

The Dollar in an Era of International Retrenchment

Ryan Chahrour

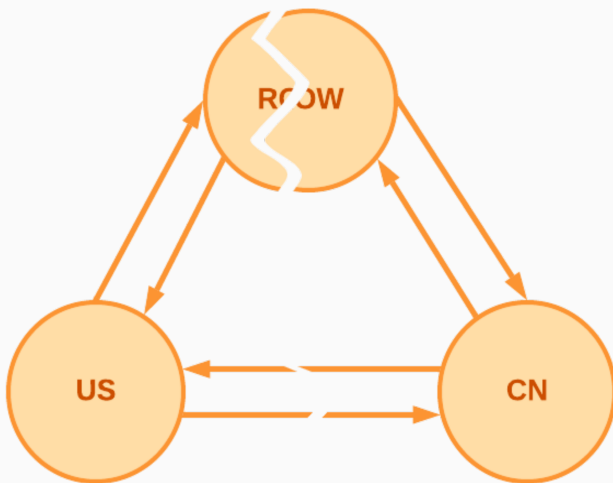
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International Fragmentation - Stylized View



Could international fragmentation change special role of USD?

- Quantitative theory that links trade and dollar dominance
 - multiple steady states, unique dynamics
 - introduce potential for regional heterogeneity
- Policy experiments that change trade and financing patterns
 - tariffs: between the US and China/or between the East/West
 - currency supports: potential to “jumpstart” international currency
 - How do transitions unfold? Welfare implications?
- Bottom lines
 - Dollar dominance is hard to change.
 - Transition can be slow, until it's not...

Model

Model Summary

1. Four regions
 - two big countries: US and CN
 - two regions composed of s.o.e.'s: Region A and Region B
 - baseline: perfect symmetry between US/CN and between A/B
2. Exogenous endowments
3. Consumption is CES of all country's goods
 - home-bias in preferences
4. Trading firms conduct all import/exports
 - trading firms need financing (letter of credit)
 - financing is denominated in either USD or CHY
5. Big countries supply safe assets to world
 - potentially unbalanced trade

Simplified Model

1. Households trade safe assets internationally
 - safe assets used to fund trading firms via search markets
 - earn liquidity premium $\Delta_{jt}^{\$}$
2. Trading firms need safe asset funding to complete int. transactions
 - **borrow** assets from local households in search markets
 - currency **mismatch** cost κ (e.g. expected default cost)

Simplified Model

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$$1 = \beta E_t \left[\left(\frac{C_{jt+1}}{C_{jt}} \right)^{-\sigma} \frac{1}{Q_t^{\$} (1 - \Delta_{jt}^{\$})} \right] ; \Delta_j^{\$} = \underbrace{\frac{M^F(B_j^{\$}, X_j)}{B_j^{\$}}}_{=\text{prob. lending \$}} \times r$$

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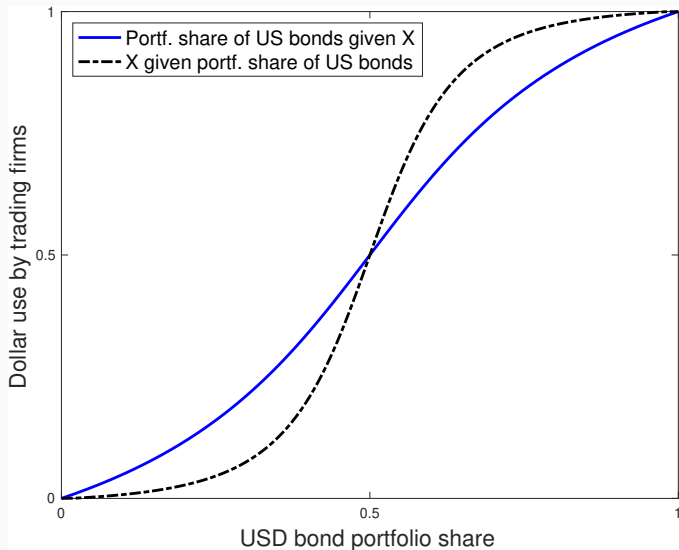
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2. Trading firms need safe asset funding to complete int. transactions

- **borrow** assets from local households in search markets
- currency **mismatch** cost κ (e.g. expected default cost)

$$V_j^{\$} = \underbrace{\frac{M^F(B_j^{\$}, X_j)}{X_j}}_{=\text{prob. obtaining \$}} [\pi - r - \kappa(1 - \bar{X})] - \underbrace{\frac{M^F(B_j^{\text{¥}}, 1 - X_j)}{1 - X_j}}_{=\text{prob. obtaining ¥}} [\pi - r - \kappa\bar{X}]$$

Intuition: Feedback w. Multiple Steady States



Calibration Highlights

Parameter	Concept	Value
$\mu_{us} = \mu_{cn}$	Big country measure	0.200
κ	Mismatch cost	0.010
X_{us}	US dollar share	0.900
X_{cn}	CN dollar share	0.100
η	CES elasticity of substitution	4.000

Concept	Target Value
Gross debt/GDP	0.60
US & CN trade/GDP	0.35
RW trade/GDP	0.55
RW USD use	0.80
Import markup	1.20

Parameter	Concept	Value
$\bar{B}$	US/CH asset supply	1.475
$a_{us} = a_{cn}$	Home bias big countries	0.331
a_j	Home bias RW	0.298
ε^f	Funding match. elas.	0.292
ϕ	Fixed cost of entry	0.083

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Baseline: Multiple Steady States

Moments	USD Coord.				Symmetric*				CNY Coord.			
	US	CN	A	B	US	CN	A	B	US	CN	A	B
Dollar Share	0.90	0.10	0.80	0.80	0.90	0.10	0.50	0.50	0.90	0.10	0.20	0.20
$100 \times (r^{\text{¥}} - r^{\text{\$}})$	1.08	-	-	-	0.00	-	-	-	-1.08	-	-	-
$100 \times \text{Impl. rev.}/\text{GDP}$	0.88	0.22	-	-	0.55	0.55	-	-	0.22	0.88	-	-

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$100 \times \text{Impl. rev.}/\text{GDP}$	0.88	0.22	-	-	0.55	0.55	-	-	0.22	0.88	-	-

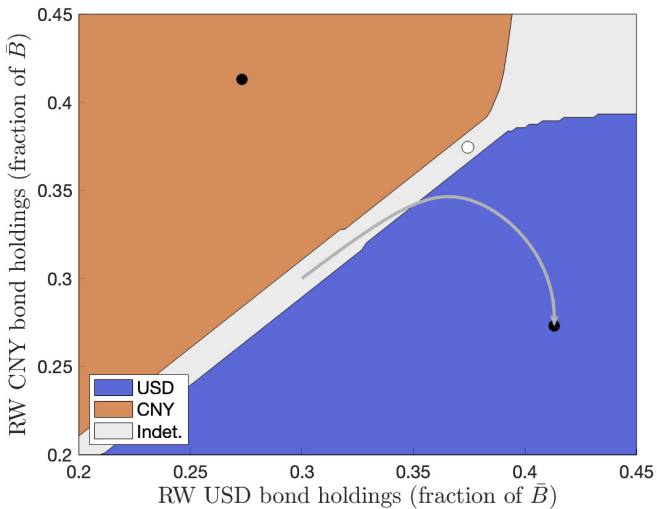
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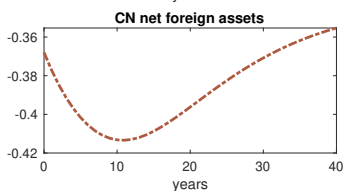
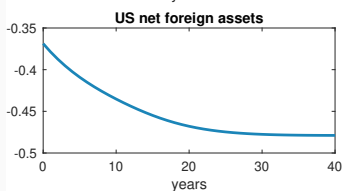
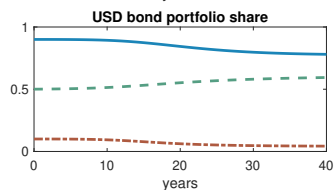
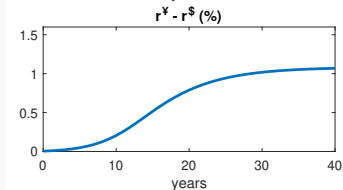
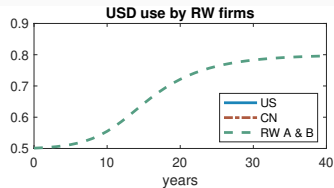
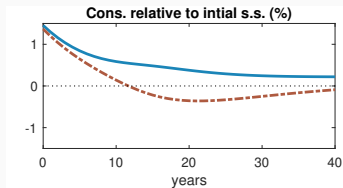
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$100 \times \text{Impl. rev.}/\text{GDP}$	0.88	0.22	-	-	0.55	0.55	-	-	0.22	0.88	-	-

Baseline: Regions of Attraction



Baseline: Transition to USD-dominant Steady State



Policy Experiment I

↪ Tariffs

Tariffs and Steady-State USD Usage

- US puts 40% tariff on CH

Scenario	USD Coord.				Middle				CNY Coord.			
	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b		$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b		$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	
baseline	1.08	0.80	0.80		<i>0.00</i>	<i>0.50</i>	<i>0.50</i>		-1.08	0.20	0.20	
unil. US tariff on CN	1.25	0.85	0.85		-0.25	0.44	0.44		-0.98	0.24	0.24	

Note: Dashes (-) indicate that no such steady state exists; italics indicate a steady state that is dynamically unstable.

Tariffs and Steady-State USD Usage

- US puts 40% tariff on CH, CH responds in kind

Scenario	USD Coord.			Middle			CNY Coord.		
	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b
baseline	1.08	0.80	0.80	<i>0.00</i>	<i>0.50</i>	<i>0.50</i>	-1.08	0.20	0.20
unil. US tariff on CN	1.25	0.85	0.85	<i>-0.25</i>	<i>0.44</i>	<i>0.44</i>	-0.98	0.24	0.24
tit-for-tat betwn US & CN	1.20	0.83	0.83	<i>0.00</i>	<i>0.50</i>	<i>0.50</i>	-1.20	0.17	0.17

Note: Dashes (-) indicate that no such steady state exists; italics indicate a steady state that is dynamically unstable.

Tariffs and Steady-State USD Usage

- US puts 40% tariff on Region B

Scenario	USD Coord.			Middle			CNY Coord.		
	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b
baseline	1.08	0.80	0.80	<i>0.00</i>	<i>0.50</i>	<i>0.50</i>	-1.08	0.20	0.20
unil. US tariff on CN	1.25	0.85	0.85	<i>-0.25</i>	<i>0.44</i>	<i>0.44</i>	-0.98	0.24	0.24
tit-for-tat betwn US & CN	1.20	0.83	0.83	<i>0.00</i>	<i>0.50</i>	<i>0.50</i>	-1.20	0.17	0.17
unil. US tariff on RW B	1.43	0.94	0.93	0.01	0.57	0.47	-1.47	0.14	0.06

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Tariffs and Steady-State USD Usage

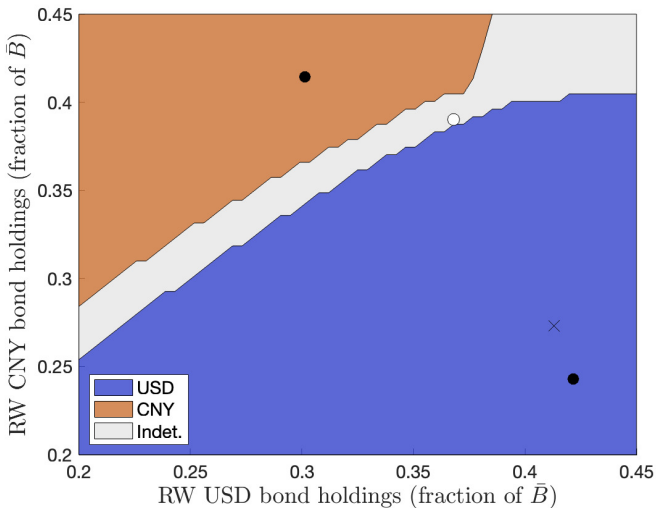
- US and Region A put 40% tariff on Region CH

Scenario	USD Coord.			Middle			CNY Coord.		
	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b
baseline	1.08	0.80	0.80	<i>0.00</i>	<i>0.50</i>	<i>0.50</i>	-1.08	0.20	0.20
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unil. US tariff on RW B	1.43	0.94	0.93	0.01	0.57	0.47	-1.47	0.14	0.06
coord. US & Reg. A on CN	1.53	0.96	0.90	-	-	-	-	-	-

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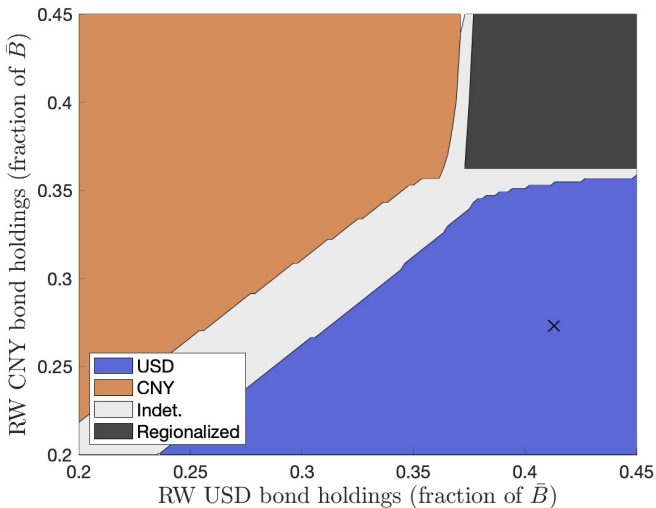
Tariffs and USD Durability

- US puts 40% tariff on CH



Tariffs and USD Durability

- US puts 40% tariff on Region B



Tariffs Summary

1. Generally small changes relative to status quo
2. Reducing trade with ROW regions can hurt dollar
3. Coordinated US + Region A tariffs makes dollar eq. more stable
 $\hookrightarrow$ ROW trades more with US overall

Policy Experiment II

↪ CHY supports

Background:

- Eichengreen and Kawai (2015), “Renminbi Internationalization ...”
- Prasad (2016), “China’s efforts to expand the...use of the Renminbi”
- Bahaj & Reis (2020), “Jumpstarting an International Currency”

Policy induces a fraction z of Region B firms to use CHY *unconditionally*

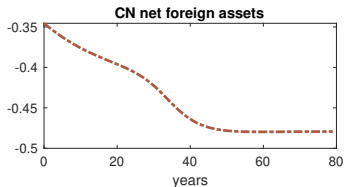
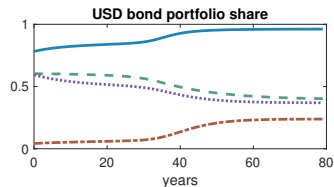
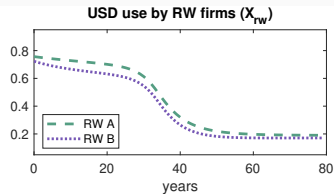
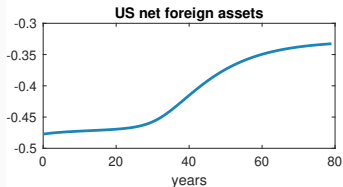
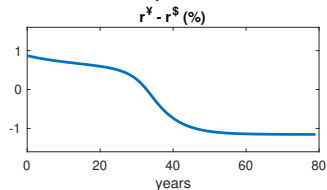
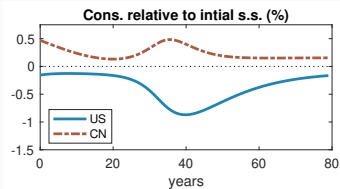
1. $z = 0.10$ forever
2. $z = 0.20$ for certain number of years

Case 1: $z = 0.10$ forever

Scenario	USD Coord.				Middle				CNY Coord.			
	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b		$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b		$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	
baseline	1.08	0.80	0.80		<i>0.00</i>	<i>0.50</i>	<i>0.50</i>		-1.08	0.20	0.20	
perm. support for yuan	-	-	-		-	-	-		-1.15	0.19	0.17	

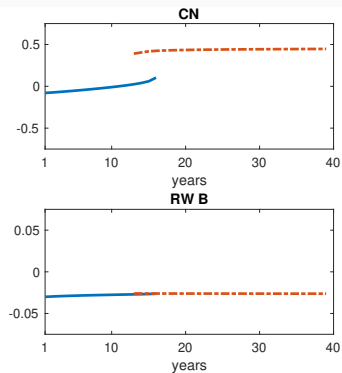
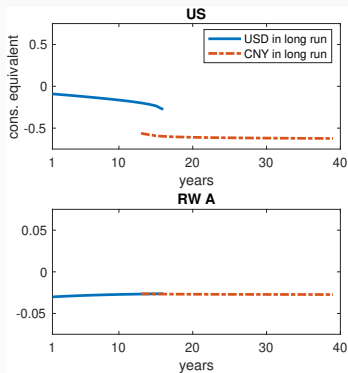
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Case 1: $z = 0.10$ forever



Case 2: $z = 0.20$ for H years

Outcome depends on duration...



Policy Experiment III

↪ **Global Trade Conflict**

Scenario

- US and Region A put 40% tariff on CN and Region B
- CN and Region B put 40% tariff on US and Region A
- US and CN both induce $z = 0.20$



Cross-bloc trade falls 70%

Bloc-specific Dominant Currencies

Scenario	USD Coord.				Middle				CNY Coord.			
	$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b		$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b		$r^{\text{¥}} - r^{\text{\$}}$	X_a	X_b	
baseline	1.08	0.80	0.80		<i>0.00</i>	<i>0.50</i>	<i>0.50</i>		-1.08	0.20	0.20	
strong fragmentation	-	-	-		-0.00	1.00	0.00		-	-	-	

Note: Dashes (-) indicate that no such steady state exists; italics indicate a steady state that is dynamically unstable.

Welfare Implications

Welfare Relative to Baseline: Permanent Consumption Units (incl. transitions)

Situations in which the dollar loses dominance...

	US	CN	RW A	RW B
permanent support for yuan at 10%	-0.27	0.27	0.00	0.00
temporary (20 yrs) support for yuan at 20%	-0.61	0.43	-0.03	-0.03

Welfare Relative to Baseline: Permanent Consumption Units (incl. transitions)

Situations in which the dollar loses dominance...

	US	CN	RW A	RW B
permanent support for yuan at 10%	-0.27	0.27	0.00	0.00
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Welfare Relative to Baseline: Permanent Consumption Units (incl. transitions)

Situations in which the dollar loses dominance...

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temporary (20 yrs) support for yuan at 20%	-0.61	0.43	-0.03	-0.03

Conclusion

1. USD dominance is not easy to change
 - tariff policy matters because it changes trading patterns ...
 - but tariff policy must be coordinated with RW countries to have significant impact
2. Direct support for a currency (e.g. yuan) could have bigger impact
 - policy must be large
 - policy must last around 15 years
3. Trade conflict hurts dominant currency country
 - reduces the need for trade financing
 - could change which country's asset behind it
4. If international trade becomes “bifurcated”, then currency choices could as well.