cash flows on the government debt portfolios require a higher future path of US taxes. Figure 25 highlights this point, indicating that the US fiscal deterioration implies a higher future path of US taxes moving forward.

Figure 25: Fiscal Rules and US Government Debt



Description: This figure plots the impulse responses to a 1 S.D positive US government spending shock ($\epsilon_{s,t}^{US} \downarrow$) for relative discount rates: ($r_{b,t}^{US} - r_{b,t}^{ROW}$), relative debt growths ($\Delta b_t^{US} - \Delta b_t^{ROW}$) and relative surplus-debt ratios ($s_t^{US} - s_t^{ROW}$).

B.5.2 Part II: Fiscal Theory and Global Growth Prospects

US Growth Prospects: Now we explore the real implications of the relative higher future path of US taxes. For the US, the increase in expected future taxes levied on the US corporate sector depresses i) the market value of US patents, ii) US R&D intensity and consequently iii) US expected growth.

To see this point analytically, note that when we combine (61), (44) and (40), we can connect the R&D intensity $\frac{S_t^i}{N_t^i}$ to the expected present value of future monopoly profits:

$$\frac{1}{\chi}\left(\frac{S_t^i}{N_{i,t}^i}\right)^{1-\eta} = \left[\mathbb{E}_t\left[\sum_{k=1}^{\infty}(1-\phi)^{k-1}M_{t+k}^i(1-\tau_{t+k}^i)\Pi_{t+k}^i\right]^{\frac{\eta}{1-\eta}}\right] \tag{72}$$

Here Π_{t+k}^i denotes monopoly profits for country i's innovators at time $t+k$. This can further be expressed as a function of innovation:

$$\Pi_t^i = \underbrace{\left(\frac{1}{\nu}-1\right)}_{\text{Mark-Up}}\underbrace{\left[\xi\nu\left((K_t^i)^{\alpha}(\Omega_t^i)^{1-\alpha}\right)^{1-\xi}\mathcal{N}_t^i\right]^{\frac{1}{1-\xi}}}_{\text{Demand: } X_t^i} \tag{73}$$

Where:

$$\mathcal{N}_t^i = (N_{i,t}^i + \sum_{j=0}^{N} N_{j,t}^i (\frac{h_i^i}{h_j^i} \mathcal{E}_{j,t}^i))^{\frac{1-\nu}{\nu(1-\nu)}} \tag{74}$$

(72) can be interpreted as a Q-theory equation for R&D: it equates optimal R&D intensity $\frac{S_t^i}{N_{i,t}^i}$ to the discounted present value of after tax profits. Thus a higher future path of future of US taxes lowers i) lowers the present value of future monopoly profits in the local innovation sector and consequently ii) local R&D intensity: $\frac{S_t^i}{N_t^i} \downarrow$.

Through the law of motion for $N_{i,t}^i$ (67), this maps directly into lower US innovation stock ($N_{US,t}^{US} \downarrow$) and also depressed US growth prospects. This can be seen by noting that country i's output in the model follows:

$$Y_t^i = (Z_t^i L_t^i)^{1-\alpha} (K_t^i)^{\alpha} \tag{75}$$

where $Z_t^i = (\xi\nu)^{\frac{\xi}{1-\xi}} \mathcal{N}_t^i$. Thus the depressed US innovation effort endogenously depresses US growth through the term $\mathcal{N}_t^i$ which is a function of the local innovation stock $N_{i,t}^i$, as can be seen through (74).

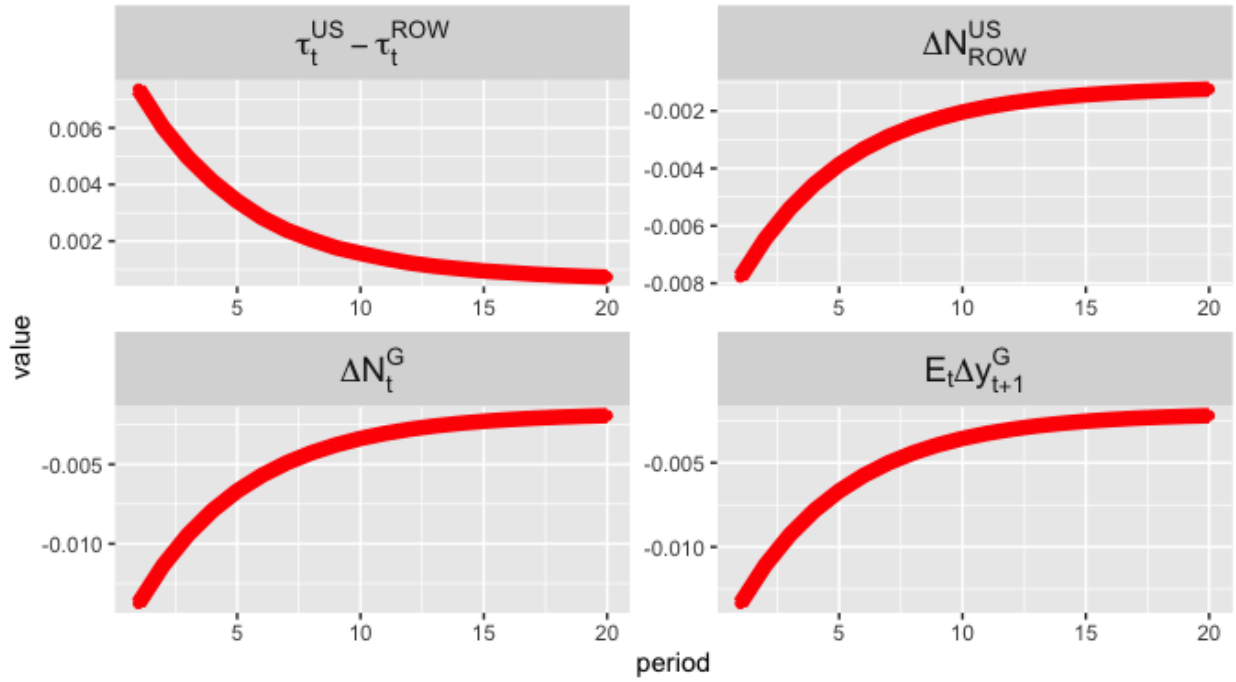
Foreign Growth Prospects: Note however that the distortionary impacts of the US fiscal policy are not limited to US innovation and growth. Due to the network structure in global innovation operating in the model, foreign countries adopt US innovation as a primary input in her own local innovation. Thus foreign incentives to adopt US technology ($h_{ROW,t}^{US} \downarrow$) and consequently foreign growth are depressed as well.

This can be seen by (62) which ties optimal investment in foreign adoption of US innovation: $h_{i,t}^{US}$ to the discounted present value of future monopoly profits in the US innovation sector. Iterating on this equation, it can be shown that the value of adopting US innovation to foreign country i: $\mathcal{V}_{US,t}^i$ is:

$$\mathcal{V}_{US,t}^i = \mathbb{E}_t \sum_{k=0}^{\infty} (1 - \tau_{t+k}^{US}) \Pi_{i,t+k}^{US} \tag{76}$$

Since this present value is also depressed by the higher expected future path of US corporate tax, $h^{US}_{ROW,t}$ is depressed as well. This explains the model dynamics contained in figure 26 which demonstrates that foreign adoption of US innovation ($\Delta N^{US}_{ROW,t}$) declines persistently over the next 20 quarters (five years), resulting in the global innovation stock (ΔN^{G}_{t}) and expected future global growth rate ($\mathbb{E}_t \Delta y^{G}_{t+1}$) slowing down as well.

Figure 26: Fiscal Theory and Global Growth Prospects



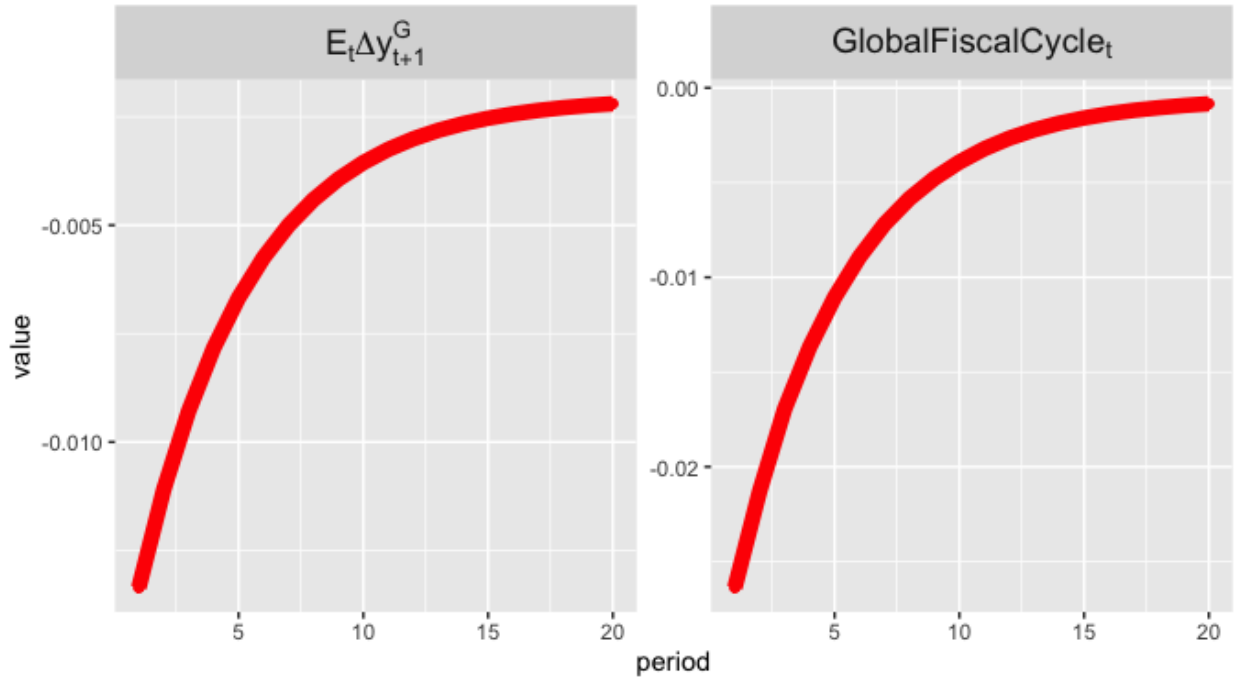
Description: This figure plots the impulse responses to a 1 S.D positive US government spending shock ($\epsilon^{US}_{s,t} \downarrow$) for relative taxes ($\tau^{US}_t - \tau^{ROW}_t$), growth rate in stock of US innovation adopted by ROW ($\Delta N^{US}_{ROW,t}$), global innovation growth (ΔN^{G}_{t}) and expected global growth ($\mathbb{E}_t \Delta y^{G}_{t+1}$).

B.5.3 Part III: Global Fiscal Cycle and Global Risk Premia

Global Growth and Global Fiscal Cycle: How does the global distortionary impact of US fiscal policy map into higher global policy uncertainty and global risk premia? The key force driving this mapping is the response of foreign fiscal authorities to the US fiscal policy. Recall from the exogenous fiscal rules (25) that local governments in the model respond with more expansionary fiscal policy during low expected growth environments.

Thus confronted by the deteriorating global growth environment, foreign governments follow the US by i) spending more and ii) accumulating more government debt. This model implication is clearly shown in the middle left panel of figure 27 which depicts the relatively sharp decline in the global fiscal cycle in response to the deteriorating global growth environment.

Figure 27: Global Growth and Global Fiscal Cycles



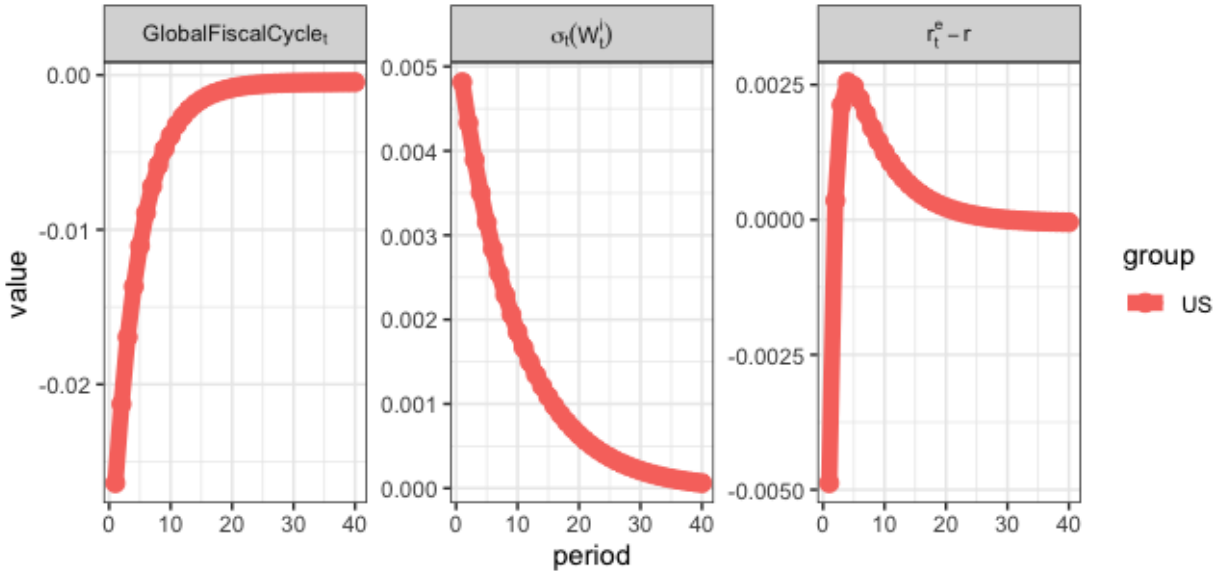
Description: This figure plots the impulse responses to a 1 S.D positive US government spending shock ($\epsilon^{US}_{s,t} \downarrow$) for expected global growth ($\mathbb{E}_t \Delta y^G_t$) and the global fiscal cycle (Global Fiscal Cycle$_{i,t}$).

Global Policy Uncertainty and Global Risk Premia: These common deteriorations in fiscal conditions are then linked to higher global risk premia through higher global policy uncertainty. This mapping is generated through the role of government debt in the fiscal mechanism. Since governments smooth the local tax burden by accumulating more government debt, uncertainty over future global tax policy and consequently global long-run growth rises. This is depicted in the middle right panel of figure (28).

The mapping with global risk premia is then immediate. Since preferences are recursive, this increase in global wealth uncertainty, or global long-run risks, is priced into global risky asset prices,

generating a rise in global risk premia. This manifests itself via a drop in global risky asset prices on impact followed by higher future global returns moving forward (middle right panel of figure 28).

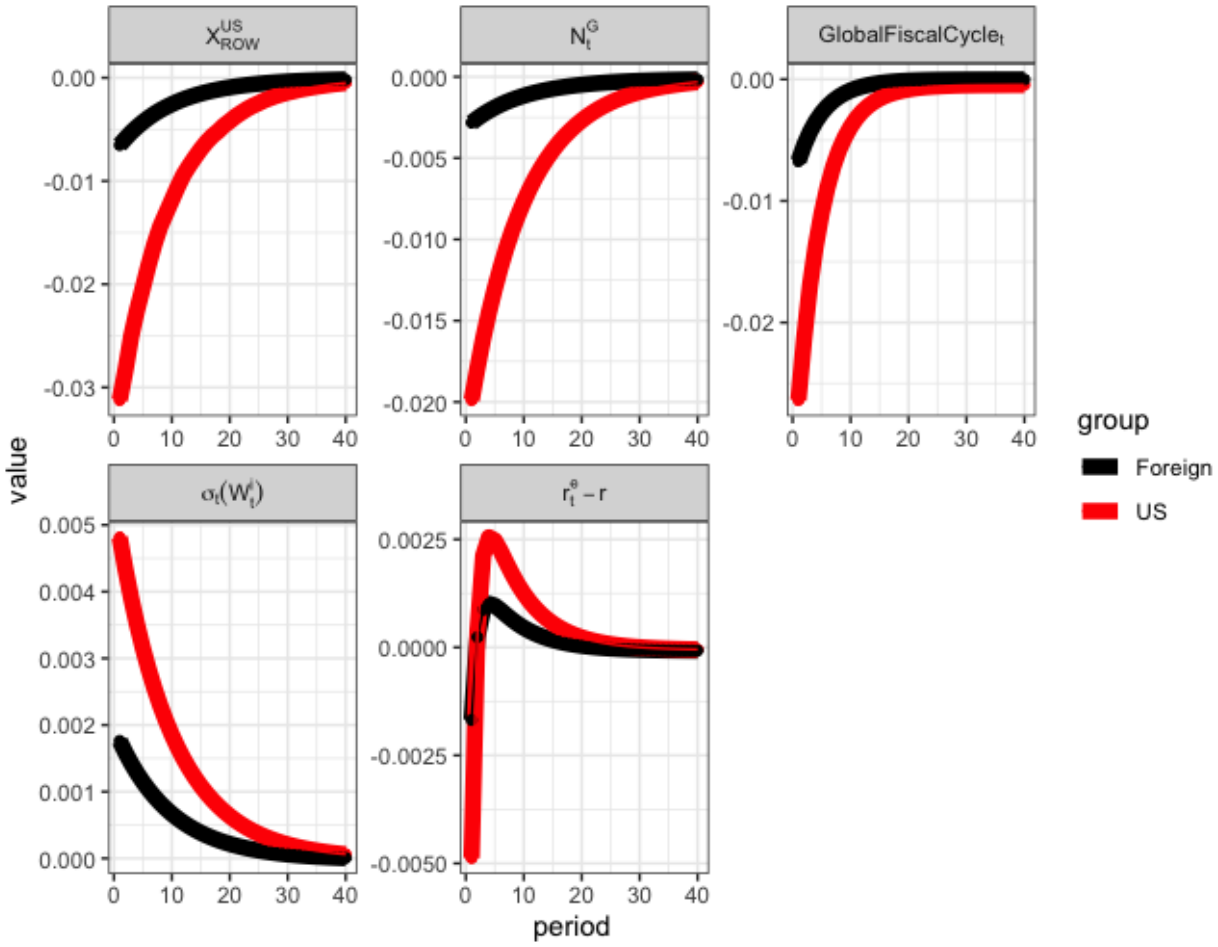
Figure 28: Global Fiscal Cycle, Global Policy Uncertainty and Global Risk Premia



Description: This figure plots the impulse responses to a 1 S.D positive US government spending shock ($\epsilon_{s,t}^{US} \downarrow$) for the global fiscal cycle (Global Fiscal Cycle$_{i,t}$), foreign wealth volatility ($\sigma(W_t^i)$) and global excess returns ($r_t^W - r_t$).

US as Global Innovation Leader: It is important to note that this link between fiscal conditions and global risk premia is unique to the US. Figure 29 demonstrates this: a US fiscal shock has a larger transmission into global risk premia than a foreign fiscal shock. This outsized influence of the US fiscal policy stems from the US role as the global innovation leader. Whilst each country's production is home biased towards their own innovation as intermediate inputs, *they have a greater preference for US innovation relative to the innovation of other foreign countries.* This places the US at the center of the global innovation network, enabling the US fiscal policy to uniquely influence i) foreign growth, ii) foreign fiscal conditions, iii) foreign policy uncertainty and consequently iv) global risk premia.

Figure 29: Fiscal Mechanism and US Specialness



Description: This figure plots the impulse responses of key model variables to a 1 S.D positive government spending shock ($\epsilon^i_{s,t} \uparrow$). Red (black) are impulse responses to a US (foreign) spending shock. Variables are Foreign adoption of US innovation (X^{US}_{ROW}), global innovation stock (ΔN^G_t), global fiscal cycle (Global Fiscal Cycle$_{i,t}$) and global excess returns ($r^W_t - r_t$).

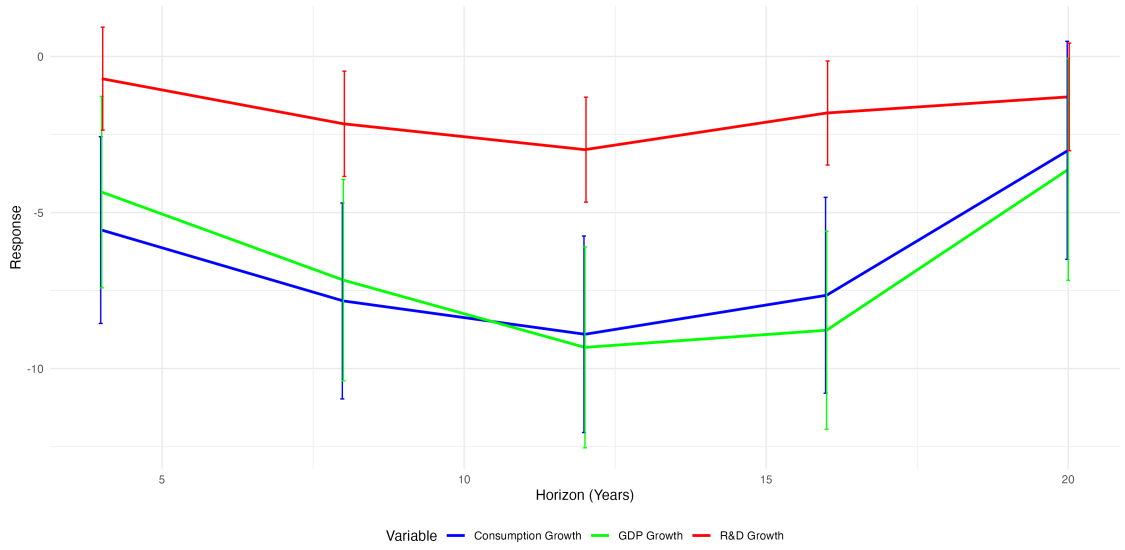
C Extended Model Validation

Innovation: Here, I show a direct connection between US fiscal policy and global innovation. The local projections are of the form:

$$X^i_{t,t+j} = \alpha + \beta^{US}_h \Delta\text{US Surplus-Debt Ratio}_t + \beta^i_h \Delta\text{Country i's Surplus-Debt Ratio}_t$$
$$+\beta^{Global}_h \text{Global Fiscal Cycle}_{i,t} + \Gamma\text{Control}_t + \epsilon_{i,t}, j \in \{1, 2, ..., N\} \quad (77)$$

The predictor variable X^i_t can either be: i) Country i's Consumption Growth$_t$, ii) Country i's GDP Growth$_t$, iii) Country i's R&D Growth. Figure 30 plots these impulse responses using the US surplus-debt ratio as the main fiscal variable. Consistent with my mechanism, deteriorations in the US fiscal condition depresses future global innovation and growth.

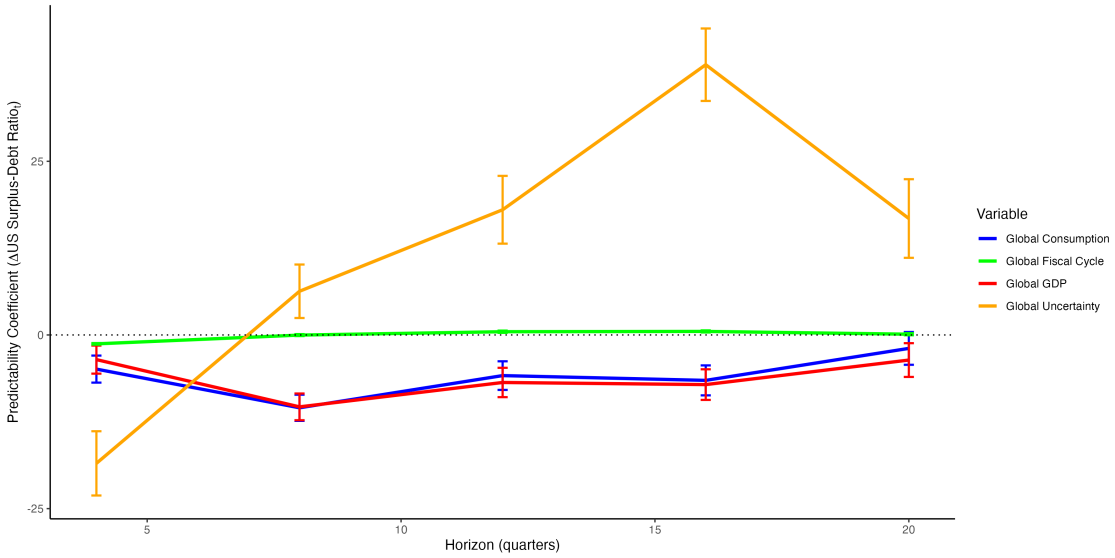
Figure 30: US Fiscal Condition, Global Innovation and Growth



Description: This figure estimates the panel macro local projection specification 77. This looks at the response to a one S.D decline in ΔUS Surplus-Debt Ratio. The object of prediction are i) future local consumption growths (blue), ii) future foreign GDP growths (green) and iii) future foreign R&D growths (red). Blue, red and green highlight impulse responses to one SD decline in ΔUS Surplus-Debt Ratio$_t$ for local consumption, local gdp growths and local R&D growths. Since R&D data from the world bank is only available at the annual frequency, the entire panel local projection exercise is conducted using annual data from 1980-2018. I plot the responses at a 4, 8, 12, 16 and 20 year horizons respectively. The bands correspond to the 90% confidence intervals for each of the predictive regressions. Magnitudes are in basis points (0.01%).

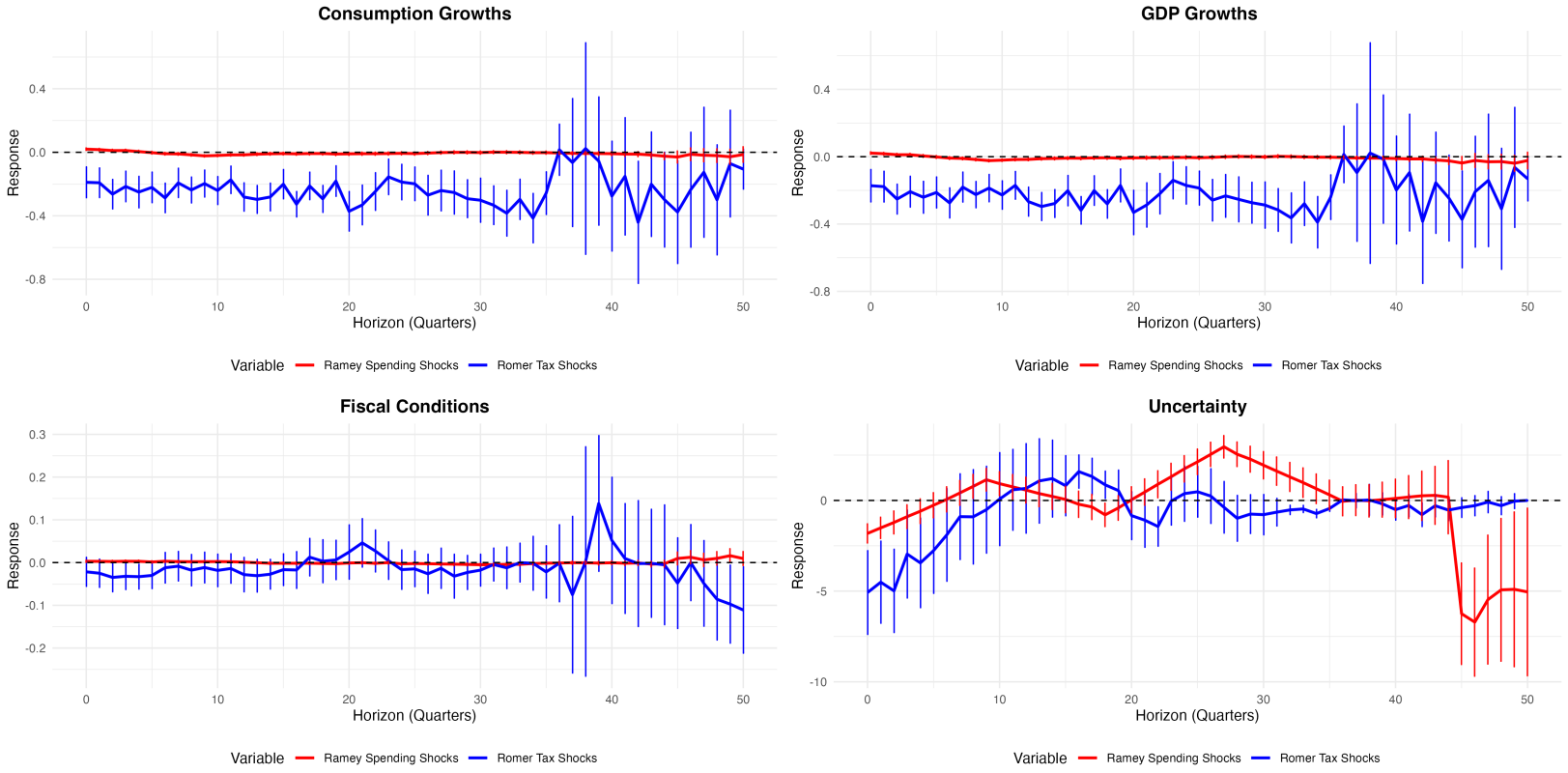
Global Fiscal Cycle and Global Uncertainty: Next, my mechanism links the US fiscal condition to the global fiscal cycle and global policy uncertainty. Confronted by the deteriorating global growth environment, foreign governments respond by following the US and adopting more expansionary policy, resulting in i) ***deteriorations*** in foreign fiscal conditions outside the US, ii) ***higher*** global policy uncertainty and consequently iv) ***higher*** global risk premia. I confirm these empirical predictions using the same panel local projections framework from before. Figure 31 plots these impulse responses, again using the US surplus-debt ratio as the main fiscal variable. Consistent with my mechanism, a decline in the US surplus-debt ratio predicts i) declines in foreign surplus-debt ratios and ii) higher foreign uncertainty, proxied by realized stock market volatility.

Figure 31: Macro and Fiscal Predictability (US Surplus-Debt Ratio)



Description: This figure estimates the panel macro local projection specification 77. This looks at the response to a one S.D decline in ΔUS Surplus-Debt Ratio. The object of prediction are i) future global consumption and GDP growths (black), ii) future fiscal conditions and iii) future uncertainty. The local surplus-debt ratio and realized stock market volatility are the proxies for fiscal conditions and uncertainty. Blue, red and green and yellow highlight impulse responses to one SD decline in ΔUS Surplus-Debt Ratio$_t$ for local consumption, local gdp growths, local fiscal conditions, proxied by ΔCountry i's Surplus-Debt Ratio$_t$, and local uncertainty proxied by realized stock market volatility respectively. Since all data is available at quarterly frequency, the entire panel local projection exercise is conducted using quarterly data from 1980Q1-2018Q4. I plot the responses at a 1 year (4 quarter), 2 year (8 quarter), 3 year (12 quarter), 4 year (16 quarter) and 5 year (20 quarter) horizon respectively. The bands correspond to the 90% confidence intervals for each of the predictive regressions. Magnitudes are in basis points (0.01%).

Figure 32: Macro and Fiscal Predictability Coefficients (Narrative Spending and Tax Shocks))



Description: This figure plots the results of estimating the panel predictive regressions 20 using the narrative US fiscal shocks. The prediction variables are local consumption and GDP growths, fiscal conditions proxied by surplus-debt ratios and uncertainty proxied by local stock market volatility. The blue lines the impulse responses to exogenous US tax shocks from Romer and Romer (2010). On the spending side, the red lines use the US miliary news shock series from Ramey (2011). As before, the bands represent 90% confidence bands.

Digging Deeper: I now investigate in more thorough depth each part of the mechanism. Since the model is very rich, it has many testable implications that can be explored. In specific terms, the model generates three main testable predictions (in no particular order):

1. **US leads the Global Innovation Network**: Due to the global innovation network, depressed US incentives to innovate depress i) global innovation flows and ii) global growth prospects.
2. **US Fiscal Condition, US Innovation and Global Growth**: Deteriorations in US fiscal condition predict both i) lower US innovation and ii) global innovation growth.
3. **US FP, Global Fiscal Cycle and Global Policy Uncertainty**: US Fiscal Policy leads the global fiscal cycle: US fiscal policy drives the global fiscal cycle: a US fiscal deterioration drives common deteriorations in global fiscal conditions and consequently drives up i) global policy uncertainty and ii) global risk premia.

C.0.1 US leads the Global Innovation Network

Overview: The central model implication is that the US is a global innovation leader: the US leads the global innovation cycle. To confirm this prediction, I investigate the predictive power of US innovation growth, proxied by the US R&D growth rate, for i) global innovation growth and ii) global consumption and GDP growths. This is confirmed in table 23: up to a 10 year horizon, US R&D effort predicts i) future global innovation and ii) future global consumption and GDP growth rates outside the US.

Table 23: *US Innovation leads Global Innovation and Global Growth*

This table estimates panel specification using annual data from 1980-2021. Standard errors contained in parentheses are blockwise bootstrapped using panel blocks of length $NT = 21$ (Developed Only), $NT = 17$ (Emerging Only) and $N = 38$ (All countries) and computed using 5,000 iterations. Country fixed effects are included in all regressions and the US is omitted from each dependent variable. Global R&D Growth$_t^{US}$ is global R&D growth orthogonalised w.r.t US R&D growth.

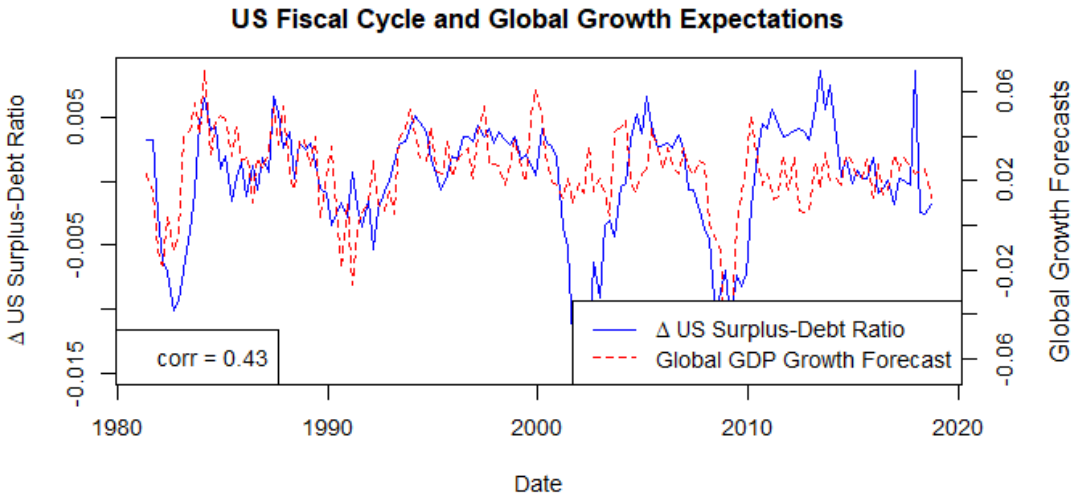
	Dependent Variable: R&D Growth$_{t,t+k}$								
	All Countries			*Developed Only*			*Emerging Only*		
	1YR	5YR	10YR	1YR	5YR	10YR	1YR	5YR	10YR
US R&D Growth$_t$	0.464***	0.694***	0.823***	0.410***	0.630***	0.723***	0.612***	0.854***	1.097***
	(0.083)	(0.146)	(0.200)	(0.131)	(0.289)	(0.203)	(0.231)	(0.243)	(0.234)
Global R&D Growth$_t$	0.723***	1.482***	1.222***	0.618***	0.641***	1.388***	0.684***	1.514***	1.325***
	(0.114)	(0.240)	(0.354)	(0.151)	(0.230)	(0.189)	(0.194)	(0.300)	(0.482)
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,068	925	751	1,068	925	751	1,068	925	751
Adjusted R^2	0.135	0.238	0.313	0.159	0.293	0.340	0.106	0.071	0.140
	Dependent Variable: Consumption Growth$_{t,t+k}$								
	All Countries			*Developed Only*			*Emerging Only*		
	1YR	5YR	10YR	1YR	5YR	10YR	1YR	5YR	10YR
US R&D Growth$_t$	0.012***	0.072***	0.104***	0.010***	0.056***	0.074***	0.019***	0.115***	0.183***
	(0.003)	(0.015)	(0.028)	(0.003)	(0.008)	(0.019)	(0.004)	(0.028)	(0.056)
Global R&D Growth$_t$	0.038***	0.078***	0.059***	0.033***	0.043***	0.188***	0.071***	0.164***	0.245***
	(0.006)	(0.019)	(0.022)	(0.005)	(0.012)	(0.058)	(0.028)	(0.034)	(0.081)
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,068	925	751	1,068	925	751	1,068	925	751
Adjusted R^2	0.015	0.069	0.087	0.016	0.087	0.079	0.030	0.088	0.153
	Dependent Variable: GDP Growth$_{t,t+k}$								
	All Countries			*Developed Only*			*Emerging Only*		
	1YR	5YR	10YR	1YR	5YR	10YR	1YR	5YR	10YR
US R&D Growth$_t$	0.013**	0.067***	0.097***	0.019**	0.057***	0.075***	0.009***	0.057***	0.071***
	(0.004)	(0.019)	(0.032)	(0.004)	(0.008)	(0.019)	(0.003)	(0.018)	(0.013)
Global R&D Growth$_t$	0.037***	0.089***	0.117***	0.027***	0.071***	0.100***	0.027***	0.071***	0.100***
	(0.007)	(0.023)	(0.040)	(0.005)	(0.013)	(0.039)	(0.007)	(0.024)	(0.021)
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1,068	925	751	1,068	925	751	1,068	925	751
Adjusted R^2	0.020	0.084	0.101	0.021	0.110	0.123	0.021	0.110	0.123
Note:				*p<0.1; **p<0.05; ***p<0.01					

C.0.2 US Fiscal Policy, US Innovation and Global Growth

Overview: Given that the US is the global innovation leader, disruptions in US innovation also disrupts global innovation flows. Thus the US fiscal policy plays an outsized role in shaping global innovation, global growth prospects and global risk premia in the model. The key mechanism through which this occurs are the distortionary impacts of US corporate taxes on US innovation adopted overseas.

Survey Data: To begin, I plot the link between the US fiscal condition and global growth expectations in figure 34. Following Andrews, Colacito, Croce, and Gavazzoni (2024), I use OECD survey data to measure these global growth expectations as an equally weighted average of country specific four quarter ahead GDP growth forecasts. Table 24 builds on this result, quantifying the economically and statistically significant link between ΔUS Surplus-Debt Ratio$_t$ and global growth expectations.

Figure 33: US Fiscal Condition and Global Growth Expectations



Description: This figure plots ΔUS Surplus-Debt Ratio$_t$ (red) against the global GDP growth forecast (blue). The sample period is from 1980Q1-2018Q4.

Table 24: *US Fiscal Condition and Global Growth Expectations*

Description: Standard errors are Newey West with four lags and the global fiscal cycle is orthogonalised w.r.t ΔUS Surplus-Debt Ratio$_t$. The sample period is from 1980Q1-2018Q4.

	Dependent variable: Global GDP Growth Forecasts					
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	1.790***		1.795***	0.806***	1.822***	1.069***
	(0.173)		(0.163)	(0.131)	(0.164)	(0.173)
Global Fiscal Cycle$_{i,t}$		0.674***	0.681***	0.187***	0.677***	0.276**
		(0.143)	(0.133)	(0.137)	(0.139)	(0.144)
Global Consumption Growth$_t$				0.917***		
				(0.0621)		
Global GDP Growth$_t$					−0.024***	
					(0.008)	
Global IP Growth$_t$						0.209***
						(0.029)
Observations	150	150	150	150	150	150
Adjusted R^2	0.181	0.049	0.232	0.458	0.244	0.324
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 25: *Model vs Simulated Regressions (Global Consumption Predictability)*

Description: The empirical regressions use an equally weighted average of consumption growths as my measure for global consumption growth. As in my empirical analysis, ΔUS Surplus-Debt Ratio$_t$ is used as the fiscal variable. For the model regressions, $\frac{(\tau_t^{US}-\tau_t^{*,US})\text{Tax Transfer}_t^{US}}{B_{t-4}^{US}}$ represents the US surplus-debt ratio. The last column computes results when the fiscal volatility shock is removed from the model (ω_t^i). Model regressions are computed as the average results over 1,000 simulations for 1000 quarters each.

	Coefficient	*Data*	*Model*	*No Vol*
Panel (a): Global Consumption Growth Predictability				
$\Delta c_{t,t+4}^W = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	1.034	-0.413	-1.231
		(0.330)		
$\Delta c_{t+4,t+8}^w = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	1.932	0.901	0.961
		(0.480)		
$\Delta c_{t+8,t+12}^w = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	1.938	1.441	1.645
		(0.878)		
$\Delta c_{t+12,t+16}^w = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	0.873	1.880	1.771
		(0.558)		
$\Delta c_{t+16,t+20}^w = \alpha + \beta(\Delta\text{US Surplus-Debt Ratio}_t) + \epsilon$	β	0.488	1.850	1.880
		(0.252)		
Note:		*p<0.1; **p<0.05; ***p<0.01		

C.0.3 US FP, Global Fiscal Cycle and Global Uncertainty

Overview: The final testable prediction I take to the data is the endogenous link between US fiscal capacity, the global fiscal cycle and global uncertainty implied by the model. This link endogenously generates predictability in the model: Since i) the US fiscal policy drives down global growth prospects and ii) local fiscal authorities enact more expansionary policy when growth prospects are low, a deterioration in the US fiscal condition leads to a common deterioration in fiscal conditions worldwide (Global Fiscal Cycle$_{i,t}$ $\downarrow$). Since the fiscal rule allows the tax burden to be smoothed over time: these common fiscal deteriorations are partially financed via higher debt, raising uncertainty about future tax policy and consequently the quantity of global long-run risk.

US leads the Global Fiscal Cycle: Table 26 evaluates the link between the US fiscal condition and global fiscal cycle: consistent with the model, the US leads the global fiscal cycle. Foreign governments respond to US fiscal deteriorations by deteriorating their own fiscal conditions for up to a 1 year horizon, as suggested by the positive coefficient on the 1 year change in the global fiscal cycle. The effect mean-revert around the 5 year horizon before effectively dying out after 10 years.

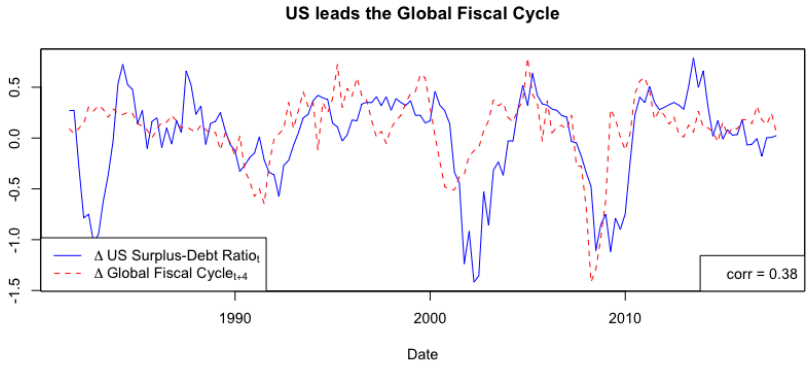
To further butress this point, figure **??** plots ΔUS Surplus-Debt Ratio$_t$ against the future 1 year change in the global fiscal cycle (ΔGlobal Fiscal Cycle$_{i,t}$). It clearly indicates a strong positive correlation, suggesting that foreign governments do indeed adopt the US fiscal policy stance by deteriorating their fiscal conditions in response to US fiscal deteriorations.

Table 26: *US Fiscal Policy and the Global Fiscal Cycle*

Description: This table estimates panel specification using quarterly data from 1980-2021. Standard errors are blockwise bootstrapped using panel blocks of length $NT = 38$.

	Dependent Variable: Foreign Fiscal Conditions		
	ΔCountry i's Surplus-Debt Ratio$_{t,t+k}$		
	1YR	5YR	10YR
ΔUS Surplus-Debt Ratio$_t$	0.764^{***}	-0.813^{***}	-0.13
	(0.109)	(0.202)	(0.232)
Global Fiscal Cycle$_{i,t}$	-0.115	-0.473^{**}	-1.200^{***}
	(0.183)	(0.139)	(0.382)
Country FE	✓	✓	✓
Observations	1,388	1,228	1,028
Adjusted R^2	0.027	0.018	0.036
Note:			*p<0.1; **p<0.05; ***p<0.01

Figure 34: US Fiscal Condition and Global Growth Expectations



Description: This figure plots ΔUS Surplus-Debt Ratio$_t$ (blue) against the future global fiscal cycle (blue). The sample period is from 1980Q1-2018Q4.

Table 27: *US Fiscal Condition and Global Uncertainty*

This table runs multivariate specifications measuring the correlation between the US fiscal condition and global uncertainty. Data from 1980Q1-2018Q4. Country fixed effects are included and standard errors contained in parentheses are clustered at the date (quarter) level. In addition to global market uncertainty proxies, I also look at the global economic policy uncertainty index (GEPU) constructed by Davis (2016) which is a GDP weighted average of EPU indexes for 16 countries obtained from Baker, Bloom and Davis (2016). GDP weights are computed using both current prices and a PPP adjustment. The sample period is from 1980Q1-2018Q4.

	Dependent variable: Global Market Uncertainty					
	Global Stock Market Volatility			VIX		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	-0.431^{***}	-0.454^{***}	-0.455^{***}	-0.286^{***}	-0.306^{***}	-0.280^{***}
	(0.11)	(0.10)	(0.12)	(0.06)	(0.06)	(0.07)
Global Fiscal Cycle$_t^{US}$	-0.166^{**}	-0.182^{**}	-0.182^{**}	-0.038	-0.059	-0.031
	(0.081)	(0.071)	(0.089)	(0.049)	(0.039)	(0.051)
Global Consumption Growth$_t$	-0.021			-0.028		
	(0.050)			(0.034)		
Global GDP Growth$_t$		0.0001			-0.003	
		(0.005)			(0.004)	
Global IP Growth$_t$			-0.0003			-0.010
			(0.001)			(0.01)
Observations	150	150	150	115	115	115
Adjusted R^2	0.136	0.135	0.135	0.210	0.210	0.212
	Dependent variable: Global Economic Policy Uncertainty Index (GEPU)					
	Current Prices			PPP Adjusted		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔUS Surplus-Debt Ratio$_t$	-0.159^{**}	-0.158^{*}	-0.178^{**}	-0.165^{**}	-0.163^{*}	-0.183^{**}
	(0.078)	(0.089)	(0.081)	(0.077)	(0.088)	(0.079)
Global Fiscal Cycle$_t^{US}$	0.001	0.001	0.007	0.002	0.002	0.001
	(0.006)	(0.006)	(0.005)	(0.0056)	(0.0061)	(0.005)
Global Consumption Growth$_t$	-0.001			-0.002		
	(0.005)			(0.005)		
Global GDP Growth$_t$		0.001			0.001	
		(0.001)			(0.001)	
Global IP Growth$_t$			0.002			0.002
			(0.001)			(0.002)
Observations	83	83	83	83	83	83
Adjusted R^2	0.025	0.013	0.026	0.030	0.017	0.031
Note:				*p<0.1; **p<0.05; ***p<0.01		

US Specialness: Since the US is the global innovation leader, my model predicts that the tight link between the US fiscal condition, global growth prospects, global uncertainty and global risk premia is unique to the US. This is the key reason why my model reproduces the unique international transmission of US fiscal policy relative to other countries. To empirically validate this assumption,

I conduct panel horserace regressions of the form:

$$\begin{aligned} \mathrm{X}_t =& \alpha + \beta_1 \Delta\text{Country j's Surplus-Debt Ratio}_t^{US} + \beta_2 \Delta\text{US Surplus-Debt Ratio}_t \\ &+ \beta_3 \Delta\text{Global Fiscal Cycle}_{j,t}^{US} + \delta' Macro_t + \epsilon_{i,t}, \\ X_t \in& \{\text{Global GDP Growth Forecast}_{t,t+4}, \text{Global Stock Market Volatility}_t\} \end{aligned} \tag{78}$$

In these horserace regressions, ΔCountry j's Surplus-Debt Ratio$_t^{US}$ denotes the four quarter change in country j's surplus-debt ratio orthogonalised w.r.t four quarter changes in the US surplus-debt ratio. Global Fiscal Cycle$_{j,t}^{US}$ is the global fiscal cycle denoted by (2) orthogonalised w.r.t four quarter changes in US and country j's surplus-debt ratios. The results contained in table 28 confirm US specialness in driving global growth expectations and global uncertainty: the US fiscal condition drives out essentially all other foreign fiscal conditions out of both horse race regressions.

These results are related to a growing literature emphasising the special role that the US plays in driving fluctuations in the global economy. This existing literature on this subject however focuses on the financial dimension: US policy actions have a unique global footprint because of the dollar's status as the global reserve currency (Jiang et al, 2018, 2020). My results hint at a distinct real dimension: US policy actions also have a global footprint of their unique influence over i) future global growth prospects and ii) global policy uncertainty. In the model that follows, I tie this real dimension of US specialness to the US leadership role in the global innovation network. Thus US fiscal policy can uniquely shape i) global growth prospects, ii) global policy uncertainty and consequently iii) global risk premia, as implied by my results, through its distortionary impact on global innovation growth.

Table 28: *Foreign Fiscal Conditions, Global LRRs, Global Uncertainty*

Description: This table documents specifications captured by (78). In all regressions, Global GDP Growth$_t$ is used as the macro control. This is denoted by Global Fiscal Cycle$_{i,t}$. The sample period is 1980Q1-2018Q4.

Dependent Variable: Global GDP Growth Forecasts						
Country j	ΔCountry i's Surplus-Debt Ratio$_t$		ΔUS Surplus-Debt Ratio$_t$		Global Fiscal Cycle$_{i,t}$	
	Coefficient	(s.e)	Coefficient	(s.e)	Coefficient	(s.e)
Australia	0.108	(0.088)	0.796**	(0.344)	0.597***	(0.190)
Canada	0.275	(0.346)	0.666***	(0.239)	0.477**	(0.190)
Denmark	0.249	(0.174)	0.624**	(0.297)	0.514**	(0.227)
France	0.407***	(0.150)	0.709***	(0.209)	0.515**	(0.243)
Germany	−0.039	(0.038)	0.875***	(0.307)	0.602**	(0.245)
Italy	0.249	(0.370)	0.831***	(0.302)	0.549**	(0.234)
Japan	0.238	(0.264)	0.828***	(0.304)	0.557**	(0.245)
Norway	0.054	(0.049)	0.747**	(0.315)	0.680**	(0.323)
New Zealand	0.392	(0.312)	0.111***	(0.040)	1.131***	(0.350)
Sweden	0.465***	(0.139)	1.310***	(0.384)	0.800***	(0.297)
Switzerland	−0.159	(0.221)	0.875***	(0.309)	0.694***	(0.265)
United Kingdom	0.150	(0.138)	0.654**	(0.327)	−0.568**	(0.246)
Dependent Variable: Global Uncertainty						
Country j	ΔCountry i's Surplus-Debt Ratio		ΔUS Surplus-Debt Ratio		Global Fiscal Cycle$_{i,t}$	
	Coefficient	(s.e)	Coefficient	(s.e)	Coefficient	(s.e)
Australia	−0.041	(0.028)	−0.532***	(0.114)	−0.075	(0.098)
Canada	−0.844	(1.345)	−0.473***	(0.111)	−0.205**	(0.077)
Denmark	−0.147**	(0.058)	−0.417***	(0.111)	−0.132	(0.080)
France	−0.081	(0.082)	−0.474***	(0.108)	−0.246***	(0.079)
Germany	−0.019	(0.027)	−0.423***	(0.117)	−0.213***	(0.079)
Italy	−0.018	(0.138)	−0.422***	(1.090)	−0.230***	(0.074)
Japan	−0.252***	(0.096)	−0.398***	(0.111)	−0.164**	(0.079)
Norway	−0.016	(0.021)	−0.431***	(0.117)	−0.227**	(0.093)
New Zealand	−0.096	(0.172)	−0.436***	(0.141)	−0.066	(0.120)
Sweden	−0.115	(0.071)	−0.690***	(0.148)	−0.216***	(0.108)
Switzerland	0.034	(0.133)	−0.483***	(0.174)	−0.294**	(0.119)
United Kingdom	0.150	(0.138)	−0.654**	(0.327)	0.568**	(0.246)