Dollar Pricing Redux

Camila Casas
Banco de la República

Federico Díez
Federal Reserve Bank of Boston

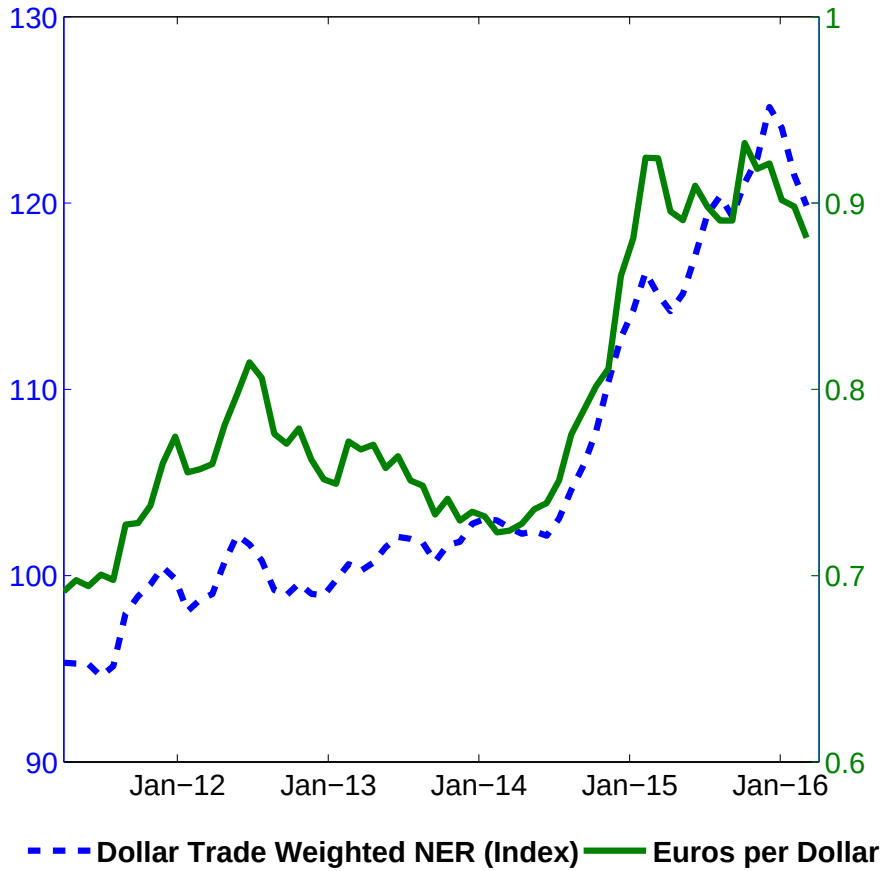
Gita Gopinath
Harvard

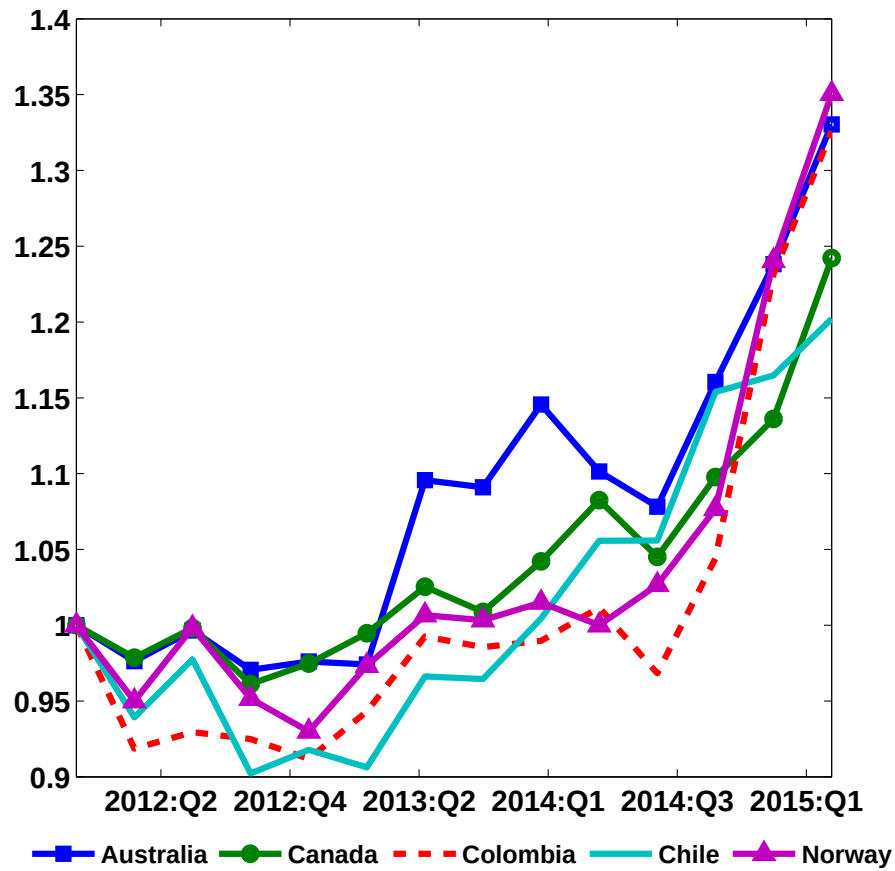
Pierre-Olivier Gourinchas
UC Berkeley

The views expressed in this paper are those of the authors and do not indicate concurrence by other members of the research staff or principals of the Board of Governors, the Federal Reserve Bank of Boston, or the Federal Reserve System. The views expressed in the paper do not represent those of the Banco de la República or its Board of Directors. All remaining errors are our own.

Nominal Exchange Rate Fluctuations Matter

. . . because of evidence of rigidities in price setting





How do Nominal Exchange Rate Fluctuations Impact Economies?

How do Nominal Exchange Rate Fluctuations Impact Economies?

. . . depends on the invoicing currency

How do Nominal Exchange Rate Fluctuations Impact Economies?

. . . depends on the invoicing currency

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	Producer's	Producer's

How do Nominal Exchange Rate Fluctuations Impact Economies?

. . . depends on the invoicing currency

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	Producer's	Producer's
Terms of Trade (NC)	Depreciates	Appreciates

How do Nominal Exchange Rate Fluctuations Impact Economies?

. . . depends on the invoicing currency

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	Producer's	Producer's
Terms of Trade (NC)	Depreciates	Appreciates
Export prices (pesos)	$\Leftrightarrow$	$\Leftrightarrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$

How do Nominal Exchange Rate Fluctuations Impact Economies?

. . . depends on the invoicing currency

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	Producer's	Producer's
Terms of Trade (NC)	Depreciates	Appreciates
Export prices (pesos)	$\Leftrightarrow$	$\Leftrightarrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$
Trade Balance	Improves	Deteriorates

How do Nominal Exchange Rate Fluctuations Impact Economies?

. . . depends on the invoicing currency

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	Producer's	Producer's
Terms of Trade (NC)	Depreciates	Appreciates
Export prices (pesos)	$\Leftrightarrow$	$\Leftrightarrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$
Trade Balance	Improves	Deteriorates
Exports	$\Uparrow$	$\Downarrow$
Imports	$\Downarrow$	$\Uparrow$

How do Nominal Exchange Rate Fluctuations Impact Economies?

. . . depends on the invoicing currency

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	Producer's	Producer's
Terms of Trade (NC)	Depreciates	Appreciates
Export prices (pesos)	$\Leftrightarrow$	$\Leftrightarrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$
Trade Balance	Improves	Deteriorates
Exports	$\Uparrow$	$\Downarrow$
Imports	$\Downarrow$	$\Uparrow$
Inflation	$\Uparrow$	$\Downarrow$

What does data tells us?

1. Invoicing Currency: Not producer currency, but pricing in very few currencies

What does data tells us?

1. Invoicing Currency: Not producer currency, but pricing in very few currencies
   - Outsized role for dollar

What does data tells us?

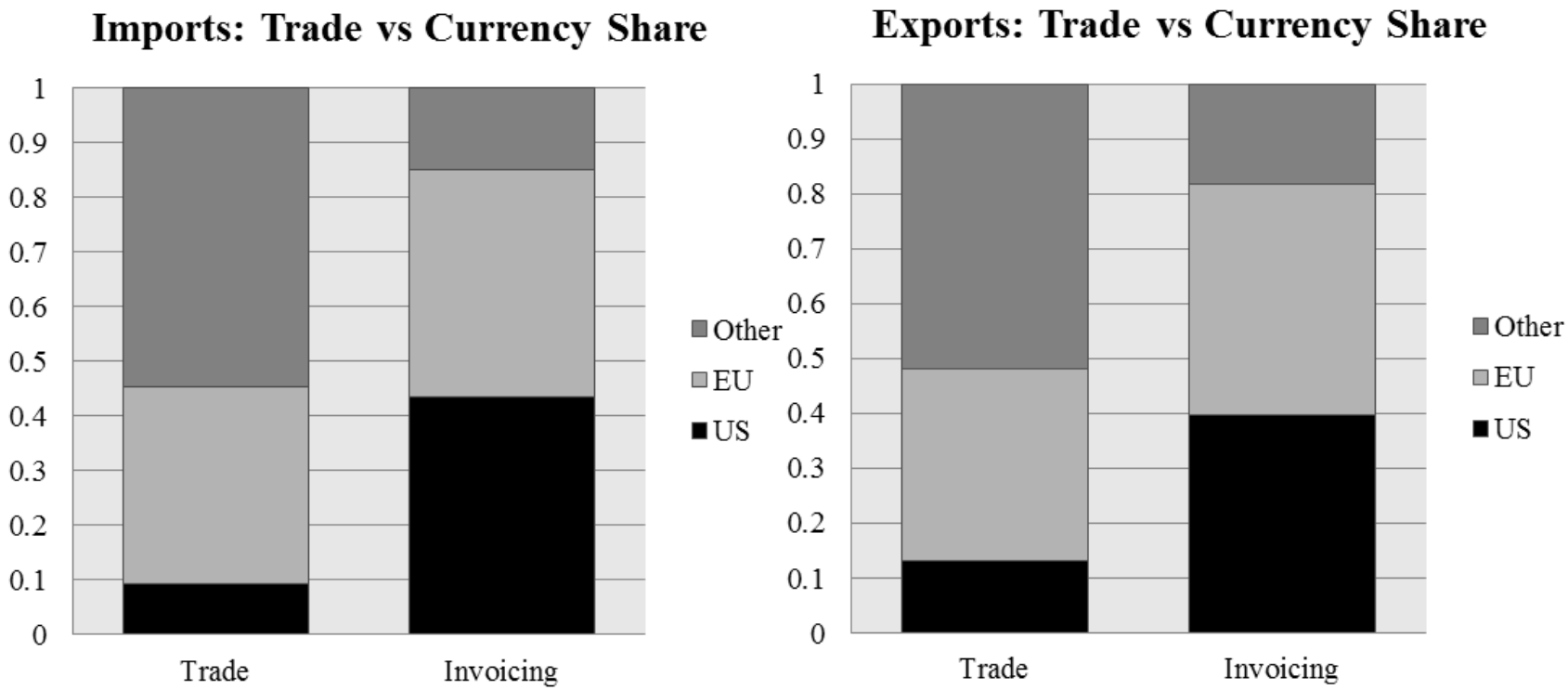
1. Invoicing Currency: Not producer currency, but pricing in very few currencies
   - Outsized role for dollar
2. Conditional on a price change prices not very sensitive to exchange rates
   - Strategic complementarity in pricing
   - Imported intermediate inputs

What does data tells us?

1. Invoicing Currency: Not producer currency, but pricing in very few currencies
   - Outsized role for dollar
2. Conditional on a price change prices not very sensitive to exchange rates
   - Strategic complementarity in pricing
   - Imported intermediate inputs
3. Dollar Pricing Redux: 1+2

Dominance of dollar invoicing in world trade

Gopinath (2015): "The International Price System"



- Covers 55% of imports, 57% of exports. Averages post 1999.
- Dollar invoicing share: 4.7 times its share in world imports, 3.1 times its share in world exports.
- Euro invoicing share: 1.2 times for imports and exports.
- Goldberg (2013), Goldberg and Tille (2009), Ito and Chinn (2013)

Limited own currency use in most countries

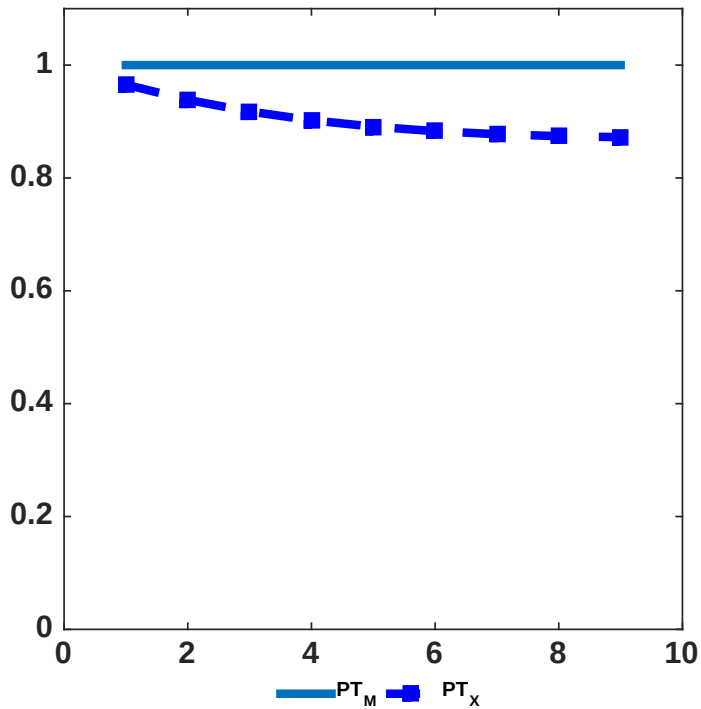
Country	Imports	Exports
United States	0.93	0.97
Italy*	0.58	0.61
Germany*	0.55	0.62
Spain*	0.54	0.58
France*	0.45	0.50
United Kingdom	0.32	0.51
Australia	0.31	0.20
Switzerland	0.31	0.35
Norway	0.30	0.03
Sweden	0.24	0.39
Japan	0.23	0.39

Country	Imports	Exports
Canada	0.20	0.23
Poland	0.06	0.04
Iceland	0.06	0.05
Thailand	0.04	0.07
Israel	0.03	0.00
Turkey	0.03	0.02
South Korea	0.02	0.01
Brazil	0.01	0.01
Indonesia	0.01	0.00
India	0.00	0.00

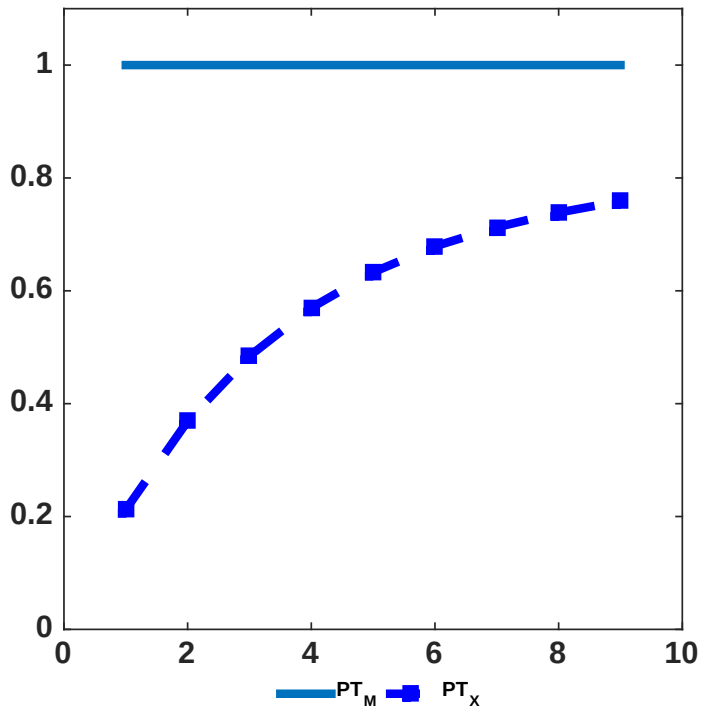
- EM share in world imports: 38%, exports: 33%

Predictions for Exchange Rate Pass-Through: Prices

$$\Delta p_t = \alpha + \sum_{k=0}^{8} \beta_k \Delta e_{t-k} + \epsilon_t$$



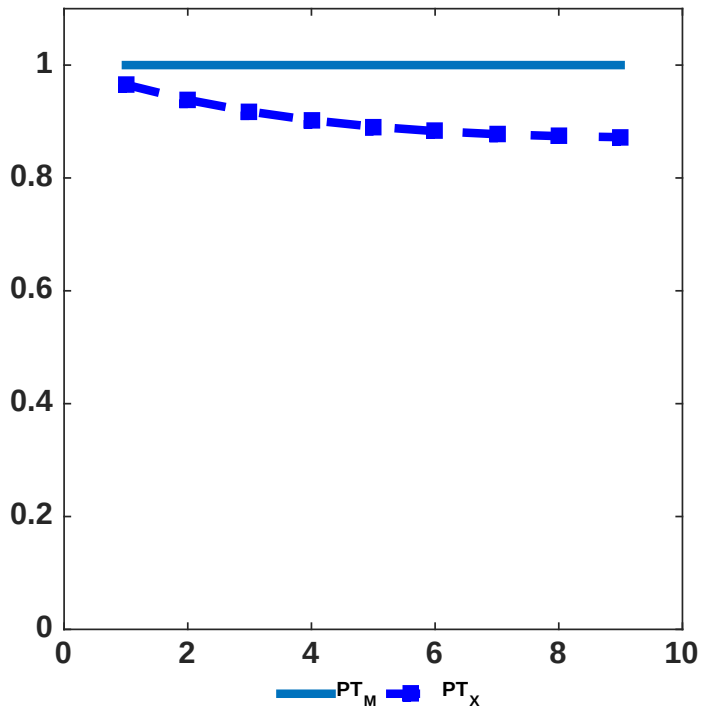
(a) Dollar



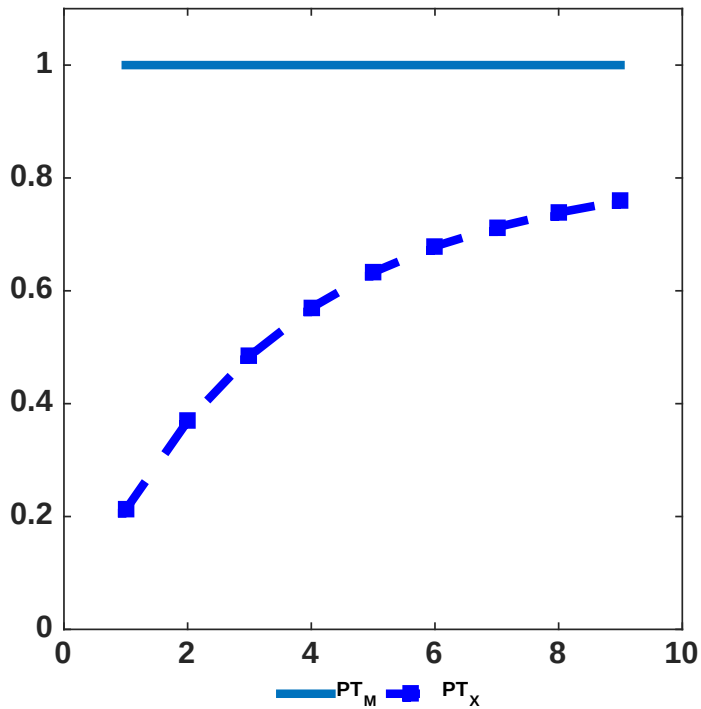
(b) Producer Currency

Predictions for Exchange Rate Pass-Through: Prices

$$\Delta p_t = \alpha + \sum_{k=0}^{8} \beta_k \Delta e_{t-k} + \epsilon_t$$



(c) Dollar

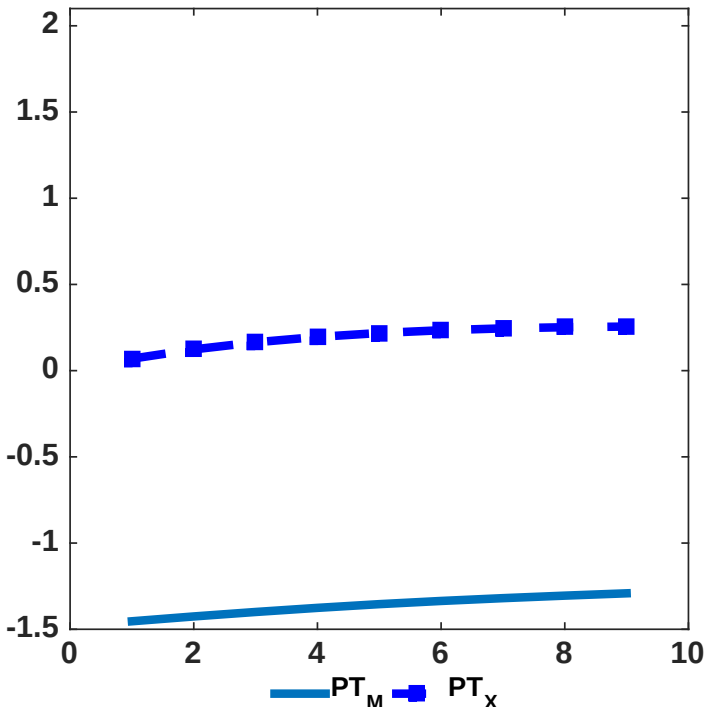


(d) Producer Currency

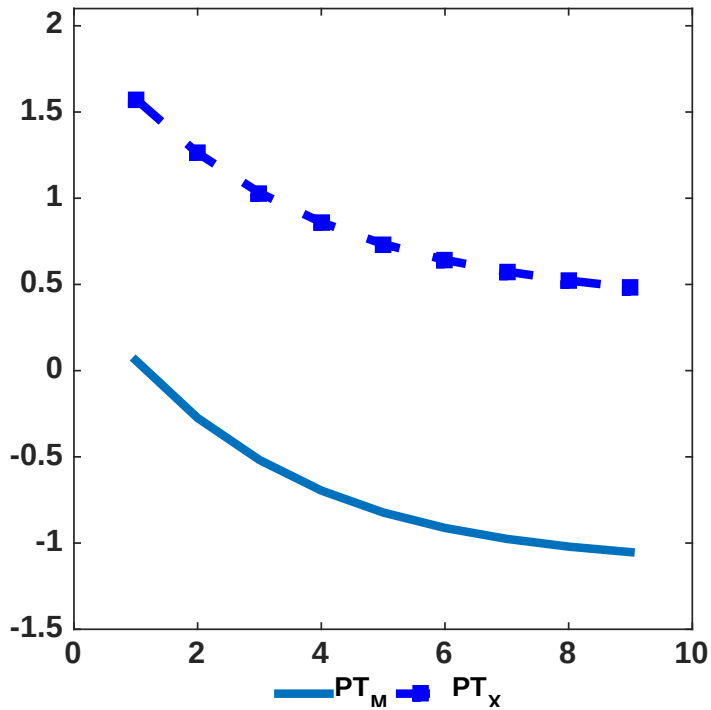
Stable Terms of Trade

Predictions for Exchange Rate Pass-Through: Quantities

$$\Delta q_t = \alpha + \sum_{k=0}^{8} \beta_k \Delta e_{t-k} + \epsilon_t$$



(e) Dollar

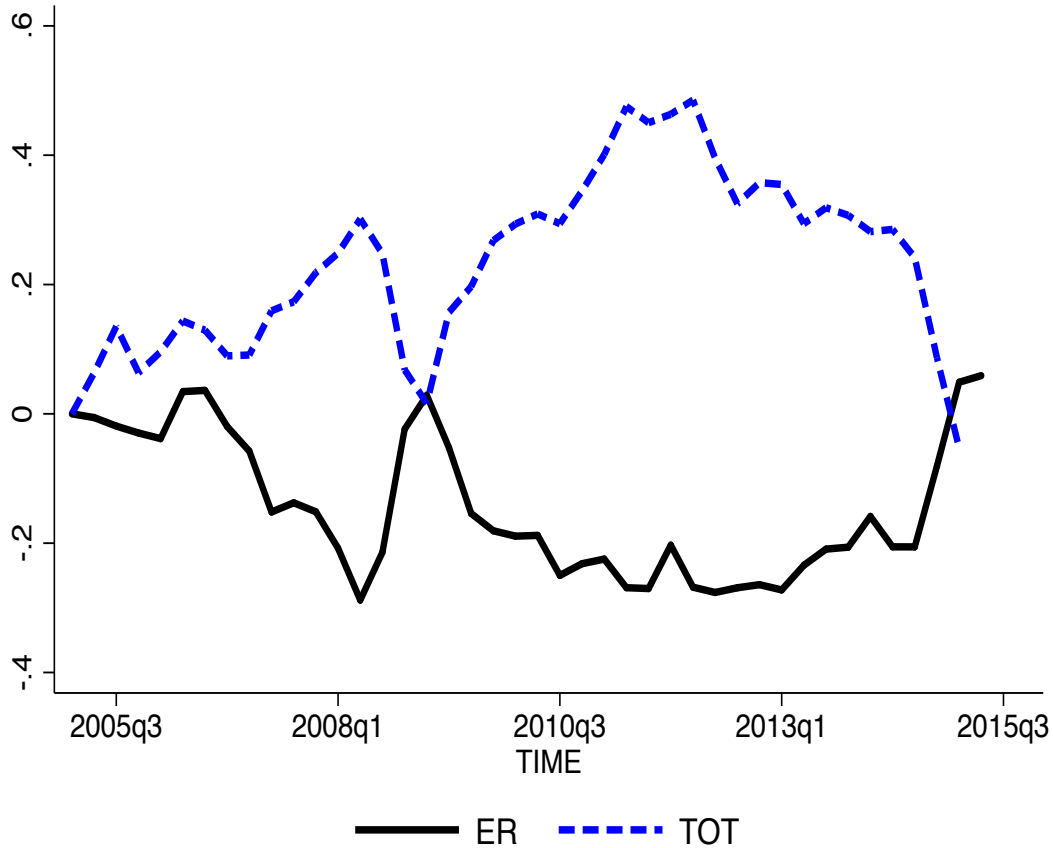


(f) Producer Currency

Empirical Evidence: Colombia

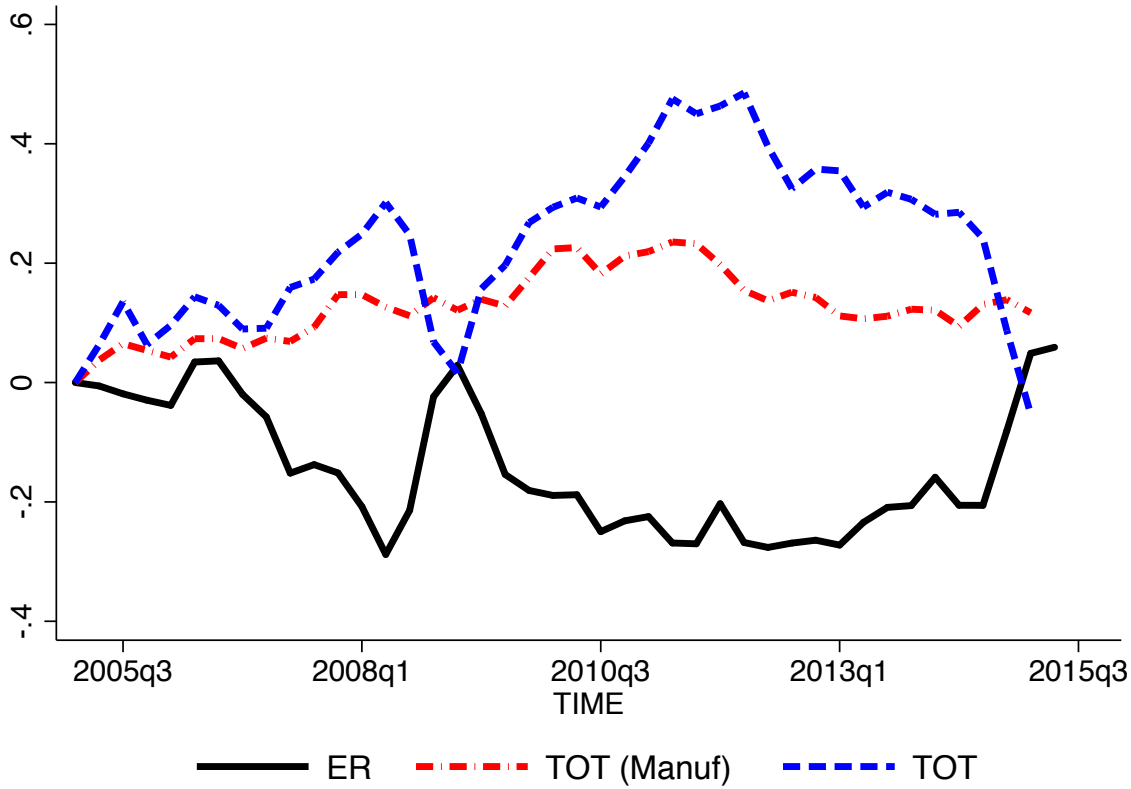
Terms of Trade and Nominal Exchange Rate

$>$ 98% exports invoiced in dollars



- TOT $\equiv \frac{P_X}{P_M}$, $Corr(TOT, \mathcal{E}_{p/\$}) = -0.89$

Colombia: Stability of Terms of Trade

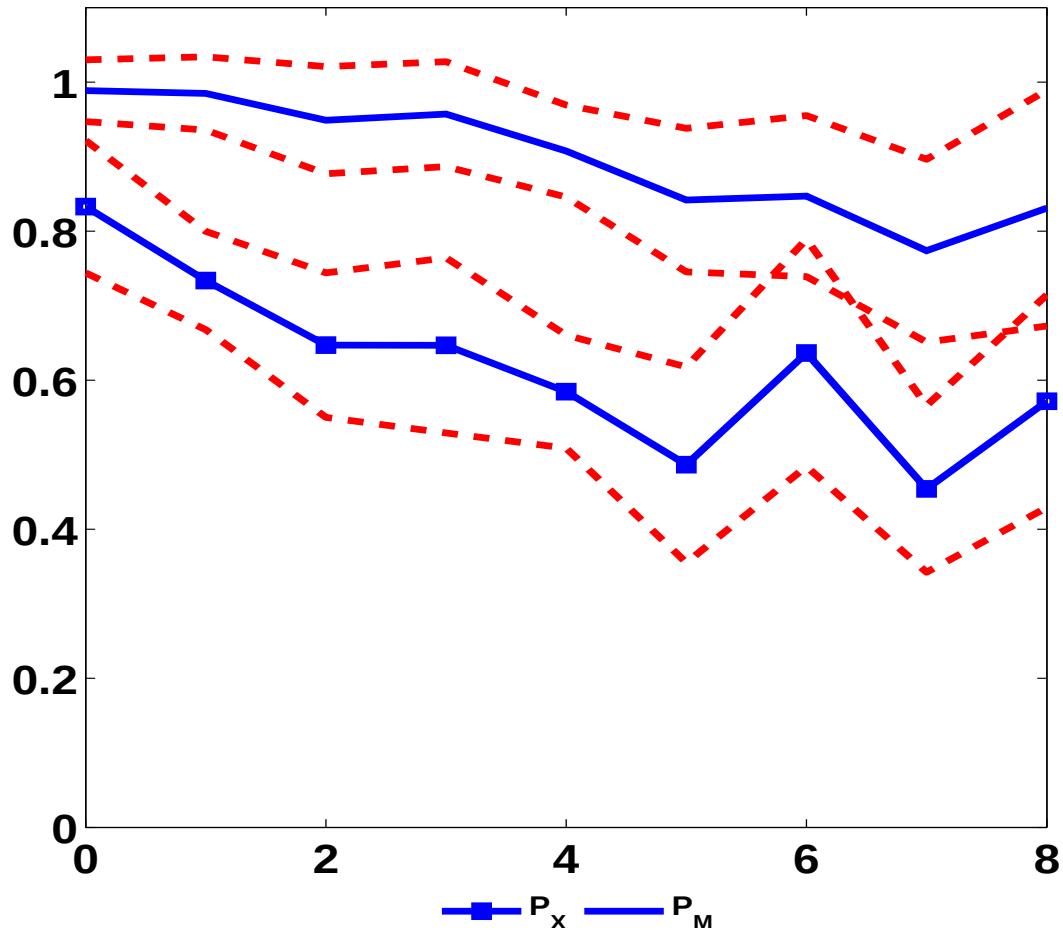


	Data	*DP*	*PCP*	*LCP*
$\frac{Cov(ER,TOT)}{Var(ER)}$	-0.33	-0.24	-0.68	0.50

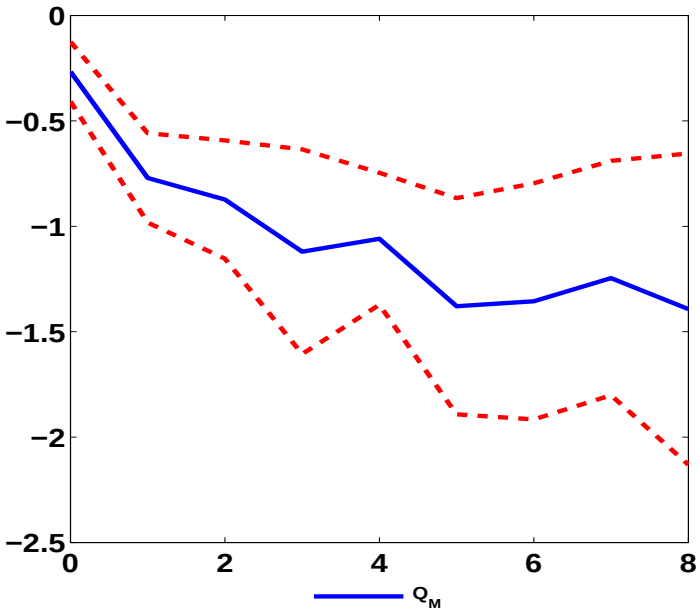
Colombia: Exchange Rate Pass-through

Large own price movements, Small dollar price movements

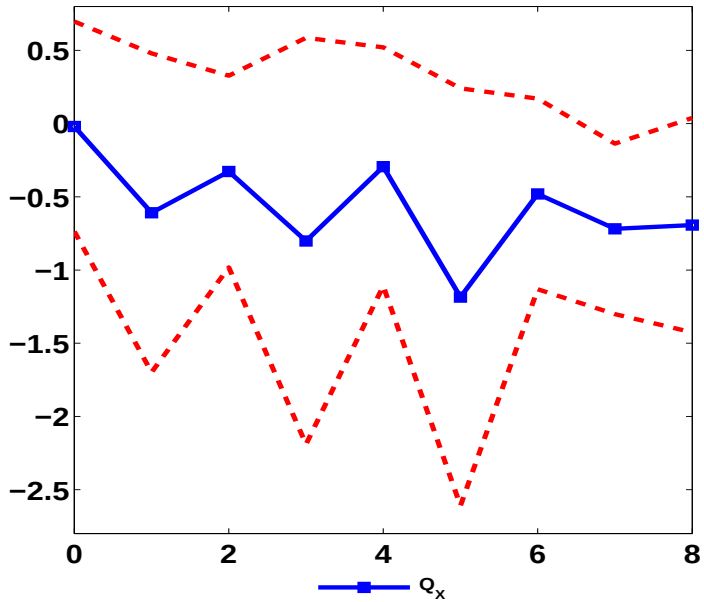
$$\Delta p_t = \alpha + \sum_{k=0}^{8} \beta_k \Delta e_{t-k} + \epsilon_t$$



Colombia: Exchange Rate Pass-through (Quantities)

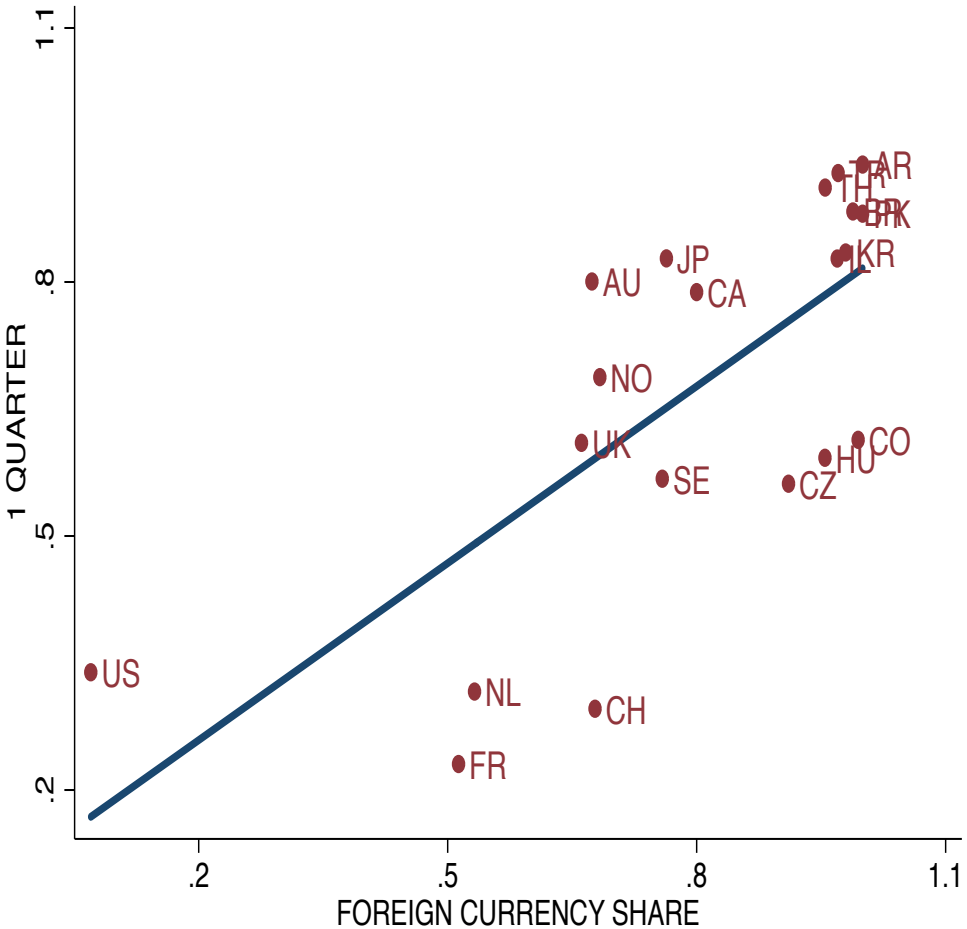


(g) Imports



(h) Exports

Extends to many countries . . . Countries with higher shares of imports invoiced in a foreign currency have higher short-run and long-run pass-through



	1 Quarter
$Frac_{foreign}$	**0.70**
	(0.16)
N	20
R^2	0.51

Take Aways

How do Nominal Exchange Rate Fluctuations Impact Economies?

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	~~Producer's~~ Dollar	~~Producer's~~ Dollar

Take Aways

How do Nominal Exchange Rate Fluctuations Impact Economies?

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	~~Producer's~~ Dollar	~~Producer's~~ Dollar
Terms of Trade	~~Depreciates~~ Stable	~~Appreciates~~ Stable

Take Aways

How do Nominal Exchange Rate Fluctuations Impact Economies?

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	~~Producer's~~ Dollar	~~Producer's~~ Dollar
Terms of Trade	~~Depreciates~~ Stable	~~Appreciates~~ Stable
Export prices (pesos)	$\not\Leftrightarrow \Uparrow$	$\not\Leftrightarrow \Uparrow$

Take Aways

How do Nominal Exchange Rate Fluctuations Impact Economies?

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	~~Producer's~~ Dollar	~~Producer's~~ Dollar
Terms of Trade	~~Depreciates~~ Stable	~~Appreciates~~ Stable
Export prices (pesos)	~~$\Leftrightarrow$~~ $\Uparrow$	~~$\Leftrightarrow$~~ $\Uparrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$
Trade Balance	Improves	Deteriorates

Take Aways

How do Nominal Exchange Rate Fluctuations Impact Economies?

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	~~Producer's~~ Dollar	~~Producer's~~ Dollar
Terms of Trade	~~Depreciates~~ Stable	~~Appreciates~~ Stable
Export prices (pesos)	~~$\Leftrightarrow$~~ $\Uparrow$	~~$\Leftrightarrow$~~ $\Uparrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$
Trade Balance	Improves	Deteriorates
Exports	~~$\Uparrow$~~ $\Leftrightarrow$	$\Downarrow$

Take Aways

How do Nominal Exchange Rate Fluctuations Impact Economies?

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	~~Producer's~~ Dollar	~~Producer's~~ Dollar
Terms of Trade	~~Depreciates~~ Stable	~~Appreciates~~ Stable
Export prices (pesos)	~~$\Leftrightarrow$~~ $\Uparrow$	~~$\Leftrightarrow$~~ $\Uparrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$
Trade Balance	Improves	Deteriorates
Exports	~~$\Uparrow$~~ $\Leftrightarrow$	$\Downarrow$
Imports	$\Downarrow$	~~$\Uparrow$~~ Stable

Take Aways

How do Nominal Exchange Rate Fluctuations Impact Economies?

Following a nominal *depreciation* of peso/dollar . . .

	Consensus View (Mundell-Fleming)	
	Colombia	U.S.
Invoicing currency	~~Producer's~~ Dollar	~~Producer's~~ Dollar
Terms of Trade	~~Depreciates~~ Stable	~~Appreciates~~ Stable
Export prices (pesos)	~~$\Leftrightarrow$~~ $\Uparrow$	~~$\Leftrightarrow$~~ $\Uparrow$
Import prices (pesos)	$\Uparrow$	$\Uparrow$
Trade Balance	Improves	Deteriorates
Exports	~~$\Uparrow$~~ $\Leftrightarrow$	$\Downarrow$
Imports	$\Downarrow$	~~$\Uparrow$~~ Stable
Inflation	$\Uparrow$	~~$\Downarrow$~~ Stable

Take Aways

- Strategic complementarities in pricing and intermediate input trade provide a force to coalesce on a single currency
- Dollar exchange rate can matter more than bilateral for third party transactions
- Policy making can benefit from a closer look at invoice currencies
- Monetary Policy: Asymmetries in spillovers