

# When Bonds Matter: Home Bias in Goods and Assets

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- Why?

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- Empirically: are observed relative returns and labor income consistent with the story? No!
- Why? Exchange rates!
- CG teach us how to separate exchange rates from portfolio choice. It has important empirical implications

# Outline

- An illustration of the problem
- The CG solution
- Implications
- What's next?



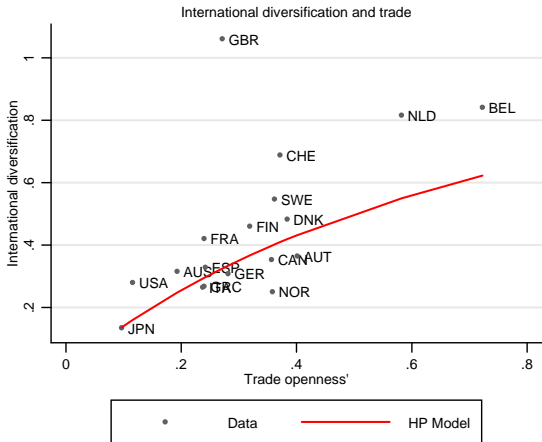
## A general setup

- Two goods, un-diversifiable labor income  $w$  and diversifiable asset income  $d$ , log utility

$$c = w + Sd + (1 - S)d^*x$$
$$c^* = w^* + Sd^* + (1 - S)\frac{d}{x}$$

- Adding structure easy to solve for diversification  $(1 - S)$
- For example in HP we show that in a standard IRBC model  $(1 - S)$  depends on trade openness

# Diversification and trade in a IRBC model



- Success!

## Other implications of the model

$$1 - S = \frac{1}{2} + \frac{1}{2} \frac{\bar{w}}{\bar{d}} \frac{\text{cov}(\Delta \hat{w}, \Delta \hat{d})}{\text{Var}(\Delta \hat{d})}$$

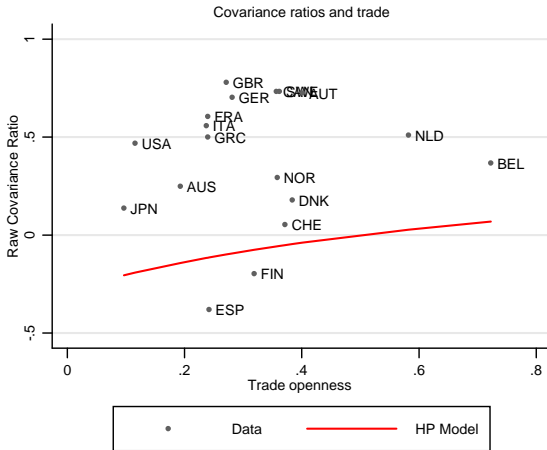
where  $\Delta \hat{w} = \hat{w} - \hat{w}^* - \hat{x}$

- Easy to derive either from risk-sharing conditions or solving portfolio problem
- Portfolio choice imposes a relation between portfolios and covariance ratios, i.e.

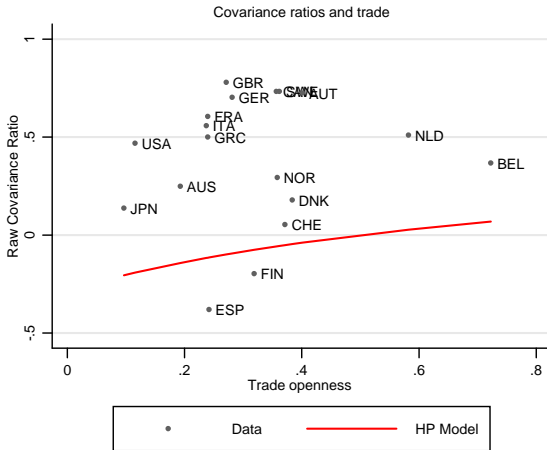
home-bias  $\iff$  Negative covariance ratio

- In the data there is home bias but covariance ratios are mostly **positive**

# Covariance ratios and trade in a IRBC model



# Covariance ratios and trade in a IRBC model



- Failure!

## Understanding the failure

- The exchange rate predicted by the model is not very volatile and moves systematically with  $\Delta \hat{w}$
- When  $\hat{w}$  is high (good domestic shock) real exchange rate depreciates slightly ( $\hat{e} \uparrow$ ) causing  $\Delta \hat{d}$  to go down.
- In the data real exchange rate is very volatile and not systematically correlated with anything so that  $\Delta \hat{w}$ ,  $\Delta \hat{d}$  comove **positively** because exchange rate movements (for example right now both US relative returns and relative labor income are falling)

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- **Success in home bias comes because of failure in exchange rate!**

## The CG contribution

- Allow agents to trade nominal bonds (whose relative return is the nominal exchange rate)
- Agents use bonds to perfectly hedge against nominal exchange rate fluctuations
- Equity portfolio is determined by the **orthogonalized** covariance ratios

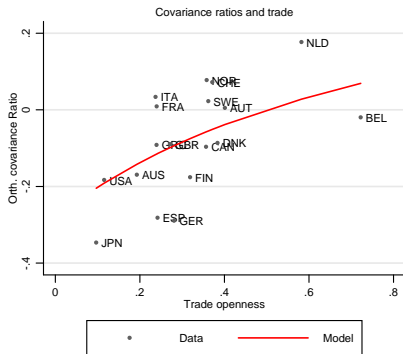
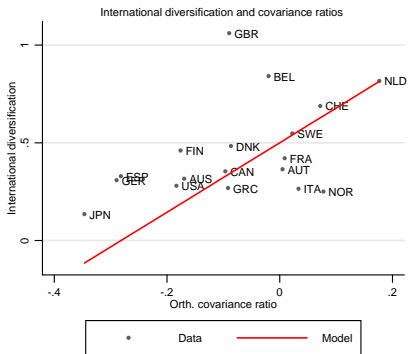
$$1 - S = \frac{1}{2} + \frac{1}{2} \frac{\bar{w}}{\bar{d}} \frac{\text{cov}(\Delta \hat{w}|e, \Delta \hat{d}|e)}{\text{Var}(\Delta \hat{d}|e)}$$

- Nice idea and most importantly it works!

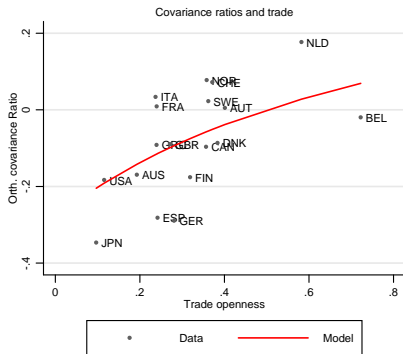
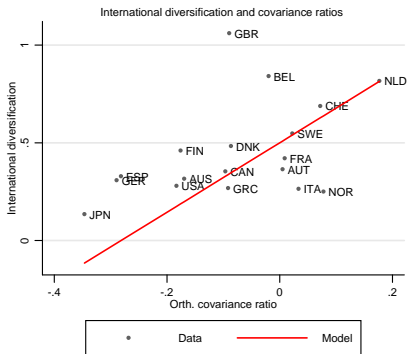


- CG show it can help explain home bias in Japan, Canada and US
- In HP we found that
  - There is actually a relation between orthogonalized covariances ratio and portfolio choice
  - Orthogonalized covariance ratios can be generated by the model (i.e the model can generate an orthogonalized real exchange rate)

# Orthogonalized covariance ratios and trade in a IRBC model



# Orthogonalized covariance ratios and trade in a IRBC model



- Success again, thanks to CG!

# Bond portfolios

- If bonds are used to hedge nominal exchange rate fluctuations, the model has implications for international bond portfolios
- CG explore them and show that if RA is sufficiently high the implications are not crazy (i.e. model does not predict large short positions)
- Hedging can also be achieved through forward contracts, so not necessarily clear the model needs to be confronted with bond portfolios

# Dependence of stocks portfolios on parameters

- CG emphasize that introducing bonds reduces the sensitivity of equity portfolios from parameters
- The point is less appealing to me for 2 reasons:
  - Equity portfolios vary in the data and comove with fundamentals that are related to structural parameters (trade)
  - From my reading it is a bit of knife hedge result (it depends on the existence of real bonds)

## A general lesson

- CG (and other papers) suggest that once you purge nominal exchange rate from real exchange rate, several puzzles for IBC models disappears (Home bias, Real exchange rate volatility, Backus Smith risk sharing)

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- CG (and other papers) suggest that once you purge nominal exchange rate from real exchange rate, several puzzles for IBC models disappears (Home bias, Real exchange rate volatility, Backus Smith risk sharing)
- The hedging story offer a justification for separating portfolio and other decisions from nominal exchange rate fluctuations
- Understanding the nominal exchange rate remains a main challenge, which most of those models are not well equipped to take