Supplementary Appendix (Not for publication)

Appendix A: Data

Unless otherwise specified, the sample period starts from March 1973 and ends in August 2023

Variables	Data source	Note
Exchange rates	Federal Reserve Economic Database (FRED)	FRED: DEXUSAL (AUD), DEXCAUS (CAD), EXGEUS (DEM), DEXUSEU (EUR), DEXJPUS (JPY), DEXNOUS (NOK), DEXUSNZ (NZD), DEXSDUS (SEK), DEXSZUS (CHF), DEXUSUK (GBP). We scale the DEM exchange rate such that the EUR and DEM exchange rate are the same in Jan 1999. Monthly average series are used.
Inflations	International Monetary Fund International Financial Statistics (IMF IFS)	Raw consumer price index data are downloaded. Inflation is computed as: $\log(CPI_t) - \log(CPI_{t-12})$. For Australia and New Zealand, because the CPI are reported quarterly, we use the last available CPI data for the whole quarter.
Nominal interest rates	Global Financial Database (GFD), FRED and OECD	3 month rates GFD: ITAUS3D (AUD), ITCAN3D (CAD), ITDEU3D (DEM), ITJPN3D (JPY), ITNOR3D (NOK), ITNZL3D (NZD), ITSWE3D (SEK), ITCHE3D (CHF), ITGBR3D (GBP). New Zealand's interest rate is only available

	Long-term interest rates	from 1978. FRED: DTB3 (US) 10 year rates OECD Long-term interest rates https://www.oecd.org/en/data/indicators/long-term-interest-rates.html
Risk variables	FRED. Federal Reserve Board For Gilchrist and Zakrajsek (2012)	FRED: AAAFF, BAAFF, AAA10Y, BAA10Y Gilchrist and Zakrajsek (2012) spreads, update and maintained by https://www.federalreserve.gov/econres/notes/feds-notes/updating-the-recession-risk-and-the-excess-bond-premium-20161006.html
Trade balance to GDP	FRED	BOPGSTB (post-1992), BOPBGS (pre-1992), GDP. Quarterly variables are interpolated.
Liquidity Ratio	FRED	sum of U.S. dollar financial commercial paper (FRED series: DTBSPCKFM) and short-term funding to U.S. banks is demand deposits (FRED series: DEMDEPSL) divided by the sum of reserves held at Federal Reserve banks and government securities held by commercial banks (the sum of TOTRESNS and USGSEC from FRED.)
Liquidity yield	Datastream	The variable is constructed by using $f_t - s_t - (i_t - i_t^*)$ where f_t is one year forward and i_t, i_t^* are one year government bond interest rate. Datastream mnemonic for the Forward rates are: USAUDYF, USCADYF, USDEMYF, USJPYYF, USNZDYF, USSEKYF, USCHFYF, USNOKYF, USGBPYF. Datastream mnemonic for the 1 year government rates are: TRAU1YT, TRCN1YT, TRBD1YT, TRJP1YT, TRNZ1YT, TRNW1YT, TRSD1YT, TRSW1YT, TRUK1YT, TRUS1YT
GDP	OECD	For output gap estimation

Sample start date for the inflation announcement regression

Currency	Start date	GBP	16 Jan 1997
AUD	28 Jan 1997	NOK	10 Mar 1998
CAD	21 Feb 1997	NZD	14 Jul 1997
EUR	19 Apr 2001	SEK	12 Mar 1997

Appendix B: Alternative Baseline Model Estimated 1999:1-2023:8

Table B1With inflation change $\Delta s_t = \alpha + \beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \Delta \pi_t + \beta_4 \Delta \pi_t^* + \beta_5 \Delta RISK_t + \beta_6 q_{t-1} + \beta_7 \frac{TB}{GDP_t} + \beta_8 \Delta \eta_t + u_t$

	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel fixed effect
Δr_t	-4.11***	-3.91***	-3.47***	-2.43***	-4.35***	-2.61***	-3.37***	-2.89***
	(-5.56)	(-5.96)	(-5.00)	(-3.63)	(-5.03)	(-3.46)	(-4.37)	(-4.57)
Δr_t^*	4.38***	3.52***	2.85***	3.47***	4.18***	0.07	2.41***	1.36**
	(5.56)	(5.00)	(3.45)	(4.58)	(4.91)	(0.23)	(2.75)	(2.16)
$\Delta \pi_t$	-3.62***	-2.66***	-1.76**	-1.57**	-4.33***	-0.78	-2.01**	-1.81***
	(-4.46)	(-3.73)	(-2.24)	(-2.10)	(-4.56)	(-0.96)	(-2.39)	(-2.61)
$\Delta \pi_t^*$	3.45***	2.74***	0.62	2.01**	3.56***	-0.41	1.59*	0.58
	(4.25)	(3.81)	(0.64)	(2.27)	(3.99)	(-1.09)	(1.76)	(0.88)
$\Delta RISK_t$	-0.04***	-0.02***	-0.01***	-0.01***	-0.03***	-0.03***	-0.02***	-0.03***
	(-10.14)	(-9.57)	(-3.80)	(-4.71)	(-8.26)	(-7.33)	(-6.55)	(-9.39)
q_{t-1}	-0.00	-0.01	-0.02*	-0.01	-0.01	-0.01	-0.01	-0.01
	(-0.57)	(-1.54)	(-1.96)	(-1.27)	(-0.92)	(-1.42)	(-0.57)	(-1.54)
$\frac{TB}{GDP_t}$	-0.30*	-0.34***	-0.38**	-0.30*	-0.15	-0.45**	-0.33*	-0.32***
	(-1.91)	(-3.16)	(-2.49)	(-1.77)	(-0.87)	(-2.53)	(-1.84)	(-2.73)
$\Delta \eta_t$	-2.16**	-2.53***	-1.26	-1.70**	-1.98***	-1.31*	-0.91	-1.62***
	(-2.42)	(-3.25)	(-1.27)	(-1.97)	(-2.72)	(-1.87)	(-1.29)	(-2.66)
N	296	296	295	296	296	296	296	2071
F	25.76	23.93	10.35	11.12	13.44	14.77	10.73	24.19
R2	0.42	0.40	0.22	0.24	0.27	0.29	0.23	0.24 (within)
R2_adjusted	0.40	0.38	0.20	0.22	0.25	0.27	0.21	

Note: *t*-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Jan 1999 to Aug 2023. The explanatory variable in all regression is the change of U.S. exchange rate with the currency in the column head. For the panel regressions, *t*-statistics are based on Driscoll Kraay 1998 standard errors. r_t and r_t^* are the change of home and foreign real interest rate, π_t and π_t^* are the home and foreign CPI inflation rate, $RISK_t$ is the first principal component of five risk variables. q_{t-1} is the real exchange rate in the previous period. TB/GDP_t is the trade balance to GDP of the U.S.

Table B2 With Bianchi Bigio Engel liquidity ratio, with inflation level and 3m Govt rate

$$\Delta s_t = \alpha + \beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \pi_t + \beta_4 \pi_t^* + \beta_5 \Delta RISK_t + \beta_6 q_{t-1} + \beta_7 \frac{TB}{GDP_t} + \beta_8 \Delta Liqudity\ Ratio_t + u_t$$

	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel fixed effect
Δr_t	-1.05***	-1.62***	-2.17***	-1.39***	-0.74**	-1.80***	-1.81***	-1.36***
	(-3.40)	(-5.78)	(-7.54)	(-5.12)	(-2.22)	(-5.92)	(-5.93)	(-6.90)
Δr_t^*	0.95***	1.18***	2.23***	1.53***	1.07***	0.20	0.81**	0.85***
	(3.13)	(4.06)	(5.67)	(3.85)	(2.91)	(0.99)	(2.32)	(5.02)
π_t	-0.30**	-0.30**	-0.67***	-0.47***	-0.40***	-0.26**	-0.63***	-0.38***
	(-2.59)	(-2.18)	(-4.65)	(-3.42)	(-2.70)	(-2.24)	(-4.72)	(-4.74)
π_t^*	0.09	0.24	0.48***	0.23*	0.14	-0.15	0.29***	0.17**
	(0.59)	(1.41)	(3.61)	(1.90)	(0.86)	(-1.12)	(2.87)	(2.39)
$\Delta RISK_t$	-0.03***	-0.02***	-0.01**	-0.01***	-0.02***	-0.02***	-0.02***	-0.02***
	(-9.36)	(-9.16)	(-1.98)	(-3.86)	(-6.31)	(-6.85)	(-5.60)	(-7.79)
q_{t-1}	-0.01	-0.01	-0.03***	-0.04***	-0.02**	-0.03***	-0.01	-0.02**
	(-1.49)	(-1.15)	(-2.65)	(-2.96)	(-2.04)	(-2.67)	(-1.39)	(-2.51)
$\frac{TB}{GDP_t}$	-0.50***	-0.52***	-0.60***	-0.93***	-0.38*	-0.68***	-0.87***	-0.57***
	(-2.78)	(-4.01)	(-3.73)	(-3.76)	(-1.94)	(-3.11)	(-4.11)	(-4.50)
$\Delta LiqRatio_t$	-0.06	-0.03	-0.09**	-0.09**	-0.06	-0.06	-0.07*	-0.07**
	(-1.43)	(-1.21)	(-2.48)	(-2.43)	(-1.28)	(-1.49)	(-1.76)	(-2.35)
N	271	271	271	271	271	271	271	1897
F	20.13	19.11	13.42	11.59	11.22	15.51	12.74	28.82
R2	0.38	0.37	0.29	0.26	0.26	0.32	0.28	
R2_adj	0.36	0.35	0.27	0.24	0.23	0.30	0.26	0.26 (within)

Note: t-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Feb 2001 to Aug 2023. The explanatory variable in all regression is the change of U.S. exchange rate with the currency in the column head. For the panel regressions, standard errors are Driscoll Kraay 1998 standard errors.

η_t is the liquidity ratio from U.S. commercial banks, as in Bianchi et al paper

Table B3 Without liquidity variables, with inflation change and 3m Govt rate

$$\Delta s_t = \alpha + \beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \Delta \pi_t + \beta_4 \Delta \pi_t^* + \beta_5 \Delta RISK_t + \beta_6 q_{t-1} + \beta_7 \frac{TB}{GDP_t} + u_t$$

	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel fixed effect
Δr_t	-3.92***	-3.85***	-3.34***	-2.41***	-4.12***	-2.53***	-3.19***	-2.74***
	(-5.28)	(-5.77)	(-4.85)	(-3.57)	(-4.73)	(-3.35)	(-4.20)	(-4.36)
Δr_t^*	4.37***	3.42***	2.73***	3.45***	4.10***	0.00	2.57***	1.31**
	(5.51)	(4.80)	(3.32)	(4.52)	(4.77)	(0.01)	(2.96)	(2.07)
$\Delta \pi_t$	-3.41***	-2.62***	-1.59**	-1.55**	-4.06***	-0.65	-1.87**	-1.65**
	(-4.20)	(-3.61)	(-2.06)	(-2.07)	(-4.25)	(-0.80)	(-2.24)	(-2.38)
$\Delta \pi_t^*$	3.52***	2.65***	0.44	1.97**	3.54***	-0.50	1.80**	0.54
	(4.30)	(3.64)	(0.46)	(2.22)	(3.92)	(-1.32)	(2.03)	(0.82)
$\Delta RISK_t$	-0.04***	-0.03***	-0.01***	-0.02***	-0.03***	-0.03***	-0.02***	-0.03***
	(-10.13)	(-10.22)	(-3.96)	(-4.87)	(-8.32)	(-7.50)	(-6.66)	(-9.15)
q_{t-1}	-0.00	-0.01*	-0.02**	-0.02	-0.01	-0.01	-0.01	-0.01*
	(-0.68)	(-1.66)	(-2.05)	(-1.42)	(-1.09)	(-1.46)	(-0.76)	(-1.75)
$\frac{TB}{GDP_t}$	-0.28*	-0.33***	-0.37**	-0.31*	-0.14	-0.43**	-0.33*	-0.31***
	(-1.80)	(-3.06)	(-2.46)	(-1.81)	(-0.79)	(-2.45)	(-1.86)	(-2.66)
N	296	296	295	296	296	296	296	2071
F	28.13	25.02	11.57	12.03	14.00	16.23	12.00	24.09
R2	0.41	0.38	0.22	0.23	0.25	0.28	0.23	0.23 (within)
R2_adjusted	0.39	0.36	0.20	0.21	0.24	0.27	0.21	

Note: *t*-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Jan 1999 to Aug 2023. The explanatory variable in all regression is the change of U.S. exchange rate with the currency in the column head. For the panel regressions, *t*-statistics are based on Driscoll Kraay 1998 standard errors. $\mathrm{r_t}$ and $\mathrm{r_t^*}$ are the change of home and foreign real interest rate, π_t and π_t^* are the home and foreign CPI inflation rate, $RISK_t$ is the first principal component of five risk variables. q_{t-1} is the real exchange rate in the previous period. TB/GDP_t is the trade balance to GDP of the U.S.

Table B4 Without liquidity variables, with inflation level and 3m Govt rate

$$\Delta s_t = \alpha + \beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \pi_t + \beta_4 \pi_t^* + \beta_5 \Delta RISK_t + \beta_6 q_{t-1} + \beta_7 \frac{TB}{GDP_t} + u_t$$

	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel fixed effect
Δr_t	-1.11***	-1.64***	-2.33***	-1.37***	-0.93***	-1.88***	-1.88***	-1.47***
	(-3.78)	(-6.21)	(-8.09)	(-5.27)	(-2.84)	(-6.45)	(-6.39)	(-7.34)
Δr_t^*	1.06***	1.15***	2.21***	1.79***	1.02***	0.21	0.77**	0.89***
	(3.81)	(4.23)	(5.61)	(4.81)	(2.86)	(1.04)	(2.31)	(5.31)
π_t	-0.26**	-0.22*	-0.69***	-0.34***	-0.46***	-0.22**	-0.57***	-0.35***
	(-2.45)	(-1.76)	(-4.89)	(-2.93)	(-3.58)	(-2.02)	(-4.60)	(-4.34)
π_t^*	0.04	0.15	0.53***	0.15	0.25*	-0.19	0.26***	0.16**
	(0.30)	(0.99)	(4.02)	(1.36)	(1.82)	(-1.48)	(2.70)	(2.24)
$\Delta RISK_t$	-0.03***	-0.02***	-0.01***	-0.01***	-0.03***	-0.03***	-0.02***	-0.02***
	(-10.42)	(-10.31)	(-2.98)	(-4.76)	(-6.93)	(-7.86)	(-6.34)	(-7.54)
q_{t-1}	-0.01	-0.01	-0.02***	-0.04***	-0.01	-0.03***	-0.01	-0.01**
	(-1.39)	(-1.61)	(-2.63)	(-2.87)	(-1.60)	(-2.95)	(-1.50)	(-2.32)
$\frac{TB}{GDP_t}$	-0.47***	-0.46***	-0.63***	-0.75***	-0.37*	-0.66***	-0.80***	-0.54***
	(-2.71)	(-3.70)	(-3.84)	(-3.57)	(-1.89)	(-3.14)	(-3.99)	(-4.28)
N	296	296	295	296	296	296	296	2071
F	24.01	22.70	15.09	12.67	12.17	18.61	14.58	23.50
R2	0.37	0.36	0.27	0.24	0.23	0.31	0.26	
R2_adj	0.35	0.34	0.25	0.22	0.21	0.29	0.24	0.24 (within)

Note: *t*-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Jan 1999 to Aug 2023. The explanatory variable in all regression is the change of U.S. exchange rate with the currency in the column head. For the panel regressions, *t*-statistics are based on Driscoll Kraay 1998 standard errors. $\mathrm{r_t}$ and $\mathrm{r_t^*}$ are the change of home and foreign real interest rate, π_t and π_t^* are the home and foreign CPI inflation rate, $RISK_t$ is the first principal component of five risk variables. q_{t-1} is the real exchange rate in the previous period. TB/GDP_t is the trade balance to GDP of the U.S.

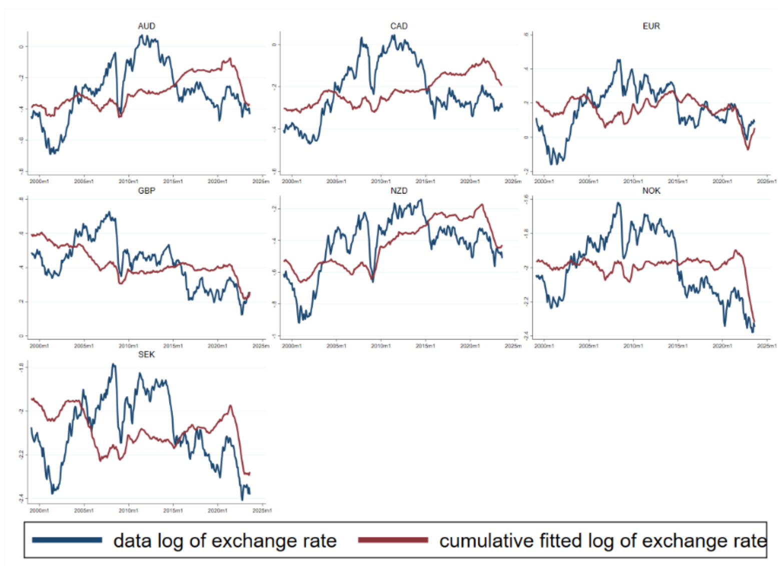
Appendix C: Figure 1 with only a subset of variables

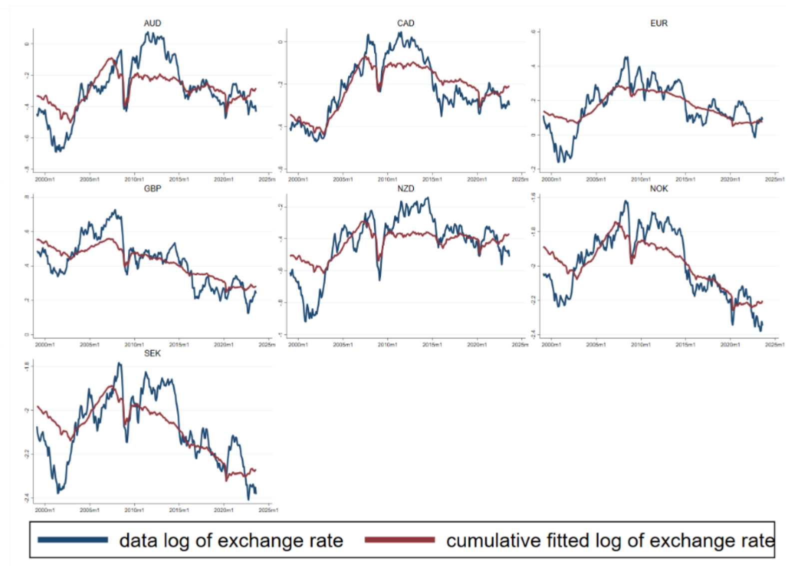
Figure 1A: Fitted value generated from regression only including change of real interest rates and inflation level

$$\Delta s_t = \alpha + \beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \pi_t + \beta_4 \pi_t^* + u_t$$

Figure 1B: Fitted value generated from only risk variable, TB and convenience yield

$$\Delta s_t = \alpha + \beta_5 \Delta RISK_t + \beta_7 \frac{TB}{GDP_t} + \beta_8 \eta_t + u_t$$

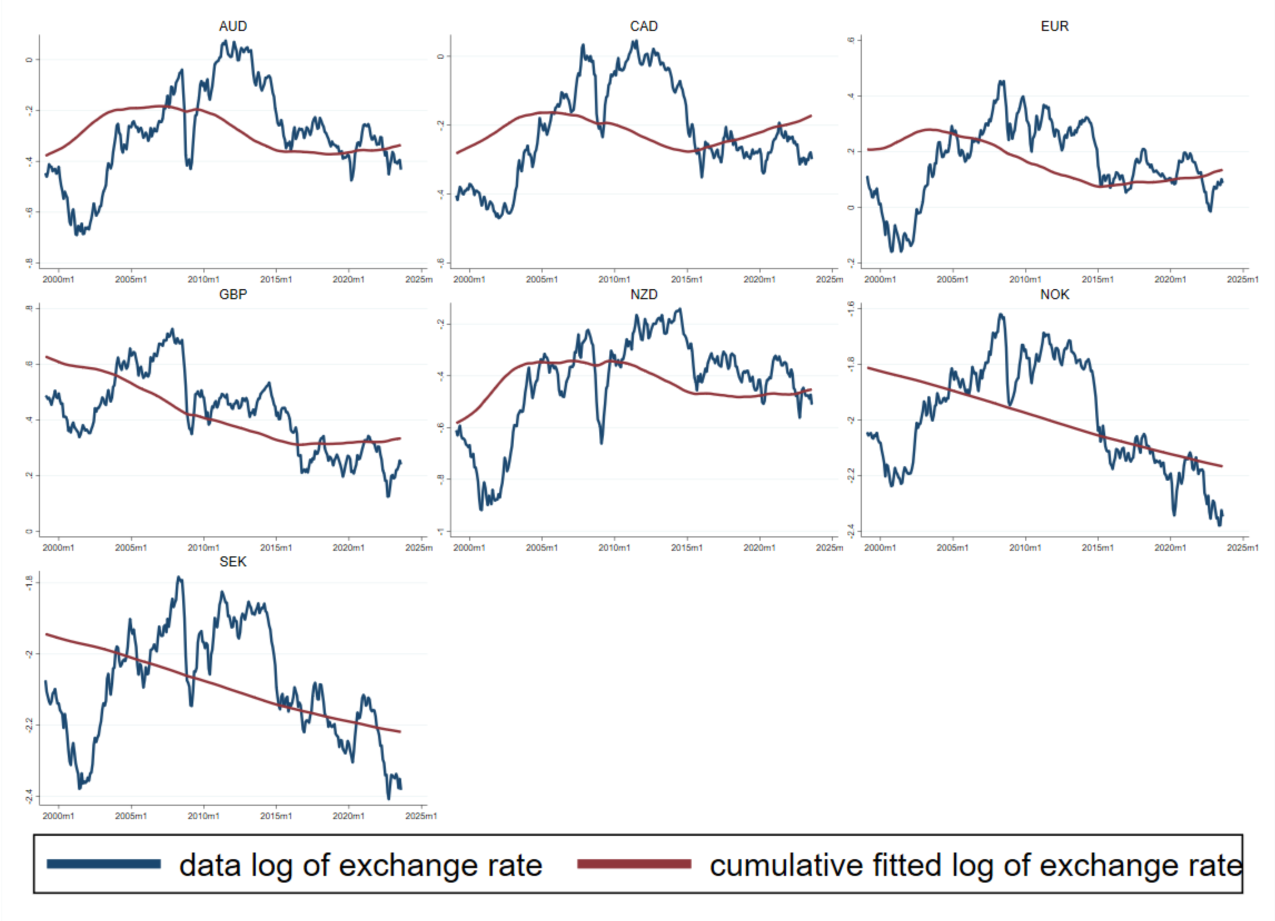




Note: The figure reports the log of exchange rate of each currency and the cumulative sum of model implied exchange rate change. The sample period is from Jan 1999 to Aug 2023. The mean value of the model implied log level of exchange rate is adjusted to have the same mean as the data series. The exchange rate is defined as the U.S. dollar price of a foreign currency: an increase in value is a U.S. dollar depreciation.

Figure 1C: Fitted value generated from only lagged real exchange rate

$$\Delta s_t = \alpha + \beta_6 q_{t-1} + u_t$$



Note: The figure reports the log of exchange rate of each currency and the cumulative sum of model implied exchange rate change. The sample period is from Jan 1999 to Aug 2023. The mean value of the model implied log level of exchange rate is adjusted to have the same mean as the data series. The exchange rate is defined as the U.S. dollar price of a foreign currency: an increase in value is a U.S. dollar depreciation.

Appendix D: Baseline regression model with only a subset of variables

Table D1: Baseline regression with only monetary variables and non monetary variables $\Delta s_t = \alpha + \beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \pi_t + \beta_4 \pi_t^* + u_t$

	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel fixed
Δr_t	-1.00***	-1.57***	-2.19***	-1.19***	-0.90**	-1.71***	-1.68***	-1.38***
	(-2.91)	(-5.03)	(-7.30)	(-4.40)	(-2.56)	(-5.32)	(-5.27)	(-5.00)
Δr_t^*	1.44***	1.16***	1.97***	1.84***	1.27***	0.29	0.66*	0.97***
	(4.49)	(3.63)	(5.02)	(4.83)	(3.32)	(1.34)	(1.84)	(4.13)
π_t	-0.25**	-0.23*	-0.57***	-0.18*	-0.52***	-0.14	-0.42***	-0.30***
	(-2.19)	(-1.71)	(-4.15)	(-1.80)	(-3.81)	(-1.39)	(-3.62)	(-3.67)
π_t^*	0.04	0.18	0.52***	0.10	0.32**	-0.18	0.21**	0.16**
	(0.29)	(1.07)	(3.86)	(0.97)	(2.22)	(-1.41)	(2.30)	(2.07)
N	298	298	297	298	298	298	298	2085
F	9.49	6.88	16.97	10.21	6.83	10.86	9.66	9.91
R2	0.11	0.09	0.19	0.12	0.09	0.13	0.12	
R2_adj	0.10	0.07	0.18	0.11	0.07	0.12	0.10	0.10 (within)
$\Delta RISK_t$	-0.04***	-0.02***	-0.01***	-0.02***	-0.03***	-0.02***	-0.02***	-0.02***
	(-10.45)	(-9.17)	(-3.10)	(-5.33)	(-7.09)	(-7.06)	(-5.81)	(-6.06)
q_{t-1}	-0.01	-0.01	-0.01	-0.01	-0.01	-0.00	-0.00	-0.01
	(-1.17)	(-1.13)	(-1.50)	(-0.82)	(-1.29)	(-0.47)	(-0.19)	(-1.15)
$\frac{TB}{GDP_t}$	-0.27	-0.35***	-0.32*	-0.21	-0.18	-0.38**	-0.29	-0.29**
	(-1.60)	(-3.01)	(-1.94)	(-1.19)	(-1.00)	(-2.05)	(-1.54)	(-2.24)
$\Delta \eta_t$	-1.42	-2.25***	-0.78	-1.56*	-1.60**	-1.58**	-0.31	-1.23*
	(-1.47)	(-2.65)	(-0.73)	(-1.69)	(-2.09)	(-2.14)	(-0.43)	(-1.93)
N	296	296	295	296	296	296	296	2071
F	29.34	28.19	3.73	8.74	15.30	15.38	9.30	11.24
R2	0.29	0.28	0.05	0.11	0.17	0.17	0.11	
R2 adjusted	0.28	0.27	0.04	0.09	0.16	0.16	0.10	0.15 (within)

Note: t-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Jan 1999 to Aug 2023.

Table D3: Baseline regression with only monetary variables, with 10 year rates and lagged variables

LHS: Δs_t	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel
$\Delta r_t^{10y,US}$	-7.11***	-3.55***	-6.26***	-1.53*	-4.19***	-3.70***	-5.20***	-4.39***
	(-6.01)	(-3.57)	(-6.97)	(-1.78)	(-3.46)	(-3.80)	(-5.43)	(-4.67)
$\Delta r_t^{10y,Foreign}$	9.05***	5.85***	6.60***	2.58***	4.70***	5.58***	6.27***	5.69***
	(7.28)	(4.77)	(5.51)	(2.66)	(3.66)	(4.79)	(5.45)	(5.54)
π_t^{US}	-6.11***	-2.17**	-4.58***	-0.45	-3.54***	-1.75*	-3.72***	-3.12***
	(-5.04)	(-2.09)	(-4.92)	(-0.51)	(-2.87)	(-1.75)	(-3.78)	(-3.40)
$\pi_t^{Foreign}$	8.51***	5.13***	5.44***	1.97*	4.62***	5.19***	6.44***	5.30***
Lagged variables below	(6.60)	(4.04)	(4.38)	(1.80)	(3.43)	(4.26)	(5.29)	(5.06)
$r_{t-1}^{10y,US}$	-0.35	-0.31	-0.33	0.13	-0.07	-0.42	-0.44*	-0.28*
	(-1.52)	(-1.14)	(-1.52)	(0.52)	(-0.28)	(-1.65)	(-1.86)	(-1.66)
$r_{t-1}^{10y,Foreign}$	0.32*	0.41	0.25	-0.02	0.10	0.48**	0.45**	0.30**
	(1.71)	(1.64)	(1.55)	(-0.11)	(0.50)	(2.33)	(2.54)	(2.26)
π_{t-1}^{US}	5.50***	1.65	3.72***	0.26	2.92**	1.10	2.79***	2.51***
	(4.51)	(1.60)	(4.05)	(0.29)	(2.38)	(1.11)	(2.83)	(2.71)
$\pi_{t-1}^{Foreign}$	-8.15***	-4.64***	-4.76***	-1.81*	-4.21***	-4.83***	-5.75***	-4.85***
	(-6.36)	(-3.68)	(-3.85)	(-1.67)	(-3.15)	(-4.00)	(-4.74)	(-4.49)
N	298	298	297	298	298	298	298	2085
F	11.09	7.61	12.94	4.62	4.64	11.54	10.90	9.20
R2	0.23	0.17	0.26	0.11	0.11	0.24	0.23	
R2 adjusted	0.21	0.15	0.24	0.09	0.09	0.22	0.21	
R2 with								0.17

Note: t-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Jan 1999 to Aug 2023. The explanatory variable in all regression is the change of U.S. exchange rate with the currency in the column head. For the panel regressions, standard errors are Driscoll Kraay 1998 standard errors. r_t and r_t^* are the change of home and foreign real interest rate, π_t and π_t^* are the home and foreign CPI inflation rate, $RISK_t$ is the first principal component of five risk variables. q_{t-1} is the real exchange rate in the previous period. TB/GDP_t is the trade balance to GDP of the U.S. η_t is the measure of the U.S. convenience yield relative to the foreign country, using 1-year government bond rates, as in Engel and Wu (2023).

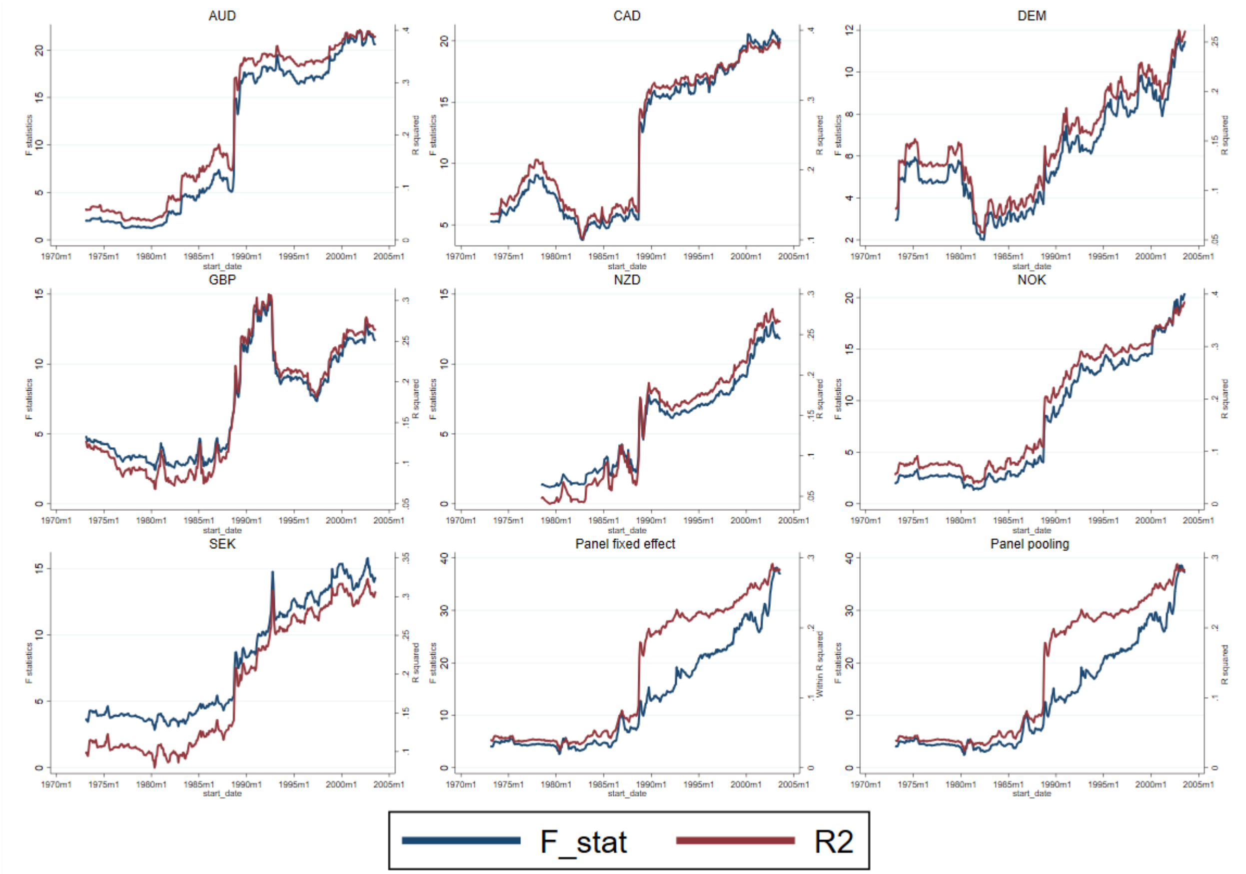
Table D4: Baseline regression with only non-monetary variables and its lagged variables

LHS: Δs_t	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel
$\Delta Risk_t$	-0.04***	-0.02***	-0.01**	-0.01***	-0.02***	-0.02***	-0.02***	-0.02***
	(-9.77)	(-8.07)	(-2.05)	(-3.75)	(-6.37)	(-6.14)	(-4.91)	(-5.88)
q_{t-1}	-0.01	-0.01*	-0.02	-0.00	-0.03***	-0.00	-0.00	-0.01
	(-1.39)	(-1.68)	(-1.55)	(-0.03)	(-2.76)	(-0.45)	(-0.46)	(-1.52)
$US\ TB/GDP_t$	-0.27	-0.39***	-0.32**	-0.12	-0.08	-0.41**	-0.26	-0.29**
	(-1.60)	(-3.38)	(-2.01)	(-0.68)	(-0.42)	(-2.19)	(-1.35)	(-2.27)
$\Delta\eta_t$	-1.74*	-2.94***	-1.86*	-2.60***	-2.18***	-1.56*	-0.25	-1.34**
Lagged variables below	(-1.66)	(-3.31)	(-1.67)	(-2.76)	(-2.79)	(-1.93)	(-0.35)	(-2.18)
$Risk_{t-1}$	0.00	-0.00	-0.00	-0.01***	-0.01	-0.01	-0.01*	-0.00**
	(0.02)	(-0.83)	(-1.02)	(-2.71)	(-1.34)	(-1.65)	(-1.68)	(-1.99)
η_{t-1}	-0.65	-1.22**	-1.88***	-1.73***	-1.34***	-0.46	-0.20	-0.42**
	(-0.80)	(-2.31)	(-2.84)	(-3.24)	(-3.00)	(-0.95)	(-1.28)	(-2.41)
N	296	296	295	296	296	296	296	2071
F	19.58	20.31	4.39	9.77	12.35	11.12	7.09	10.52
R2	0.29	0.30	0.08	0.17	0.20	0.19	0.13	
R2 adjusted	0.27	0.28	0.06	0.15	0.19	0.17	0.11	
R2 with								0.17

Note: t-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Jan 1999 to Aug 2023. The explanatory variable in all regression is the change of U.S. exchange rate with the currency in the column head. For the panel regressions, standard errors are Driscoll Kraay 1998 standard errors. r_t and r_t^* are the change of home and foreign real interest rate, π_t and π_t^* are the home and foreign CPI inflation rate, $RISK_t$ is the first principal component of five risk variables. q_{t-1} is the real exchange rate in the previous period. TB/GDP_t is the trade balance to GDP of the U.S. η_t is the measure of the U.S. convenience yield relative to the foreign country, using 1-year government bond rates, as in Engel and Wu (2023).

Appendix E: Alternative measures of overall fit

Figure E1: F-statistic and R2 of 20-year rolling window regressions of $\Delta s_t = \alpha + \beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \pi_t + \beta_4 \pi_t^* + \beta_5 \Delta RISK_t + \beta_6 q_{t-1} + \beta_7 \frac{TB}{GDP_t} + \beta_8 \Delta \eta_t + u_t$

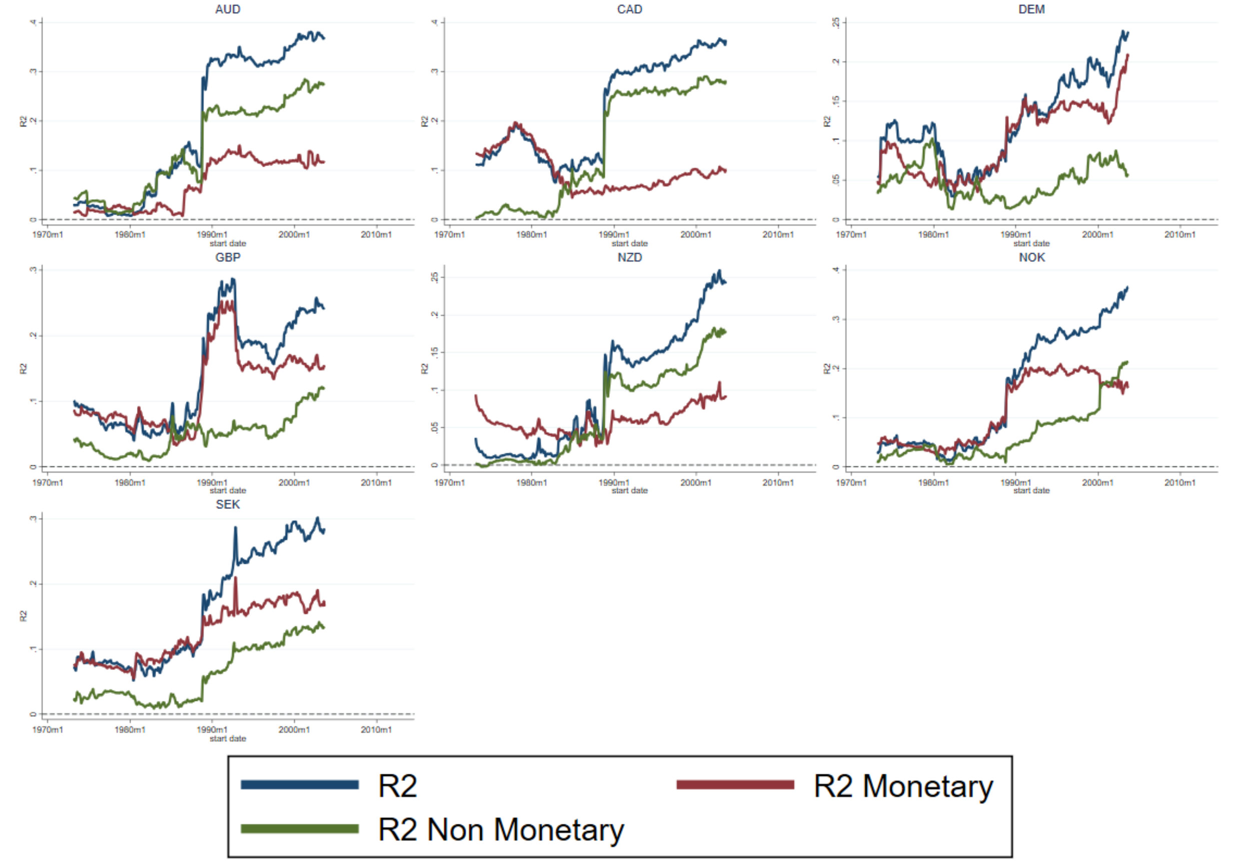


Note: X-axis corresponds to the start date of the rolling window. The first regression is Mar 1973-Feb 1993. The last regression is Sep 2003-Aug 2023.

Figure E2: R2 of each component of 20-year rolling window regressions of

$$\Delta s_t = \alpha + \underbrace{\beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \pi_t + \beta_4 \pi_t^*}_{monetary\ fit} + \underbrace{\beta_5 \Delta RISK_t + \beta_6 q_{t-1} + \beta_7 \frac{TB}{GDP_t} + \beta_8 \Delta \eta_t}_{non\ monetary\ fit} + u_t$$

In the figure below, we compute the $R^2\ monetary = cov(\Delta s, estimated\ monetary\ fit)/var(\Delta s)$ and $R^2\ non\ monetary = \ cov(\Delta s,\ estimated\ non\ monetary\ fit)/var(\Delta s)$ and $R^2 = R^2\ monetary + R^2\ non\ monetary$.

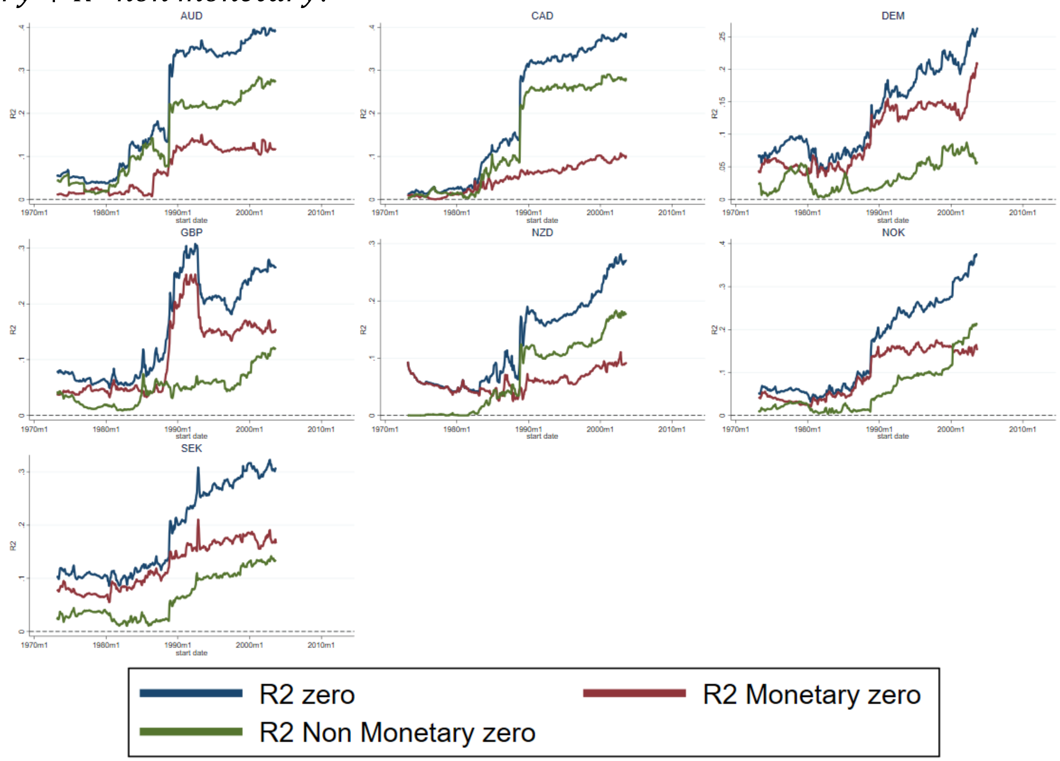


Note: X-axis corresponds to the start date of the rolling window. The first regression is Mar 1973-Feb 1993. The last regression is Sep 2003-Aug 2023.

Figure E3: R2 of each component of 20-year rolling window regressions of

$$\Delta s_t = \alpha + \underbrace{\beta_1 \Delta r_t + \beta_2 \Delta r_t^* + \beta_3 \pi_t + \beta_4 \pi_t^*}_{monetary\ fit} + \underbrace{\beta_5 \Delta RISK_t + \beta_6 q_{t-1} + \beta_7 \frac{TB}{GDP_t} + \beta_8 \Delta \eta_t}_{non\ monetary\ fit} + u_t$$

In this specification, when computing R2, the regression coefficient is set to zero when it has an opposite sign than the one implied from theory. Which we refer to "R2 zero". In the figure below, we compute the $R^2\ monetary = cov(\Delta s, estimated\ monetary\ fit)/var(\Delta s)$ and $R^2\ non\ monetary =\ cov(\Delta s,\ estimated\ non\ monetary\ fit)/var(\Delta s)$ and $R^2 = R^2\ monetary + R^2\ non\ monetary$.



Note: X-axis corresponds to the start date of the rolling window. The first regression is Mar 1973-Feb 1993. The last regression is Sep 2003-Aug 2023.

Appendix F: In sample regression analysis excluding 2008-2009

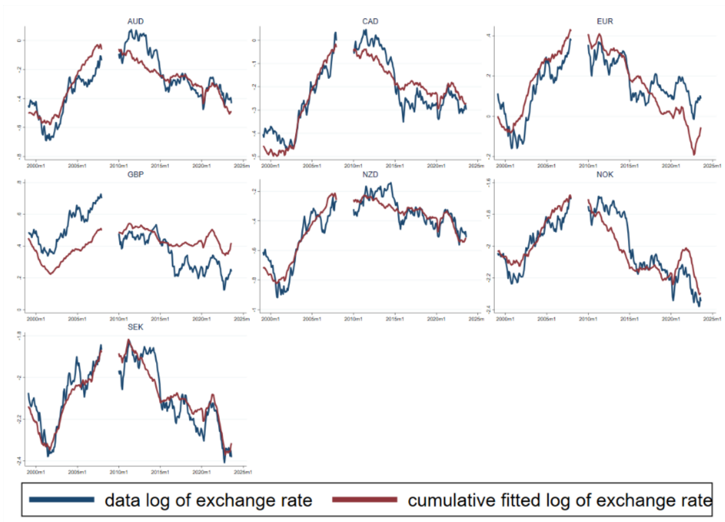
Table F1: Baseline regression with inflation level and convenience yield, excluding 2008-2009

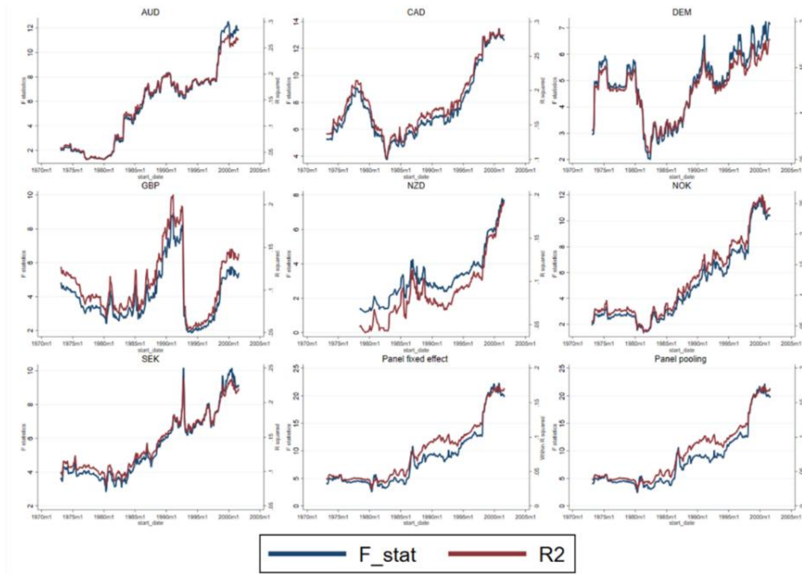
	AUD	CAD	EUR	GBP	NZD	NOK	SEK	Panel fixed effect	Panel pooled
Δr_t	-1.04***	-1.76***	-2.39***	-1.16***	-0.79**	-1.83***	-1.86***	-1.37***	-1.38***
	(-3.25)	(-6.00)	(-7.27)	(-3.91)	(-2.16)	(-5.53)	(-5.70)	(-6.13)	(-6.19)
Δr_t^*	0.79***	1.17***	2.12***	1.11***	0.60	0.09	0.48	0.68***	0.69***
	(2.78)	(4.20)	(5.13)	(2.73)	(1.61)	(0.43)	(1.41)	(4.50)	(4.61)
π_t	-0.21*	-0.16	-0.57***	-0.50***	-0.49***	-0.14	-0.61***	-0.33***	-0.33***
	(-1.96)	(-1.21)	(-3.81)	(-3.80)	(-3.16)	(-1.14)	(-4.79)	(-4.04)	(-4.06)
π_t^*	0.03	0.12	0.47***	0.28**	0.29*	-0.27*	0.27***	0.16**	0.19***
	(0.20)	(0.72)	(3.45)	(2.43)	(1.91)	(-1.82)	(2.88)	(2.40)	(3.04)
$\Delta RISK_t$	-0.03***	-0.02***	-0.01*	-0.01***	-0.03***	-0.03***	-0.02***	-0.02***	-0.02***
	(-8.07)	(-7.31)	(-1.80)	(-2.65)	(-5.76)	(-6.19)	(-4.02)	(-6.39)	(-6.15)
q_{t-1}	-0.01	-0.01	-0.02*	-0.03**	-0.01	-0.03***	-0.00	-0.01*	-0.00
	(-1.22)	(-1.24)	(-1.90)	(-2.53)	(-1.49)	(-2.85)	(-0.47)	(-1.72)	(-0.17)
$\frac{TB}{GDP_t}$	-0.46***	-0.46***	-0.59***	-0.83***	-0.38*	-0.58***	-0.75***	-0.54***	-0.50***
	(-2.70)	(-3.76)	(-3.63)	(-4.00)	(-1.93)	(-2.72)	(-3.84)	(-4.21)	(-3.93)
$\Delta \eta_t$	-1.49	-2.51***	-1.95*	-1.77*	-1.59**	-1.32	-2.02**	-1.58**	-1.64**
	(-1.54)	(-2.62)	(-1.90)	(-1.94)	(-1.98)	(-1.64)	(-2.53)	(-2.22)	(-2.33)
N	272	272	271	272	272	272	272	1903	1903
F	11.96	13.09	10.34	5.89	6.88	10.68	8.97	15.45	14.47
R2	0.27	0.28	0.24	0.15	0.17	0.25	0.21		0.17
R2 adjusted	0.24	0.26	0.22	0.13	0.15	0.22	0.19		
R2 within								0.17	

Note: t-statistics in parentheses. * p<0.1, ** p<0.05, *** p<0.01. Sample period is from Jan 1999 to Aug 2023 but excludes 2008-2009.

Figure F1 (left): Data and model implied exchange rates (excluding 2008-2009) and

Figure F4 (right): F-statistic and R^2 of 20-year rolling window regressions of equation (1), excluding 2008-2009

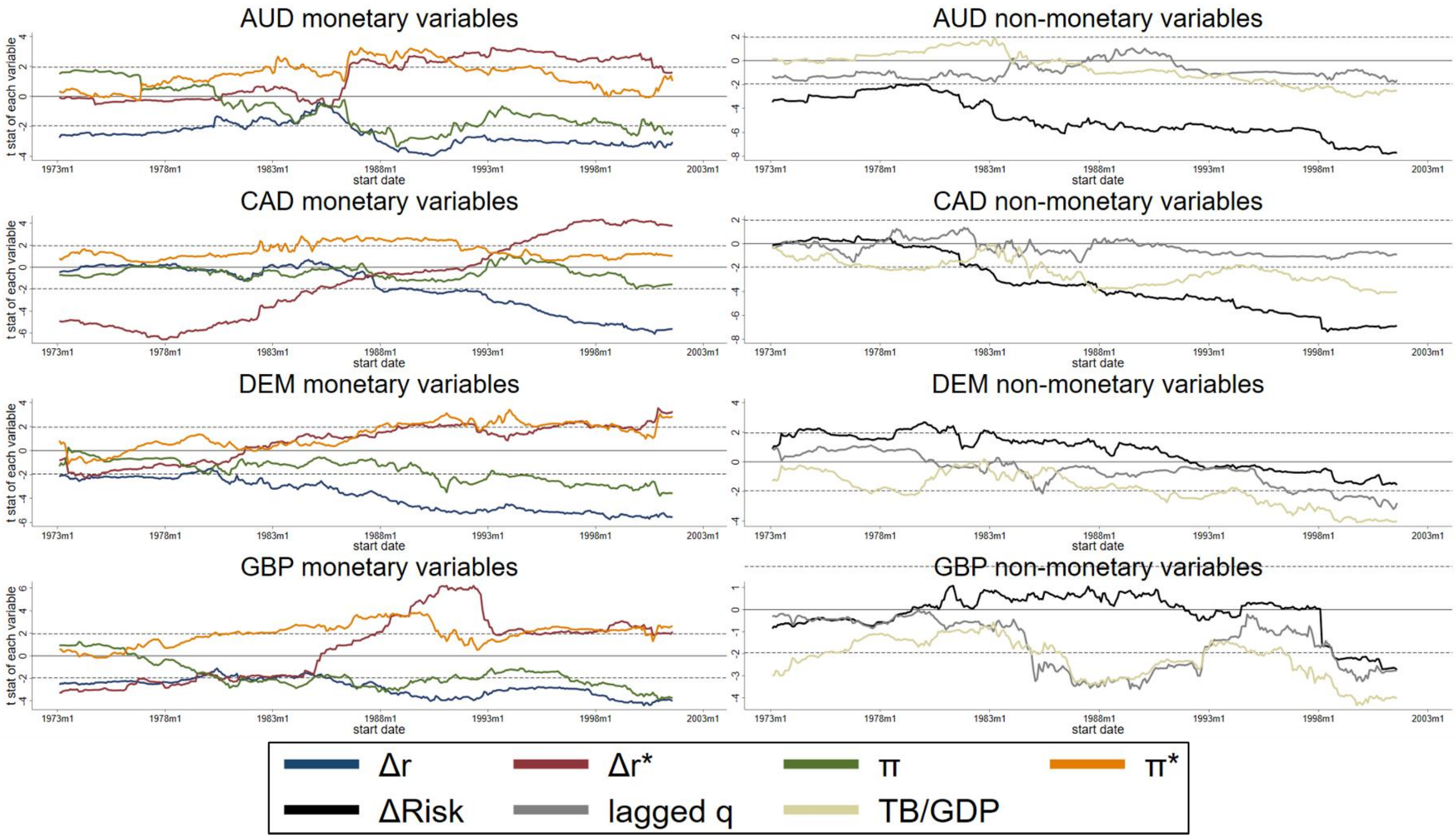




Note to left figure: The figure reports the log of exchange rate of each currency and the cumulative sum of model implied exchange rate change. The sample period is from Jan 1999 to Aug 2023 and excludes 2008-09. The mean value of the model implied log level of exchange rate is adjusted to have the same mean as the data series. Exchange rate is defined as the U.S. dollar price of a foreign currency, an increase in value is a U.S. dollar depreciation.

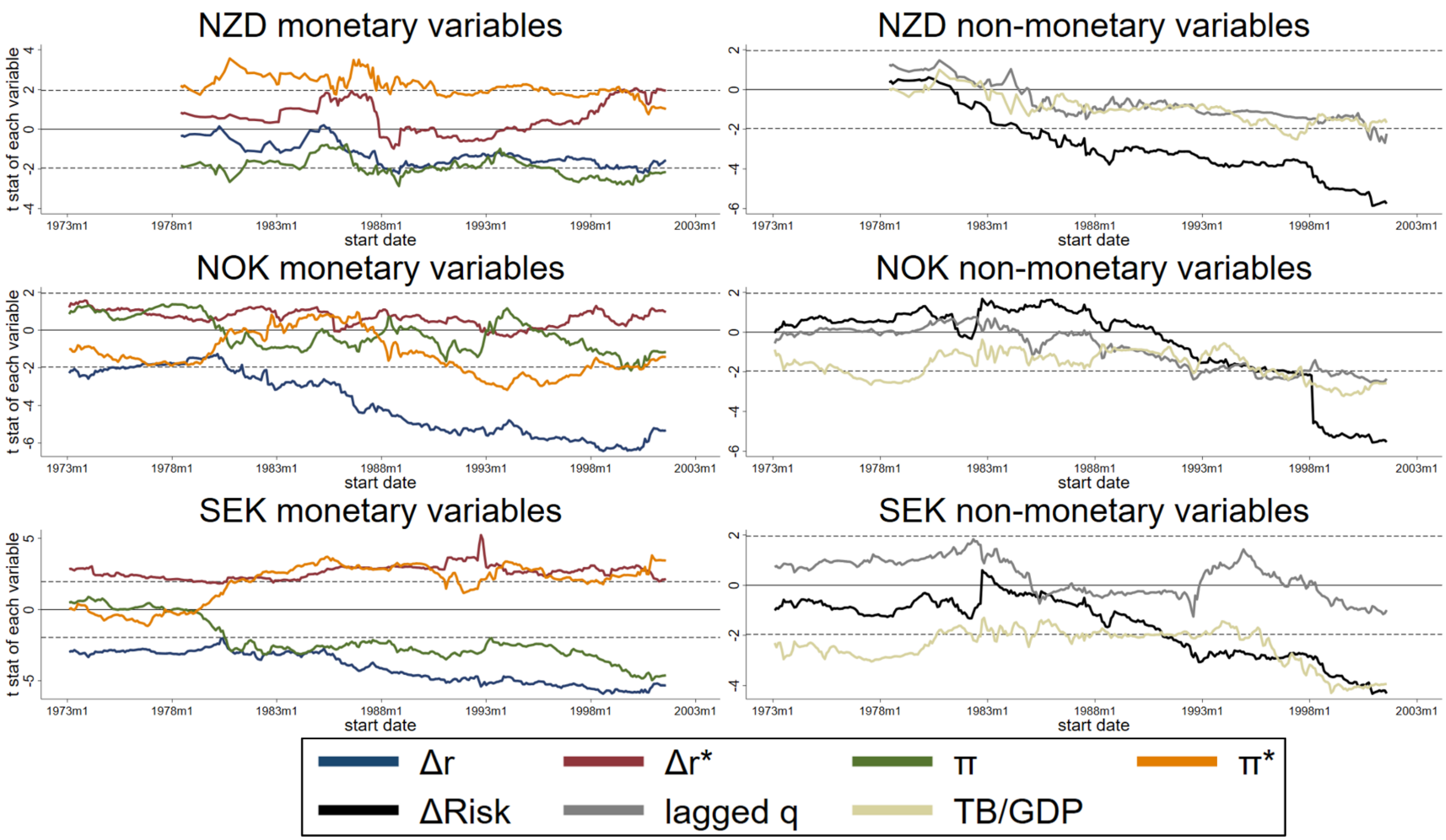
Note to the right figure: The figure reports the F-statistics in equation (1) with a 20-year rolling window regression. X-axis corresponds to the start date of the rolling window regression. The first regression is Mar 1973-Feb 1993. The last regression is Sep 2001-Aug.

Figure F2: t statistics of 20-year rolling window regressions of equation (1), excluding 2008-2009



Note: The figure reports the t-statistics of each of the variables in equation (1) with a 20-year rolling window regression. X-axis correspond to the start date of the rolling window regression. Δr_t and Δr_t are the change of home and foreign real interest rate, π_t and π_t^* are the home and foreign CPI inflation rate, $RISK_t$ is the first principal component of five risk variables. q_{t-1} is the real exchange rate in the previous period. TB/GDP_t is the trade balance to GDP of the U.S. The last regression is Sep 2001-Aug 2023.

Figure F3: *t* statistics of 20-year rolling window regressions of equation (1), excluding 2008-2009, continued

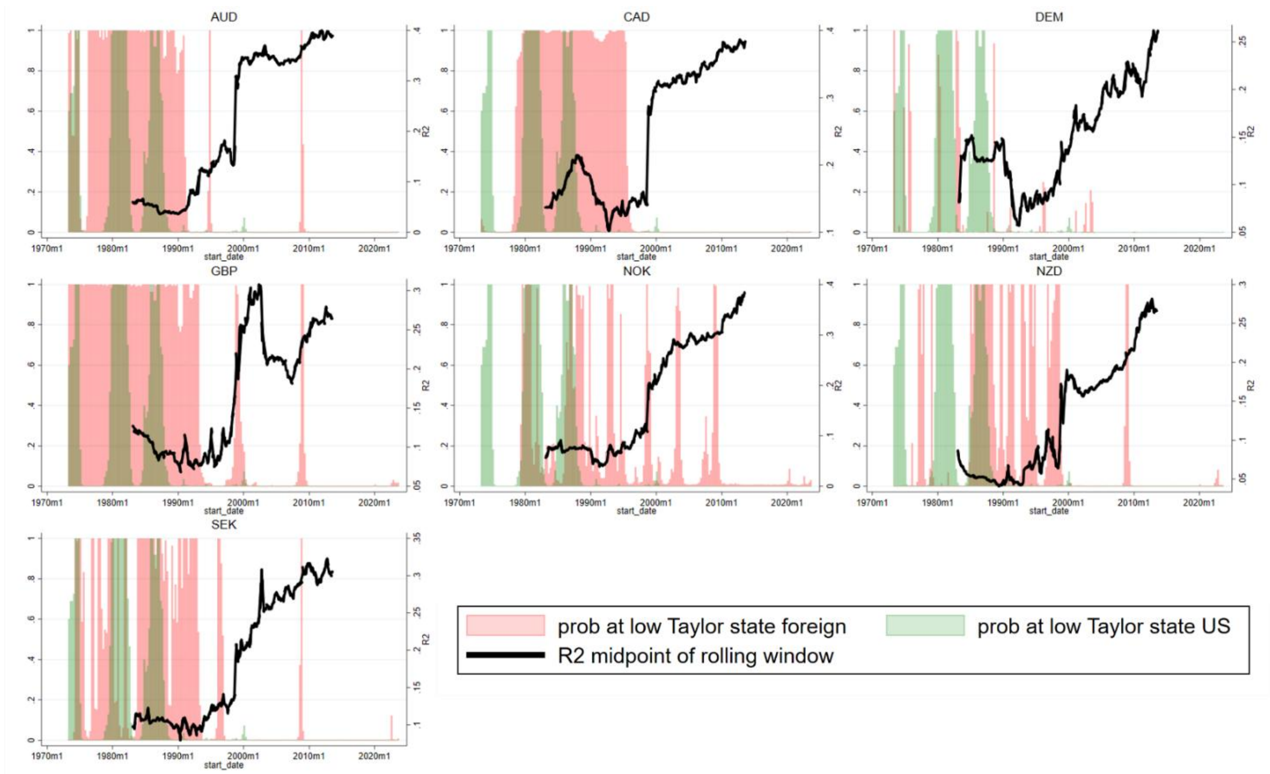


Note: The figure reports the t-statistics of each of the variables in equation (1) with a 20-year rolling window regression. X-axis correspond to the start date of the rolling window regression. Δr_t and Δr_t are the change of home and foreign real interest rate, π_t and π_t^* are the home and foreign CPI inflation rate, $RISK_t$ is the first principal component of five risk variables. q_{t-1} is the real exchange rate in the previous period. TB/GDP_t is the trade balance to GDP of the U.S. The first regression is Mar 1973-Feb 1993. The last regression is Sep 2001-Aug 2023.

Appendix G: Robustness of the Markov switching Taylor rule estimation

In the main text, the Markov switching model estimated impose a probability constraint such that the high Taylor coefficient state is an absorbing state. This corresponds to the case once a country gain inflation credibility, she always maintains the status. In the figure below, we report the same exercise but relax the probability constraint. The main message remains intact.

Figure G1 Markov switching Taylor rule estimation without probability constraint



Note: The figure reports the probability of $\phi_{\pi j}$ <1 (the condition that Taylor principle fails) for the US in the shaded green region and the foreign country of the title of each subfigure in the shaded red region. The overlapped area is shaded with brown color. The coefficients of $\phi_{\pi j}$ at the high and low Markov states are reported in the subfigure title. The black lines report the R^2 measure of 20 year rolling window regressions in equation (1). For each date, the black line indicates the midpoint of the rolling window.

Appendix H: Derivation of empirical equation from New Keynesian model

Here we show how to derive the empirical equation we estimate from a standard 2-country New Keynesian model. Our objective is to derive the equation:

(1) $\Delta s_t = \beta_1 \Delta\left(r_t - r_t^*\right) + \beta_3 \Delta\left(\pi_t - \pi_t^*\right) + \beta_5 \Delta b_{t+1} + \beta_6 \Delta \xi_t + \beta_7 \Delta \eta_t + \beta_8 q_{t-1} + \left[lagged\ \ terms\right] + u_t$

s_t - log of nominal exchange rate, r_t - real interest rate, π_t - inflation rate,

$b_{t+1} = B_{t+1}/Y$ - net foreign assets acquired at time *t* relative to average GDP

ξ_t - risk premium measured, η_t - convenience yield on U.S. bonds

$q_t \equiv s_t + p_t - p_t^*$ - log of real exchange rate, p_t - price level and * - represents foreign

We derive this equation from a symmetric 2-country model with three equations: financial market equilibrium (i.e., uncovered interest rate parity plus risk premium and liquidity premium); open-economy Phillips curve; Taylor rule for monetary policy. The model derived here is partial equilibrium in that we assume the risk premium, the convenience yield and the net foreign asset position follow exogenous processes.

<u>Model</u>

(2) *Financial market equilibrium:* $i_t^* + E_t s_{t+1} - s_t - i_t = \eta_t + \xi_t + \chi b_{t+1} + \vartheta_t$

Here, a positive value of θ_t implies a risk premium in the relative return on foreign bonds. There is also a component of the risk premium that depends on the net foreign asset position of the U.S. When $b_{t+1} < 0$, the U.S. is a net external debtor. Greater U.S. debt raises the relative return of U.S. bonds. η_t is the convenience yield on U.S. bonds. ψ_t is a catch-all term for the unobserved components of risk and liquidity or other influences on relative expected returns. We assume:

$$\xi_t = \varsigma \xi_{t-1} + \omega_t, \quad b_{t+1} = \phi b_t + \tau_t, \quad \vartheta_t = \kappa \vartheta_{t-1} + \iota_t, \quad \eta_t = \rho \eta_{t-1} + \varepsilon_t$$

Phillips curve

(3) *Phillips curve:* $\pi_t - \pi_t^* = \theta q_{t-1} + E_{t-1} s_t - s_{t-1}$

This is the "Dornbusch" price adjustment equation, per Engel (2019). Specifically, this is the "Mussa" variant of the price-setting equation, as described in Obstfeld and Rogoff

(1984). See also Engel and Wu (2023). Prices are set one period in advance and adjust to deviations from purchasing power parity. There is an adjustment for expected inflation.

(4) *Taylor rule:* $i_t - i_t^* = \sigma\left(\pi_t - \pi_t^*\right) + \upsilon_t$, where $\upsilon_t = \delta\upsilon_{t-1} + \varpi_t$

Monetary policy makers in each country target inflation, with $\sigma > 1$. The U.S. monetary authority may also reduce interest rates when liquidity is tight. An increase in υ_t represents an exogenous relative tightening of U.S. monetary policy.

Step by step derivation

First derive the solution for q_t in terms of exogenous and predetermined variables.

q_t can be solved by the method of undetermined coefficients.

(5) $$q_t = a\left(\pi_t - \pi_t^*\right) + b\upsilon_t + c\eta_t + f\vartheta_t + g\xi_t + h\left(\chi b_{t+1}\right)$$

Note that $\pi_t - \pi_t^*$ is predetermined at time *t* in the Dornbusch pricing equation because prices are set one period in advance.

Forward for one period, we have:

$$E_t q_{t+1} = aE_t\left(\pi_{t+1} - \pi_{t+1}^*\right) + bE_t\upsilon_{t+1} + cE_t\eta_{t+1} + fE_t\vartheta_{t+1} + gE_t\xi_{t+1} + hE_t\left(\chi b_{t+2}\right)$$

(6) $$E_t q_{t+1} = aE_t\left(\pi_{t+1} - \pi_{t+1}^*\right) + b\delta\upsilon_t + c\rho\eta_t + f\kappa\vartheta_t + g\varsigma\xi_t + h\phi\chi b_{t+1}$$

Now, $E_t\left(\pi_{t+1} - \pi_{t+1}^*\right) = E_t s_{t+1} - s_t - E_t\left(q_{t+1} - q_t\right) = E_t s_{t+1} - s_t + \theta q_t$.

since $E_t\left(q_{t+1} - q_t\right) = -\theta q_t$. Substitute (2) into this equation:

(7) $$E_t\left(\pi_{t+1} - \pi_{t+1}^*\right) = i_t - i_t^* + \eta_t + \xi_t + \chi b_{t+1} + \theta q_t + \vartheta_t.$$

Now substitute the expression for $i_t - i_t^*$ from (4):

(8) $$E_t\left(\pi_{t+1} - \pi_{t+1}^*\right) = \sigma\left(\pi_t - \pi_t^*\right) + \upsilon_t + \eta_t + \xi_t + \chi b_{t+1} + \theta q_t + \vartheta_t$$

Substitute $E_t\left(\pi_{t+1} - \pi_{t+1}^*\right)$ from (8) into (6):

$$\begin{aligned}
E_t q_{t+1} &= a\left[\sigma\left(\pi_t - \pi_t^*\right) + \eta_t + \upsilon_t + \xi_t + \chi b_{t+1} + \theta q_t + \vartheta_t\right] \\
&+ b\delta\upsilon_t + c\rho v_t + f\kappa\vartheta_t + g\varsigma\xi_t + h\phi\chi b_{t+1} \\
&= a\theta q_t + a\sigma\left(\pi_t - \pi_t^*\right) + \left(a + c\rho\right)\eta_t + \left(a + b\delta\right)\upsilon_t + \left(a + g\varsigma\right)\xi_{tt} + \left(a + h\phi\right)\left(\chi b_{t+1}\right) + \left(a + f\kappa\right)\vartheta_t
\end{aligned}$$

Then we substitute the guessed solution for q_t from (5):

$$E_t q_{t+1} = a\theta\left[a\left(\pi_t - \pi_t^*\right) + b\upsilon_t + c\eta_t + f\vartheta_t + g\xi_t + h\left(\chi b_{t+1}\right)\right]$$
$$+a\sigma\left(\pi_t - \pi_t^*\right) + \left(a + c\rho\right)\eta_t + \left(a + b\delta\right)\upsilon_t + \left(a + g\varsigma\right)\xi_{tt} + \left(a + h\phi\right)\left(\chi b_{t+1}\right) + \left(a + f\kappa\right)\vartheta_t$$
$$= a\left(\sigma + a\theta\right)\left(\pi_t - \pi_t^*\right) + \left(a + c\left(\rho + a\theta\right)\right)\eta_t + \left(a\left(1 + g\theta\right) + g\varsigma\right)\xi_t$$
$$+\left(a + b\left(\delta + a\theta\right)\right)\upsilon_t + \left(a\left(1 + h\theta\right) + h\phi\right)\chi b_{t+1} + \left(a\left(1 + f\theta\right) + f\kappa\right)\vartheta_t$$

Then, using $E_t q_{t+1} = \left(1-\theta\right)q_t$, which follows from the Phillips curve (3) and using (5):

$$E_t q_{t+1} = a\left(1-\theta\right)\left(\pi_t - \pi_t^*\right) + b\left(1-\theta\right)\upsilon_t + c\left(1-\theta\right)\eta_t + g\left(1-\theta\right)\xi_t + h\left(1-\theta\right)\chi b_{t+1} + f\left(1-\theta\right)\vartheta_t$$

By comparing the coefficients, we have

$$a = \frac{-\left[\sigma - (1-\theta)\right]}{\theta},\quad b = -\left[\frac{\sigma - (1-\theta)}{\theta(\sigma - \delta)}\right],\quad g = -\frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \varsigma)},\quad h = -\frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \phi)}\quad f = -\frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \kappa)}$$

<u>Derivation of $s_t - s_{t-1}$</u>

We have derived the solution for the real exchange rate in terms of exogenous and predetermined variables. Next, we derive the expression we estimate, (1).

From the solution above, we have:

$$q_t = -\frac{\left(\sigma - (1-\theta)\right)}{\theta}\left(\pi_t - \pi_t^*\right) - \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \delta)}\upsilon_t + \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \rho)}\eta_t - \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \varsigma)}\xi_t$$
$$-\frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \phi)}\chi b_{t+1} - \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \kappa)}\vartheta_t$$

We use (4) to substitute out the unobserved υ_t and rearrange the terms:

$$q_t = \frac{(\delta - 1)\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \delta)}\left(\pi_t - \pi_t^*\right) - \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \delta)}\left(r_t - r_t^*\right) - \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \rho)}\eta_t$$
$$(9)\qquad -\frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \varsigma)}\xi_t - \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \phi)}\chi b_{t+1} - \frac{\left(\sigma - (1-\theta)\right)}{\theta(\sigma - \kappa)}\vartheta_t$$

Take the first differences and use $\Delta s_t = \Delta q_t + \pi_t - \pi_t^*$

$$\Delta s_t = \frac{-(\sigma-1)(1-\delta-\theta)}{\theta(\sigma-\delta)}\Delta\left(\pi_t-\pi_t^*\right)-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\delta)}\Delta\left(r_t-r_t^*\right)-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\rho)}\Delta\eta_t$$
$$-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\varsigma)}\Delta\xi_t-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\phi)}\chi\Delta b_{t+1}-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\kappa)}\Delta\vartheta_t+\left(\pi_{t-1}-\pi_{t-1}^*\right)$$

Substituting from (9) lagged one period:

$$\Delta s_t = \frac{-(\sigma-1)(1-\delta-\theta)}{\theta(\sigma-\delta)}\Delta\left(\pi_t-\pi_t^*\right)-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\delta)}\Delta\left(r_t-r_t^*\right)-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\rho)}\Delta\eta_t$$
$$-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\varsigma)}\Delta\xi_t-\frac{(\sigma-(1-\theta))}{\theta(\sigma-\phi)}\chi\Delta b_{t+1}-\frac{\theta(\sigma-\delta)}{(1-\delta)(\sigma-(1-\theta))}q_{t-1}$$
$$+\left[lagged\ terms\right]+u_t$$

where $u_t = -\frac{(\sigma-(1-\theta))}{\theta(\sigma-\kappa)}\iota_t$

This takes the form of the estimating equation, (1), with the signs as posited when $\theta < 1-\delta$, so that prices are sufficiently sticky such that the nominal interest rate rises when the real interest rate rises.

Appendix I: Model simulation

In this section, we describe the model used to simulate the data for Table 6. The purpose of this exercise is to demonstrate that a self-fulfilling equilibrium with sunspot shocks can plausibly generate the observed incorrect signs in regression coefficients and low R^2 values when the Taylor principle is not satisfied. The model is a fairly standard New Keynesian open economy framework with a UIP wedge. We conduct simulations for two cases: one in which the Taylor principle holds, and another in which it does not.

We allow for monetary shocks across countries. An observable UIP wedge, ρ_t, which summarizes the risk premium and liquidity premium measures in the data. To prevent a perfect regression fit based on simulated data, we modify the model to include an unobservable UIP deviation, φ_t.

The households Euler equation is described as:

$$E_t s_{t+1} - s_t - i_t^R = \rho_t + \varphi_t$$

There are Home and Foreign goods. The price indices are:

$$p_t = (1-\omega)p_{H,t}^H + (\omega)p_{H,t}^F, p_t^* = (1-\omega)p_{F,t}^F + (\omega)p_{F,t}^H$$

where $1-\omega$ is the home bias parameter P_Y^X is the price level of X goods in country Y.

The economies feature producer currency pricing, households dislike work hours (H_t) with a Frisch elasticity η and linear production technology ($H_t = Y_t$). The labor market conditions are:

$$mc_t - p_t = w_t - p_t = \eta h_t - \rho c_t, mc_t^* - p_t^* = w_t^* - p_t^* = \eta h_t^* - \rho c_t^*$$

where ρ is the CRRA coefficient.

The Phillips curves are:

$$\pi_{H,t}^H = \Omega\left(mc_{\mathrm{t}} - p_{H,t}^H\right) + \beta E_t \pi_{H,t+1}^H, \pi_{F,t}^F = \Omega\left(mc_{\mathrm{t}}^* - p_{F,t}^F\right) + \beta E_t \pi_{F,t+1}^F$$

where $\Omega = (1-\beta\delta)(1-\delta)/\delta$ and δ is the probability of changing the price.

The demands for goods and the results goods market clearing conditions are:

$$y_{H,t}^H = -\theta\left(p_{H,t}^H - p_t\right) + c_t, \qquad y_{H,t}^F = -\theta\left(p_{H,t}^F - p_t\right) + c_t$$

$$y_{F,t}^H = -\theta\left(p_{F,t}^H - p_t^*\right) + c_t^*, \qquad y_{F,t}^F = -\theta\left(p_{F,t}^F - p_t^*\right) + c_t^*$$

$$y_t = (1-\omega)y_{H,t}^H + (1-\omega)y_{H,t}^H + q_t, \qquad y_t^* = (1-\omega)y_{F,t}^F + (1-\omega)y_{H,t}^F - q_t$$

where $q_t = s_t + p_t^* - p_t$ and θ is the elasticity of substitution across goods

Finally, we close the model with a relative Taylor rule condition:

$$i_t^R = \sigma\pi_t^R + \alpha i_{t-1}^R + \varepsilon_t^R$$

For the scenario where the Taylor principle is satisfied, we assume a coefficient $\sigma = 1.01$. When the Taylor principle is not satisfied, a self-fulfilling equilibrium is possible, requiring the inclusion of a sunspot equation. We follow Bianchi and Nicolo (2021) and add a sunspot equation as follows:

$$\omega_t = \frac{1}{\gamma}\omega_{t-1} + \nu_t - (\pi_t^R - E_{t-1}\pi_t^R)$$

Here, ν_t represents the sunspot shock, assumed to be i.i.d. with a standard deviation of 0.00001, and γ is set to 0.5, making the final equation an explosive root when the Taylor principle is not satisfied.

For the remaining parameters and exogenous processes, we assume $\beta = 0.99$, $\delta =$ 0.01 $\alpha = 0.965$, $\omega = 0.03$, $\eta = 1$ and $\rho = 5$. The shocks are ρ_t, φ_t and ε_t^R. We assume

ρ_t and φ_t follows AR(1) process with persistence of 0.9 and standard deviation of 0.0044 and 0.0035. We assume ε_t^R, are i.i.d with a standard deviation of 0.0014. We scale the unobservable UIP shock so that, when the Taylor principle is satisfied, the regression R^2 is approximately 30%, aligning with empirical observations.

We simulated the model 1000 times, each with 280 observations. We perform a regression of Δs_t on the change of the real interest rate Δr_t, Δr_t^*, the change of inflation $\Delta\pi_t, \Delta\pi_t^*$ and the change of observable UIP deviation $\Delta\rho_t$. The results are reported below. Overall, the model in the determinacy region produces realistic *t*-statistics and R^2. The model in the sunspot region produces wrong sign of coefficient for the inflation variables and a very low R^2, as observed in the data.

Table H1: Regression with simulated data

	When the Taylor principle is satisfied	When the Taylor principle is not satisfied
$\Delta(r)_t$	-8.26***	-1.39
$\Delta(r^*)_t$	-8.21***	1.35
$(\pi)_t$	-1.98**	0.52
$(\pi^*)_t$	1.97**	-0.49
$\Delta\xi_t$	-1.98**	-1.69*
N	280 each, simulated 1000 times	280 each, simulated 1000 times
R2	0.33	0.09

Note: t-statistics are reported. * p<0.1, ** p<0.05, *** p<0.01.

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