Openness, Integration, and the International Monetary Order

Tarek A. Hassan Thomas M. Mertens Jingye Wang Tony Zhang

Pierre De Leo
University of Maryland

Economic Policy: Papers on European and Global Issues Conference
June 19–20, 2026

Can the Euro Become the World's Anchor Currency?

- What would it take for the euro to become the world's anchor currency?

Can the Euro Become the World's Anchor Currency?

- What would it take for the euro to become the world's anchor currency?

- Risk-based perspective on exchange rate determination
  - Optimal anchor currency appreciates in global bad times Hassan, Mertens, Zhang (2023)
  - Currencies of larger economies tend to appreciate in global bad times Hassan (2013)
  - Policies that expand the EU strengthen the euro's prospects as anchor currency

Can the Euro Become the World's Anchor Currency?

- What would it take for the euro to become the world's anchor currency?

- Risk-based perspective on exchange rate determination
  - Optimal anchor currency appreciates in global bad times Hassan, Mertens, Zhang (2023)
  - Currencies of larger economies tend to appreciate in global bad times Hassan (2013)
  - Policies that expand the EU strengthen the euro's prospects as anchor currency

- My discussion

  #1 One test of the model's mechanism: the euro and the pound before and after Brexit

  #2 Beyond the model: other shocks, other policies, and currency safety

Summary: Real Exchange Rates and Their Properties

- Bilateral real exchange rate (RER) (integrated markets: $\psi = 1$, laissez faire)

$$s^{h,f} = -\frac{\gamma(1-\alpha)}{1+(\gamma-1)\alpha}(y_N^h - y_N^f)$$

Summary: Real Exchange Rates and Their Properties

- Bilateral real exchange rate (RER) (integrated markets: $\psi = 1$, laissez faire)

$$s^{h,f} = -\frac{\gamma(1-\alpha)}{1+(\gamma-1)\alpha}(y_N^h - y_N^f)$$

- Global stochastic discount factor (SDF, marginal utility w.r.t. traded goods)

$$\lambda_T = -(\gamma-1)(1-\alpha)\sum_n \theta^n y_N^n$$

Summary: Real Exchange Rates and Their Properties

- Bilateral real exchange rate (RER) (integrated markets: $\psi = 1$, laissez faire)

$$s^{h,f} = -\frac{\gamma(1-\alpha)}{1+(\gamma-1)\alpha}(y_N^h - y_N^f)$$

- Global stochastic discount factor (SDF, marginal utility w.r.t. traded goods)

$$\lambda_T = -(\gamma-1)(1-\alpha)\sum_n \theta^n y_N^n$$

- Covariance between the bilateral RER and the global SDF

$$\text{cov}(s^{h,f}, \lambda_T) = \frac{(\gamma-1)\gamma(1-\alpha)^2}{1+(\gamma-1)\alpha}(\theta^h - \theta^f)\sigma^2_{y_N}$$

#1 The Mechanism of EU (Dis)Integration: Application to Brexit

- UK broad real exchange rate index:

$$\bar{s}^{UK} = -\frac{\gamma(1-\alpha)}{1+(\gamma-1)\alpha} y_N^X \qquad y_N^X = \begin{cases} y_N^{EU} & \text{Pre-Brexit} \\ y_N^{UK} \textit{ independent of } y_N^{EU} & \text{Post-Brexit} \end{cases}$$

#1 The Mechanism of EU (Dis)Integration: Application to Brexit

- UK broad real exchange rate index:

$$\bar{s}^{UK} = -\frac{\gamma(1-\alpha)}{1+(\gamma-1)\alpha} y_N^X \qquad y_N^X = \begin{cases} y_N^{EU} & \text{Pre-Brexit} \\ y_N^{UK} \textit{ independent of } y_N^{EU} & \text{Post-Brexit} \end{cases}$$

(1) GBP depreciates more vs USD in global bad times after Brexit

$$\text{cov}(s^{UK,US}, \lambda_T) = \begin{cases} \phi\,(\theta^{EU} - \theta^{US})\sigma^2_{y_N} & \text{Pre-Brexit} \\ \phi\,(\theta^{UK} - \theta^{US})\sigma^2_{y_N} & \text{Post-Brexit} \end{cases} \qquad \phi = \frac{(\gamma-1)\gamma(1-\alpha)^2}{1+(\gamma-1)\alpha}$$

#1 The Mechanism of EU (Dis)Integration: Application to Brexit

- UK broad real exchange rate index:

$$\bar{s}^{UK} = -\frac{\gamma(1-\alpha)}{1+(\gamma-1)\alpha} y_N^X \qquad y_N^X = \begin{cases} y_N^{EU} & \text{Pre-Brexit} \\ y_N^{UK} \textit{ independent of } y_N^{EU} & \text{Post-Brexit} \end{cases}$$

(1) GBP depreciates more vs USD in global bad times after Brexit

$$\text{cov}(s^{UK,US}, \lambda_T) = \begin{cases} \phi\,(\theta^{EU} - \theta^{US})\sigma^2_{y_N} & \text{Pre-Brexit} \\ \phi\,(\theta^{UK} - \theta^{US})\sigma^2_{y_N} & \text{Post-Brexit} \end{cases} \qquad \phi = \frac{(\gamma-1)\gamma(1-\alpha)^2}{1+(\gamma-1)\alpha}$$

(2) Euro depreciates more vs USD in global bad times after Brexit $\qquad (\theta^{EU} > \theta^{EU-UK})$

#1 The Mechanism of EU (Dis)Integration: Application to Brexit

- UK broad real exchange rate index:

$$\bar{s}^{UK} = -\frac{\gamma(1-\alpha)}{1+(\gamma-1)\alpha} y_N^X \qquad y_N^X = \begin{cases} y_N^{EU} & \text{Pre-Brexit} \\ y_N^{UK} \text{ independent of } y_N^{EU} & \text{Post-Brexit} \end{cases}$$

(1) GBP depreciates more vs USD in global bad times after Brexit

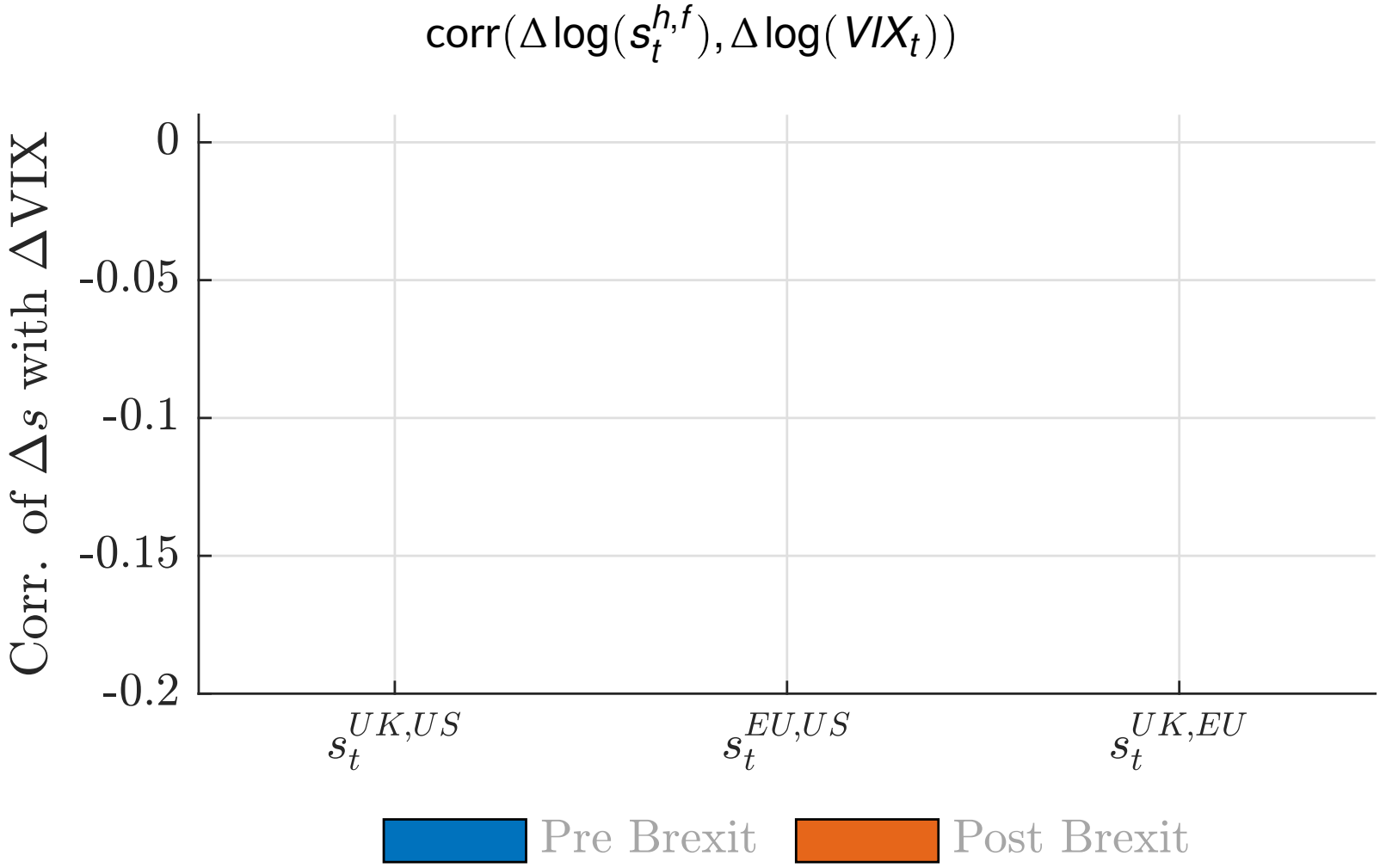
$$\text{cov}(s^{UK,US}, \lambda_T) = \begin{cases} \phi\,(\theta^{EU} - \theta^{US})\sigma^2_{y_N} & \text{Pre-Brexit} \\ \phi\,(\theta^{UK} - \theta^{US})\sigma^2_{y_N} & \text{Post-Brexit} \end{cases} \qquad \phi = \frac{(\gamma-1)\gamma(1-\alpha)^2}{1+(\gamma-1)\alpha}$$

(2) Euro depreciates more vs USD in global bad times after Brexit $(\theta^{EU} > \theta^{EU-UK})$

(3) GBP depreciates more vs EUR in global bad times after Brexit $(\theta^{UK} < \theta^{EU-UK})$

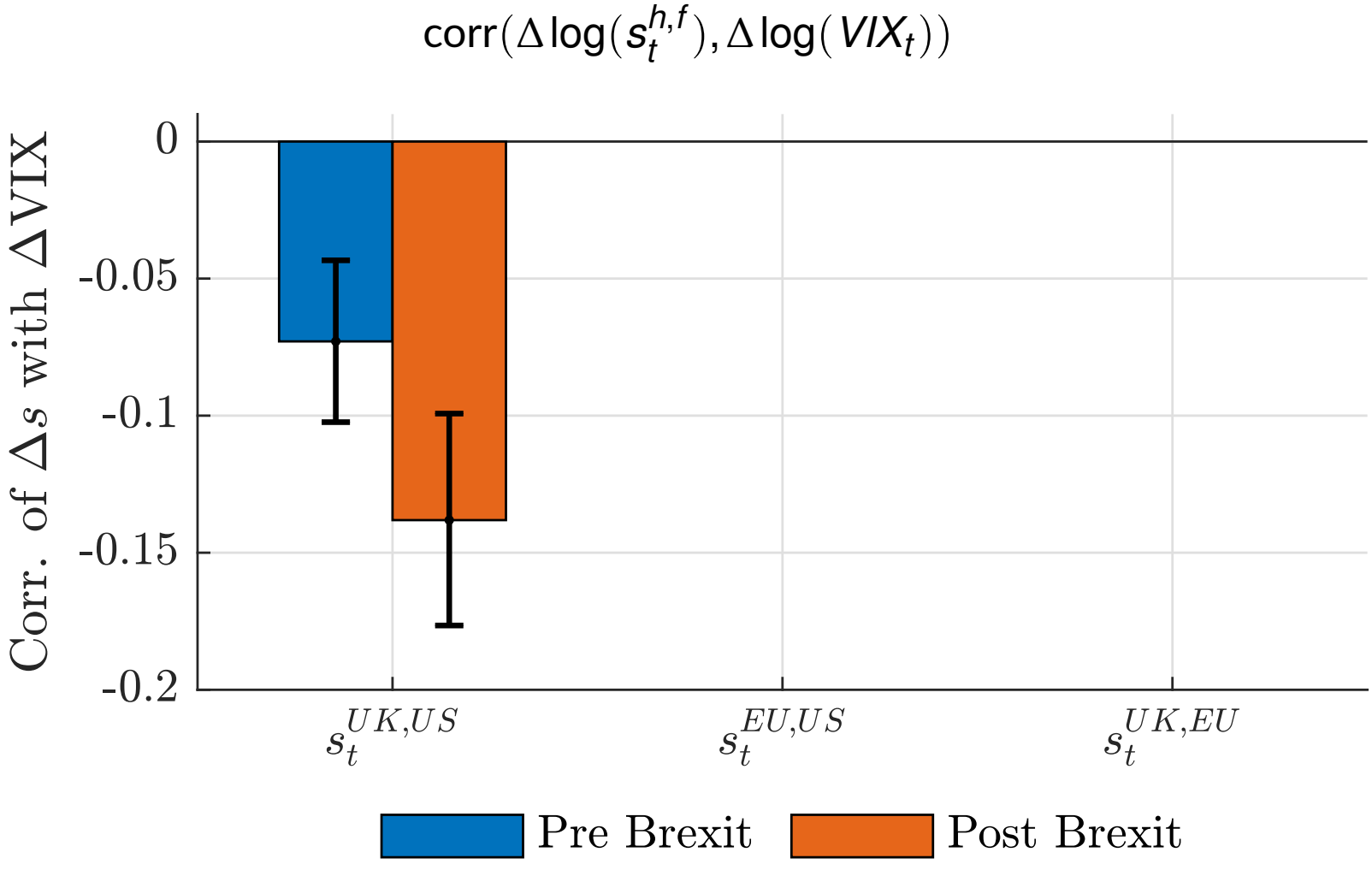
- GBP/EUR uncorrelated with global cycle before Brexit

Has Brexit Changed the Properties of the Euro and the Pound?



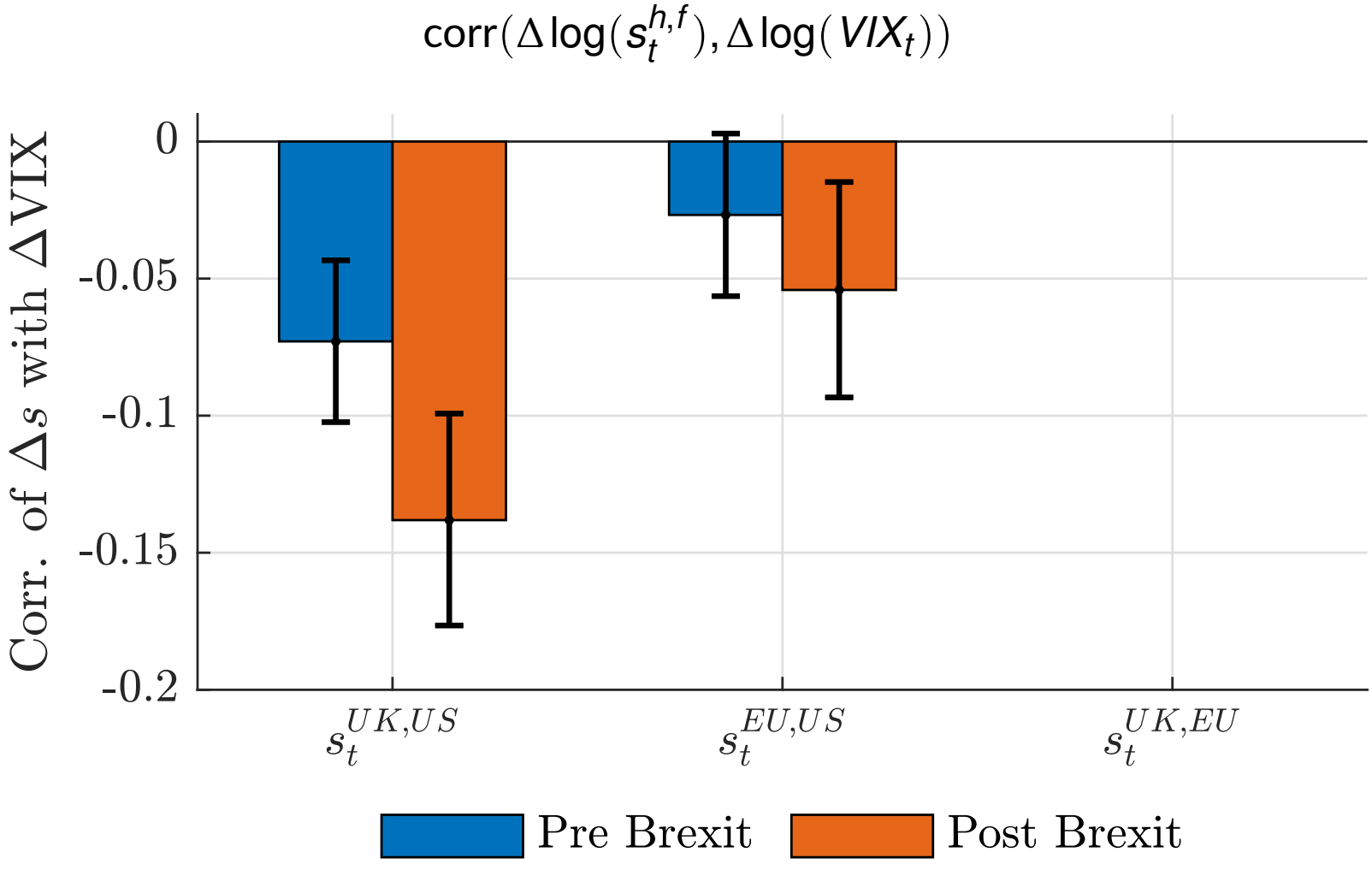
Daily, 1999-2026, Brexit: June 23, 2016

GBP Depreciates More vs USD in Risk-Off Times After Brexit



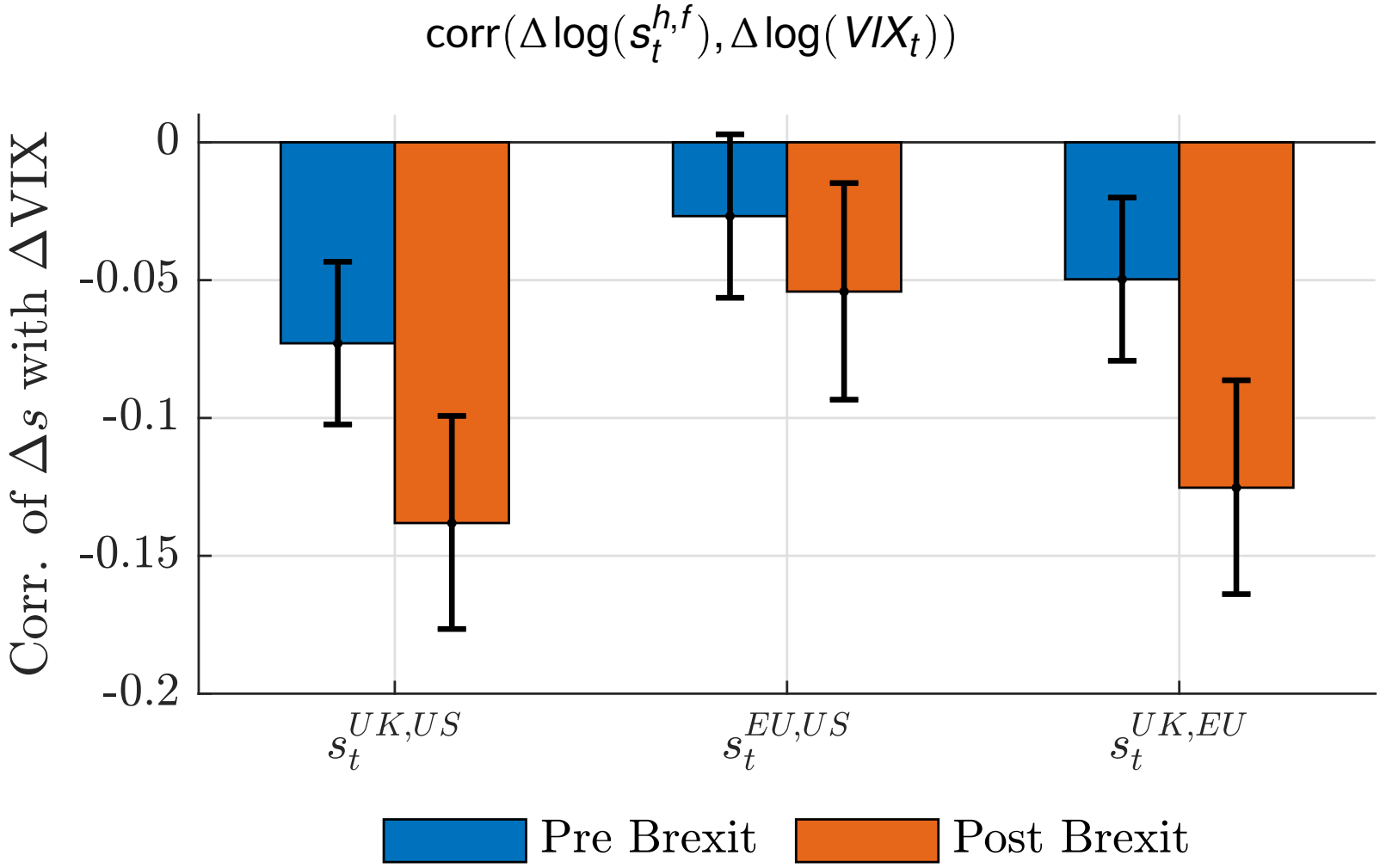
Daily, 1999-2026, Brexit: June 23, 2016

EUR Depreciates More vs USD in Risk-Off Times After Brexit



Daily, 1999-2026, Brexit: June 23, 2016

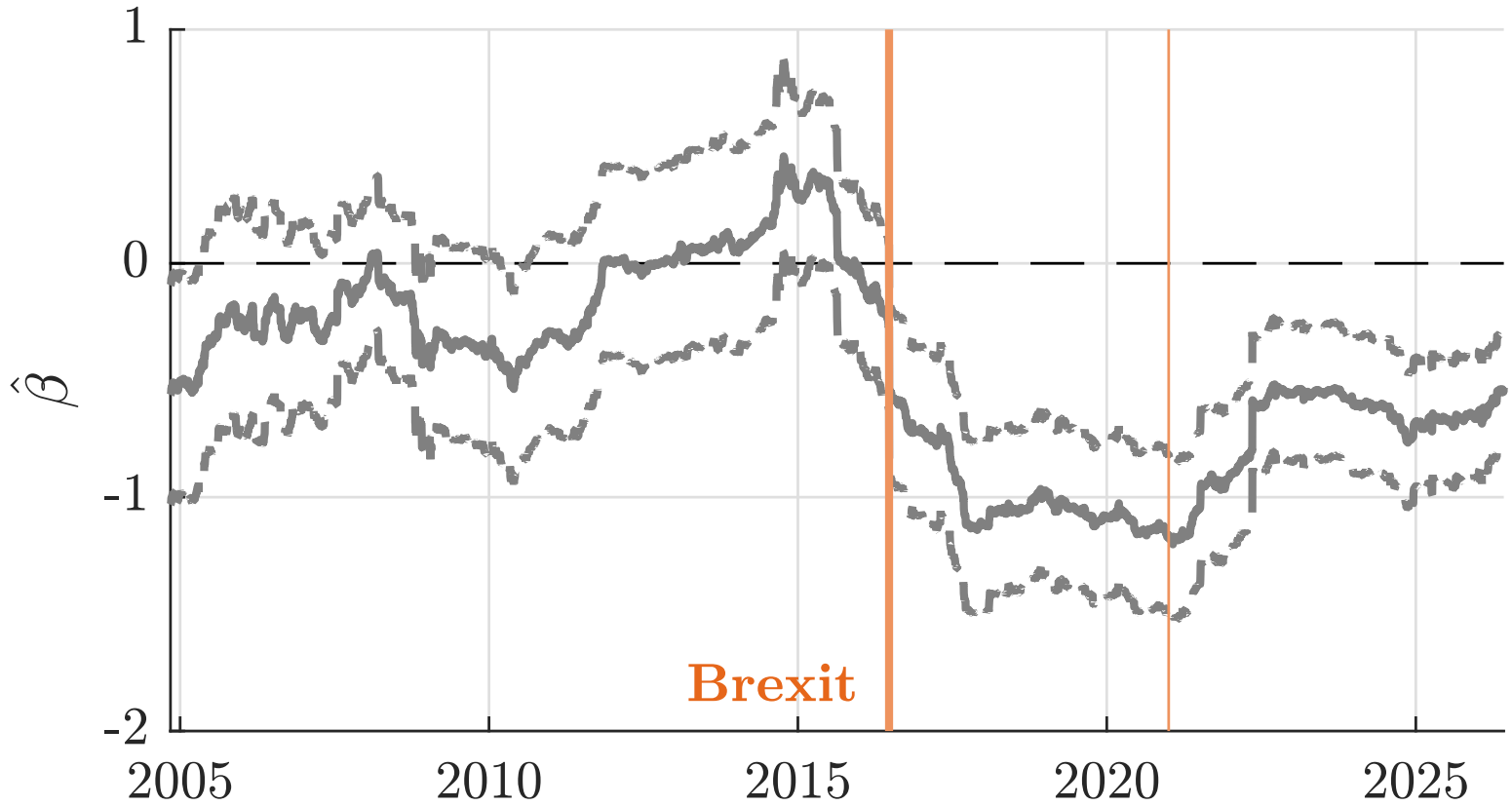
GBP Depreciates More vs EUR in Risk-Off Times After Brexit



Daily, 1999-2026, Brexit: June 23, 2016

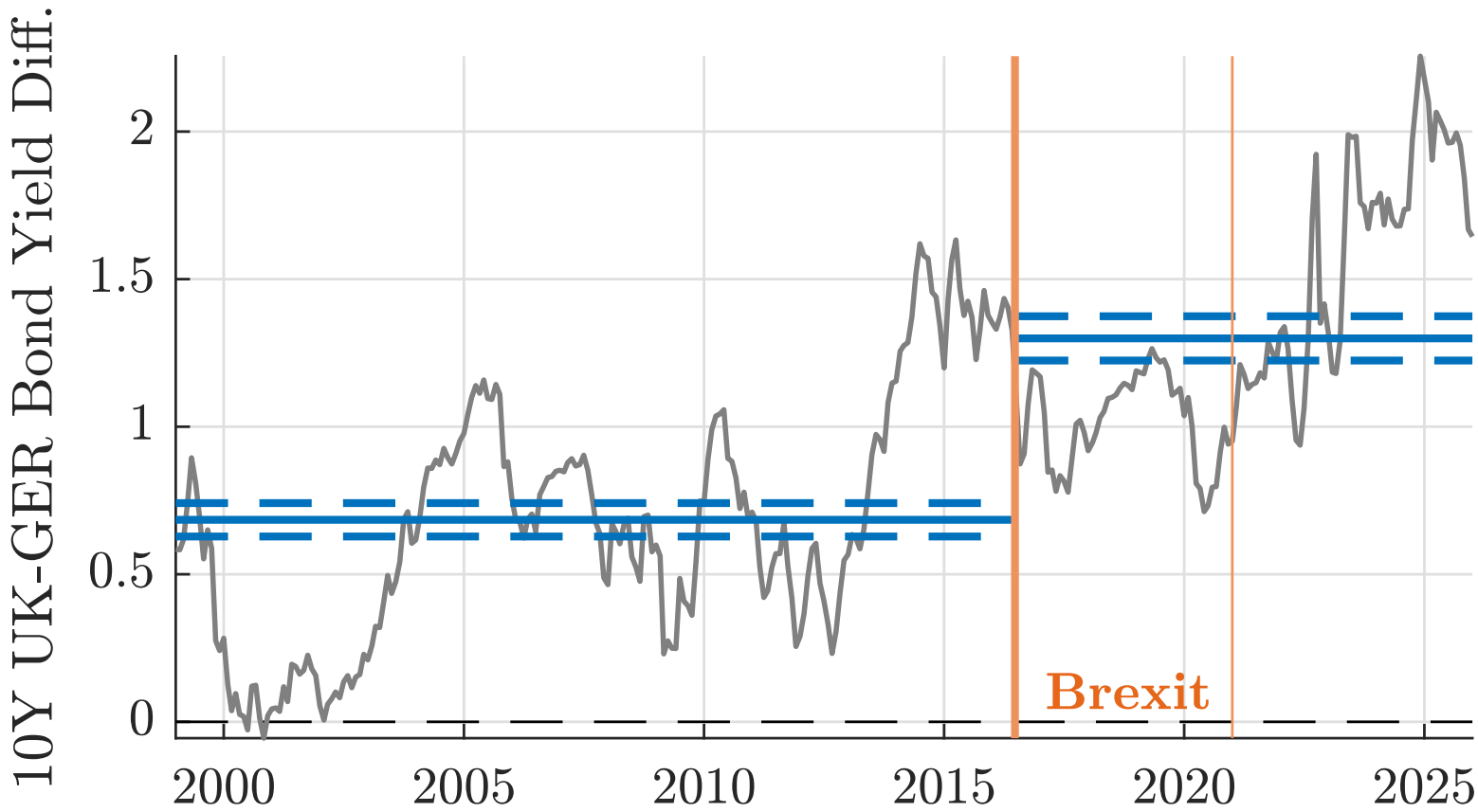
GBP Depreciates More vs EUR in Risk-Off Times After Brexit

$$\Delta \log \left(s_t^{UK,EU} \right) = \alpha + \beta \Delta \log \left(\text{VIX}_t \right) + \varepsilon_t$$

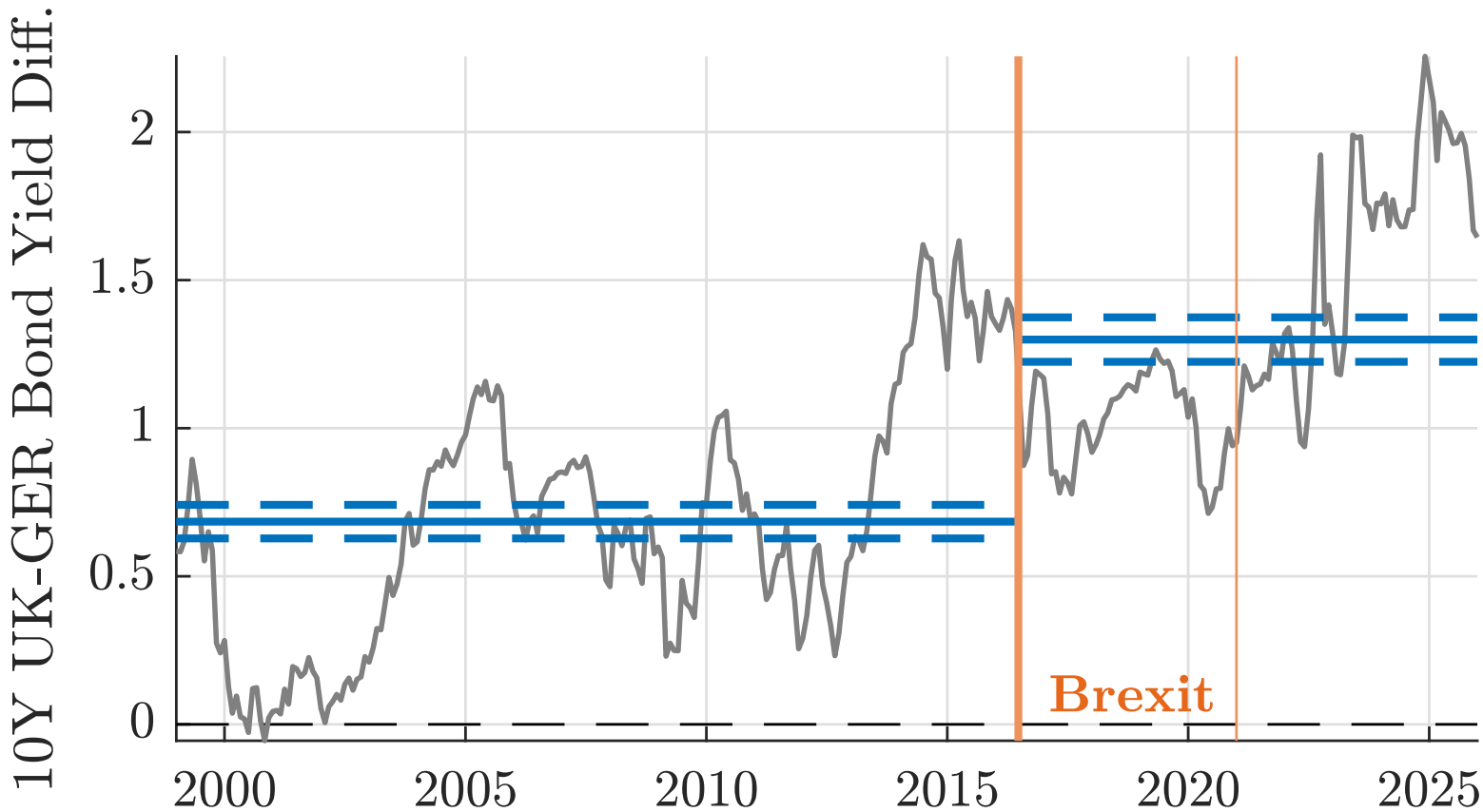


(4-year rolling windows)

UK–Germany Borrowing Cost Gap Widens After Brexit



UK–Germany Borrowing Cost Gap Widens After Brexit



- Also: USD invoicing among non-EU UK export became more prevalent after Brexit

(Garofalo, Rosso, Vicquéry, 2024)

#2 Other Shocks and Currency Safety

- In the model, shocks raise a country's MU traded goods when its RER appreciates

#2 Other Shocks and Currency Safety

- In the model, shocks raise a country's MU traded goods when its RER appreciates

- Consider other (class of) shocks ▷
  - Suppose country h faces tradable/non-tradable relative demand shocks (ξ^h)…
  - …increase MU traded goods when home RER depreciates…

$$\text{cov}(s^{h,f}, \lambda_T) = \frac{(\gamma-1)\gamma(1-\alpha)^2(\theta^h-\theta^f)\sigma^2_{y_N} - \frac{\gamma}{\alpha}\theta^h\sigma^2_{\xi^h}}{1+(\gamma-1)\alpha}$$

  - …act towards making currency of country h riskier…
  - …with effects scaling with economic size

#2 Other Shocks and Currency Safety

- In the model, shocks raise a country's MU traded goods when its RER appreciates

- Consider other (class of) shocks

  - Suppose country *h* faces tradable/non-tradable relative demand shocks (ξ^h)…
  - …increase MU traded goods when home RER depreciates…

$$\text{cov}(s^{h,f}, \lambda_T) = \frac{(\gamma-1)\gamma(1-\alpha)^2(\theta^h-\theta^f)\sigma^2_{y_N} - \frac{\gamma}{\alpha}\theta^h\sigma^2_{\xi^h}}{1+(\gamma-1)\alpha}$$

  - …act towards making currency of country *h* riskier…
  - …with effects scaling with economic size

- Beyond the model: forces that depreciate home exchange rate when home marginal utility is high, for given size (countercyclical sovereign risk, sudden stops, …)

Policy Implications Beyond EU Integration and Enlargement

- If the euro depreciates in bad times for structural reasons:
  - integration alone may not improve its safety properties
  - may need to be complemented by policies that strengthen the euro's safety properties

Policy Implications Beyond EU Integration and Enlargement

- If the euro depreciates in bad times for structural reasons:
  - integration alone may not improve its safety properties
  - may need to be complemented by policies that strengthen the euro's safety properties

- Other policies may also affect the euro's properties
  - **Eurobonds (and fiscal and banking union):** Reduce sensitivity of sovereign risk premia to the cycle $\rightarrow$ beneficial for the safety properties of the euro
  - **Central bank balance sheet policies (QE):** Stabilize asset prices in recessions, but may *depreciate* the euro (Greenwood et al., 2023)
  - …

Can the Euro Become the World's Anchor Currency?

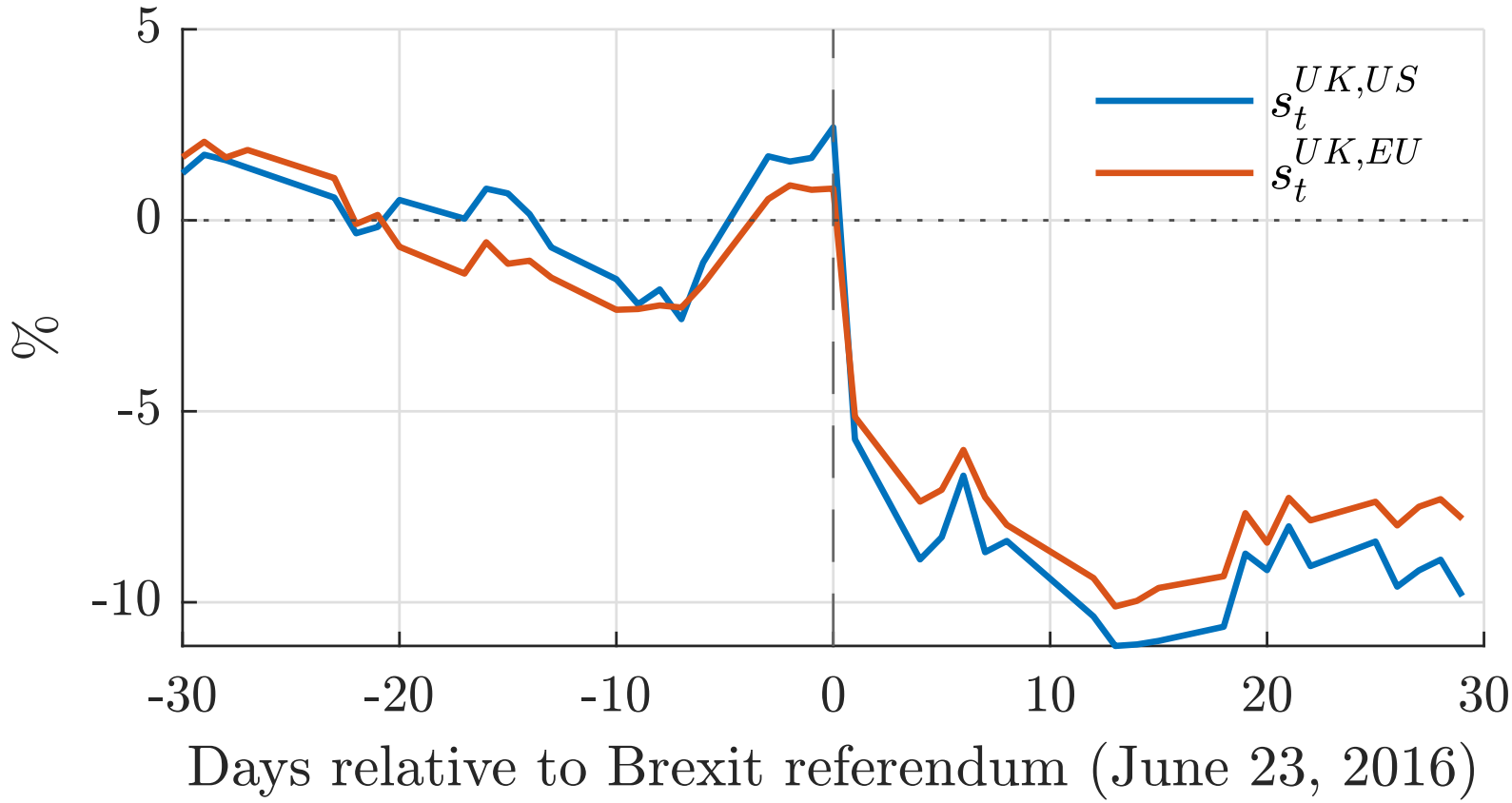
- Risk-based perspective on exchange rate determination
  - A relevant and intuitive way to think about equilibrium exchange rates and policies
  - It helps explain the behavior of the pound and the euro before and after Brexit
  - It raises the question: how do macro policies shape a currency's safety properties?

Can the Euro Become the World's Anchor Currency?

- Risk-based perspective on exchange rate determination
  - A relevant and intuitive way to think about equilibrium exchange rates and policies
  - It helps explain the behavior of the pound and the euro before and after Brexit
  - It raises the question: how do macro policies shape a currency's safety properties?
- The euro may still have a long way to go to become the world's anchor currency, but it is within the reach of EU policymakers

Appendix

Pound Depreciated on Brexit Day



Appendix: Time-Varying Relative Demand

(integrated markets: $\psi = 1$, laissez faire)

- The first-order conditions of (financier) household problem become:

$$\alpha_t \left((C_T^n)^{\alpha_t} (C_N^n)^{1-\alpha_t} \right)^{1-\gamma} (C_T^n)^{-1} = \Lambda_T,$$

$$\frac{(1-\alpha_t) \left((C_T^n)^{\alpha_t} (C_N^n)^{1-\alpha_t} \right)^{1-\gamma} (C_N^n)^{-1}}{P_N^n} = \Lambda_T,$$

$$\left((C_T^n)^{\alpha_t} (C_N^n)^{1-\alpha_t} \right)^{-\gamma} = \Lambda_T P^n.$$

- Log-linearized system

$$\sum_n \theta^n \left(c_T^n\right) = 0,$$

$$c_N^n = y_N^n$$

$$(1-\gamma)(\alpha c_T^n + (1-\alpha)c_N^n) - c_T^n + \frac{\xi^n}{\alpha} = \lambda_T$$

$$(1-\gamma)(\alpha c_T^n + (1-\alpha)c_N^n) - c_N^n - p_N^n - \frac{\xi^n}{1-\alpha} = \lambda_T$$

$$-\gamma(\alpha\, c_T^n + (1-\alpha)\, c_N^n) - \lambda_T = p^n$$

- closed form expressions

$$c_T^n = \frac{-(\gamma-1)(1-\alpha)y_N^n + \frac{\xi^n}{\alpha} - \lambda_T}{[1+(\gamma-1)(\alpha)]}$$

$$p_N^n = -\frac{\lambda_T + \gamma y_N^n + \frac{\gamma}{1-\alpha}\xi^n}{1+(\gamma-1)\alpha}.$$

$$p^n = \frac{-\gamma(1-\alpha)y_N^n - \gamma\xi^n - \lambda_T\left[1+(\gamma-1)(1-\alpha)\right]}{1+(\gamma-1)\alpha}$$

- bilateral exchange rates

$$p^h - p^f = \frac{-\gamma(1-\alpha)(y_N^h - y_N^f) - \gamma(\xi^h - \xi^f)}{1 + (\gamma - 1)\alpha}$$

- SDF

$$\lambda_T = -(\gamma - 1)(1-\alpha)\sum_n \theta^n y_N^n + \frac{1}{\alpha}\sum_n \theta^n \xi^n$$

- Covariances

$$\text{cov}(p^h - p^f, \lambda_T) = \frac{(\gamma-1)\gamma(1-\alpha)^2(\theta^h - \theta^f)\sigma_{y_N}^2 - \frac{\gamma}{\alpha}(\theta^h \sigma_{\xi^h}^2 - \theta^f \sigma_{\xi^f}^2)}{1 + (\gamma - 1)\alpha}$$