# Comments on
# "Fiscal deficits and inflation risks: the role of fiscal and monetary regimes"

by

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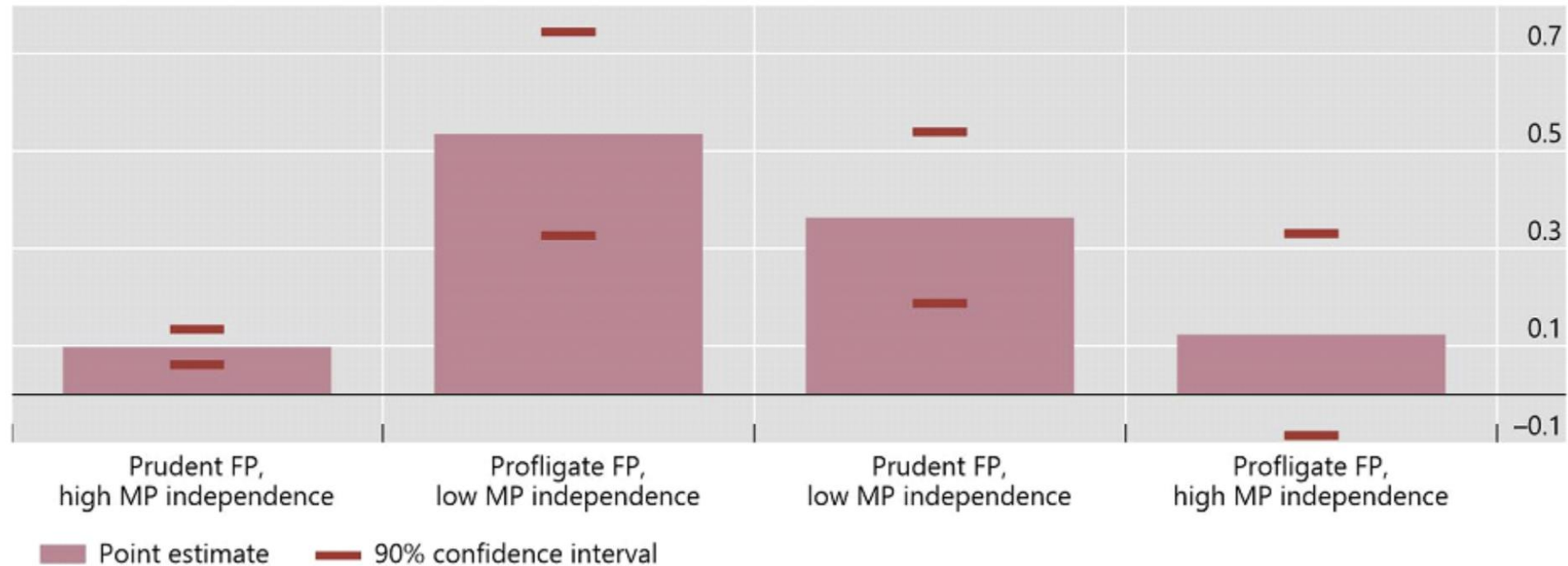National University of Singapore

# Key takeaway



Figure 1: **The inflationary impact of fiscal stimulus across fiscal and monetary regimes**. The figure shows the estimated average impact of a one percentage point increase in the fiscal deficit on inflation over the next two years across different combinations of fiscal and monetary regimes. Fiscal regimes are classified as prudent or profligate based on Mauro et al. (2015). Monetary regimes are defined as being high or low independence based on legal limitations on central bank lending to the public sector in Romelli (2022).

# Literature contribution

- New international evidence of fiscal-monetary policy interaction
  - Rising number of theoretical studies (Bianchi and Melosi, 2019; Mian, Straub and Sufi, 2021)
  - Few empirical papers that explore fiscal dominance in the international context (in US context, see Hall and Sargent, 2022)
- Uncover conditions for fiscal deficits to be inflationary
  - ***Fiscal dominance*** and inflation surges
  - Fiscal deficits have higher inflation effects conditional on fiscal dominance and tail inflation risk
- Add a new perspective on the current inflation debate
  - Post-pandemic high inflation seems more consistent with fiscal dominance rather than monetary dominance

# Empirical specifications

- OLS

$$\overline{\pi}_{i,t+1,t+2} = a_i + X'_{it}\beta + \epsilon_{it}. \tag{1}$$

$$X'_{it} = (\Delta def_{it}, \pi_{it}, \Delta y_{it}, \Delta exc_{it}, \Delta oil_{it}). \tag{2}$$

- Panel quantile regression with fixed effects

$$\overline{\pi}_{i,t+1,t+2} = \alpha_i + X'_{it}\beta + (\delta_i + X'_{it}\gamma)U_{it}, \tag{3}$$

- Key assumptions
  - Xit is strictly exogeneous
  - Global factors' effects on inflation dynamics have been captured by Xit

# Comment on specification

- Global financial cycles transmit shocks across border (i.e., Rey, 2015; Miranda-Agrippino and Rey, 2020; Davis, Valente, and van Wincoop, 2021)
  - US monetary policy → other economies' monetary policy → Inflation
  - Suggestions:
    - Control for time-fixed effects to absorb potential effects of global financial cycles on inflation
    - Alternatively, control for VIX, Ted and other relevant global factors

- Macroeconomic variables are interconnected
  - The independent variables, in particular the fiscal deficits, are endogenous
  - Suggestion
    - Robustness checks with local projection (see a relevant specification in Jordà, Schularick and Taylor, 2016)

# Clarifications on the difference between monetary and fiscal dominance

| | Monetary dominance $\overline{\pi}_{i,t+1,t+2}$ | Fiscal dominance $\overline{\pi}_{i,t+1,t+2}$ | Prud FP low MP indep $\overline{\pi}_{i,t+1,t+2}$ | Profl FP high MP indep $\overline{\pi}_{i,t+1,t+2}$ |
|---|---|---|---|---|
| $\Delta def_{it}$ | 0.0974*** | 0.536*** | 0.363*** | 0.123 |
| | (0.0222) | (0.128) | (0.107) | (0.126) |
| $\pi_{it}$ | 0.714*** | 0.722*** | 0.763*** | 0.463*** |
| | (0.0263) | (0.0797) | (0.0363) | (0.0628) |
| $\Delta y_{it}$ | 0.301*** | 1.005*** | 0.752*** | 0.366*** |
| | (0.0390) | (0.101) | (0.102) | (0.0556) |
| $\Delta exc_{it}$ | -0.0757** | 0.0149 | 0.0162 | -0.0212 |
| | (0.0307) | (0.0271) | (0.0209) | (0.0607) |
| $\Delta oil_{it}$ | -0.00109 | -0.00811 | 0.00298 | 0.00486 |
| | (0.00479) | (0.00559) | (0.00531) | (0.00747) |
| Observations | 314 | 152 | 341 | 126 |
| R-squared | 0.747 | 0.692 | 0.659 | 0.391 |
| Number of countries | 14 | 9 | 13 | 8 |

Table 1: **Effects of deficits on inflation across fiscal-monetary regimes, OLS estimates.**

- There are 21 economies in the sample.
- Some economies may switch between monetary and fiscal dominance?
  - Why columns 1 and 2 add up to 23
  - While columns 3 and 4 add up to 21?

# Dynamics of monetary and fiscal dominance

- How do fiscal and monetary regime in the same economy change over time?
  - Consider visualizing the dynamics in a heatmap

**SimilarWeb Country Intelligence Heatmap: US**
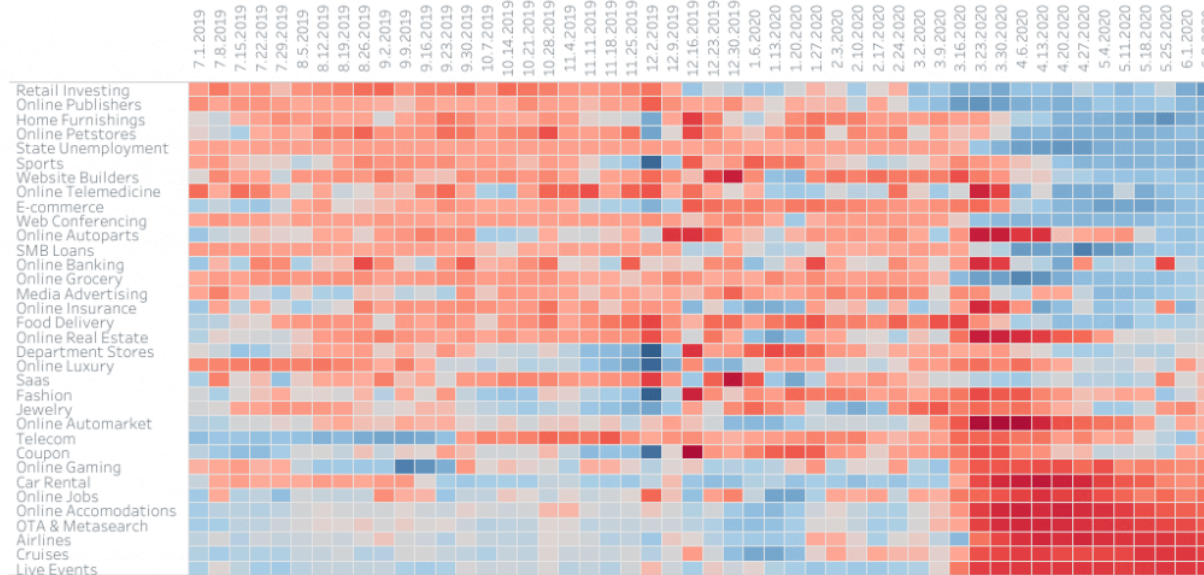
SimilarWeb Desktop and Mobile-web data Weekly Visitors

Note: Indices were constructed using the factor modeling approach of principal component analysis (PCA). Blue represents an above average YoY change across websites in an industry, while red represents an above average decline

# Comment on the difference between monetary and fiscal dominance

- Are the difference between monetary and fiscal dominance significant?
  - Could it be driven by omitted variables, sample (country) difference, relatively low inflation in the subsample of monetary dominance?
  - Suggestion: robustness checks based on the whole sample, adding the interaction between fiscal deficits and fiscal dominance in Eq. (1)

| | Monetary dominance | Fiscal dominance | Prud FP low MP indep | Profl FP high MP indep |
|---|---|---|---|---|
| | $\overline{\pi}_{i,t+1,t+2}$ | $\overline{\pi}_{i,t+1,t+2}$ | $\overline{\pi}_{i,t+1,t+2}$ | $\overline{\pi}_{i,t+1,t+2}$ |
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# Clarification on forecasting performance

- This figure illustrates the importance of fiscal deficits for forecasting inflation

- Both blue and red lines track the 45 degree line better in the left panel.
  - Fiscal deficits is more relevant for forecasting performance when monetary policy dominate?



(a) Monetary dominance
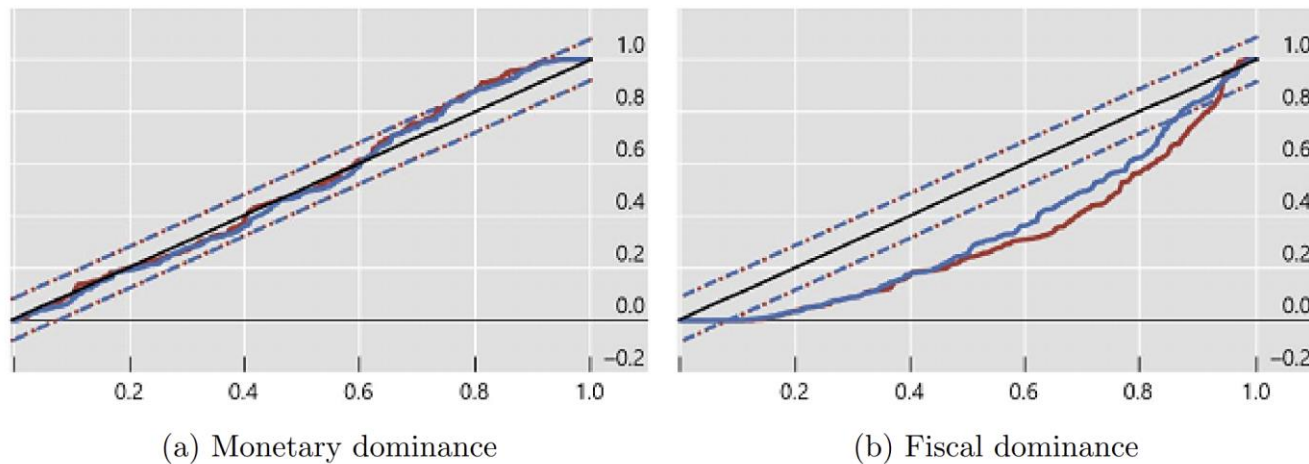
(b) Fiscal dominance

Figure 5: **Cumulative distribution of the probability integral transform in models with and without fiscal deficits.** The x-axis shows the quantile and the y-axis the empirical cumulative distribution. The blue lines show the probability integral transform in the baseline model with changes in fiscal deficits, while the red lines show the probability integral transform in the baseline model without deficits. 95% critical values are included around the 45 degree line.
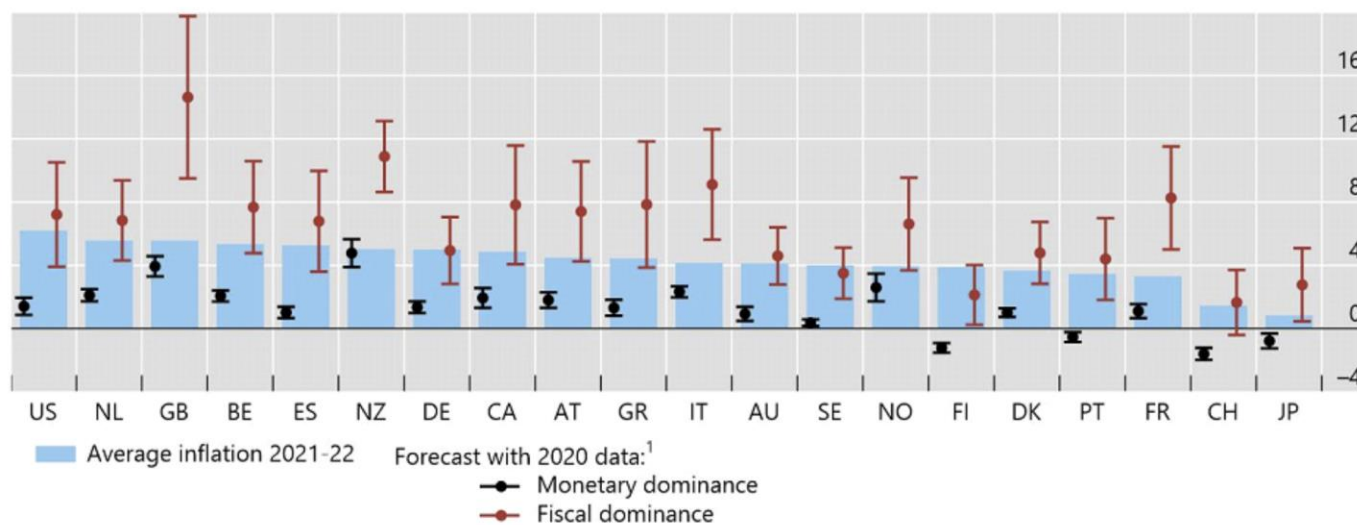
# Forecasting inflation during Covid-19



Figure 9: **Inflation outcomes during Covid-19 compared with forecasts under monetary and fiscal dominance**. The figure shows the average inflation outcomes in 2021-22 (blue bars) and the model-implied forecasts under monetary dominance (black line) and fiscal dominance (red line). The dot corresponds to the point forecast and the error bars to the 99% confidence interval. For GDP growth, average of quarterly growth over Q1 2020-Q2 2021, transformed into annualised rate. For oil prices in domestic currency, growth over the same period. Inflation for 2022 is the Consensus forecast for 2022, made in June 2022. IE not shown; for IE, the average inflation outcome is 4.3%; the forecast under monetary dominance 5.1% (confidence band 3.8-6.4%); and the forecast under fiscal dominance 19.0% (confidence band 13.4-24.6%).

- Forecasted inflation during Covid-19 is intuitive: Economies implementing more extensive fiscal stimulus measures are forecasted to experience an elevated rate of inflation.

- What are the monetary and fiscal regime for each economy based on the 2020 data?
  - Could the predictive accuracy enhance upon considering the prevalence of fiscal or monetary dominance?

# Why exclude emerging economies?

- According to Catao and Terrones (2005), the positive relation between fiscal deficits and inflation is significant in emerging economies but not in advanced economies.
- Are the impacts of fiscal deficits on inflation higher in emerging economies than in advanced economies?
  - Most emerging economies have lower monetary independence than advanced economies
  - According to current finding, the impacts of fiscal deficits on inflation should be lower in emerging economies than in advanced economies
- What are driving the difference between this paper and Catao and Terrones (2005)?
  - What are the fundamental conditions for rising impact of fiscal deficits on inflation? Perhaps a different paper
- Justifying the exclusion of emerging eocnomies in the introduction would be useful.

# Minor comments

- Use a uniform number of decimal places throughout.

| Inflation forecast quantiles | 5% $\overline{\pi}_{i,t+1,t+2}$ | 25% $\overline{\pi}_{i,t+1,t+2}$ | 50% $\overline{\pi}_{i,t+1,t+2}$ | 75% $\overline{\pi}_{i,t+1,t+2}$ | 95% $\overline{\pi}_{t+1,t+2}$ |
|---|---|---|---|---|---|
| $\Delta def_{it}$ | 0.251* | 0.390*** | 0.536*** | 0.679*** | 0.941*** |
| | (0.145) | (0.106) | (0.111) | (0.169) | (0.245) |
| $\pi_{it}$ | 0.653*** | 0.687*** | 0.722*** | 0.757*** | 0.821*** |
| | (0.0878) | (0.0649) | (0.0718) | (0.0772) | (0.115) |
| $\Delta y_{it}$ | 0.745*** | 0.872*** | 1.005*** | 1.136*** | 1.374*** |
| | (0.170) | (0.0983) | (0.0766) | (0.0976) | (0.194) |
| $\Delta exc_{it}$ | -0.0483** | -0.0175 | 0.0149 | 0.0466* | 0.105** |
| | (0.0234) | (0.0202) | (0.0219) | (0.0281) | (0.0447) |
| $\Delta oil_{it}$ | -0.000343 | -0.00413 | -0.00810* | -0.0120* | -0.0191* |
| | (0.00527) | (0.00390) | (0.00475) | (0.00649) | (0.0106) |
| Observations | 152 | 152 | 152 | 152 | 152 |

Table 2: **Quantile regression estimates, fiscal dominance regime.** This table shows the estimated coefficients in quantile regressions of inflation rate over the next two years (annualised) in country $i$, $\overline{\pi}_{i,t+1,t+2}$, on changes in the fiscal deficit-to-GDP ratio in year $t$, $\Delta def_{it}$, annual inflation rate $\pi_{it}$, GDP growth, $\Delta y_{it}$, log change in the nominal effective exchange rate $\Delta exc_{it}$, and log change in the local price of oil, $\Delta oil_{it}$. Estimated regressions include quantile-$\tau$ fixed effect for economy $i$. Block bootstrap standard errors clustered by country shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

# Minor comments

- Enhance the readability of the figure by incorporating labels for the x- and y-axes.



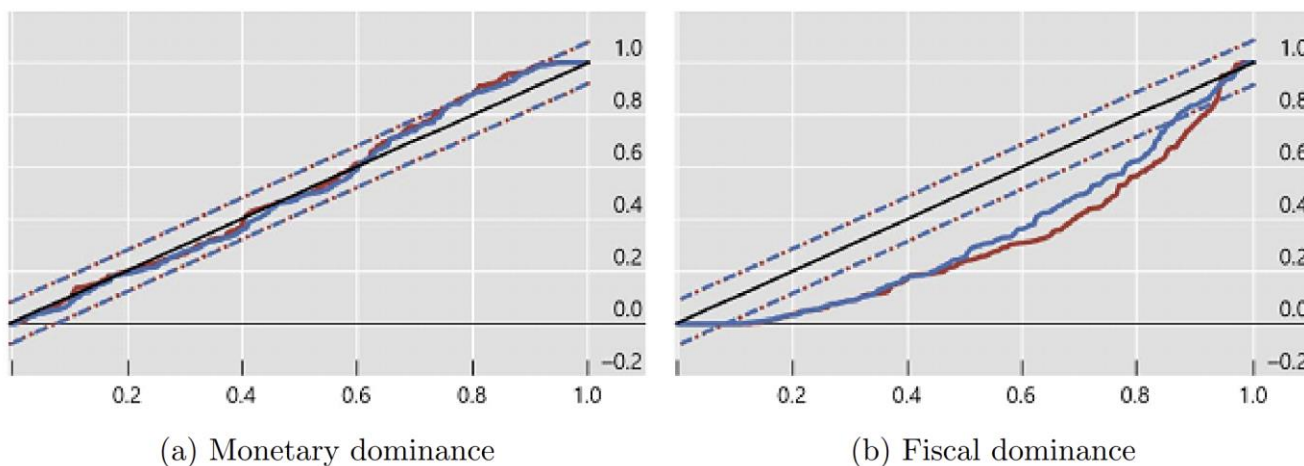(a) Monetary dominance  (b) Fiscal dominance

Figure 5: **Cumulative distribution of the probability integral transform in models with and without fiscal deficits.** The x-axis shows the quantile and the y-axis the empirical cumulative distribution. The blue lines show the probability integral transform in the baseline model with changes in fiscal deficits, while the red lines show the probability integral transform in the baseline model without deficits. 95% critical values are included around the 45 degree line.

# Minor comments

- Consider reporting the 5th, 25th, 50th (median), 75th, and 95th percentile values of inflation for the whole sample and subsamples of fiscal and monetary dominance
  - Rule out the possibility that the documented result is driven by relatively inflation in monetary

- Illustrate the heterogeneity across economies based on fiscal and monetary dominance regime?
  - Conditional on fiscal (monetary) dominance, which economy is subject to the highest inflation when marginally increase their fiscal deficits by 1%?

# Conclusion

An interesting paper with important findings and timely policy implications

- Key findings
  - The inflationary impact of fiscal deficits depends heavily on the fiscal-monetary policy regime
    - Under 'monetary dominance', higher deficits have relatively low inflation effect
    - Under 'fiscal dominance', higher deficits significantly increase inflation risks
  - Current high inflation, post the COVID-19 fiscal stimulus, aligns with a fiscal dominance regime
- Important policy implications
  - Fiscal sustainability and central bank independence are important for stable inflation
  - Policymakers need to reassess their strategies balancing crisis response and maintaining fiscal prudence to ensure economic stability

# Reference

1. Bianchi, Francesco, and Leonardo Melosi. "The dire effects of the lack of monetary and fiscal coordination." *Journal of Monetary Economics* 104 (2019): 1-22.

2. Catao, Luis AV, and Marco E. Terrones. "Fiscal deficits and inflation." *Journal of Monetary Economics* 52, no. 3 (2005): 529-554.

3. Davis, J. Scott, Giorgio Valente, and Eric Van Wincoop. "Global drivers of gross and net capital flows." *Journal of International Economics* 128 (2021): 103397.

4. Hall, George J., and Thomas J. Sargent. "Three world wars: Fiscal–monetary consequences." *Proceedings of the National Academy of Sciences* 119, no. 18 (2022): e2200349119.

5. Jordà, Òscar, Moritz Schularick, and Alan M. Taylor. "Sovereigns versus banks: credit, crises, and consequences." *Journal of the European Economic Association* 14, no. 1 (2016): 45-79.

6. Mian, Atif, Ludwig Straub, and Amir Sufi. "A goldilocks theory of fiscal policy." *NBER working paper* 29351 (2021).

7. Miranda-Agrippino, Silvia, and Hélene Rey. "US monetary policy and the global financial cycle." *The Review of Economic Studies* 87, no. 6 (2020): 2754-2776.

8. Rey, Hélène. *Dilemma not trilemma: the global financial cycle and monetary policy independence*. No. w21162. National Bureau of Economic Research, 2015.