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**Discussion of paper by H. Hau & H. Rey**  
**“Global Portfolio Rebalancing under the**  
**Microscope”**

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The usual disclaimers apply.

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# Paper

- **Important contribution on portfolio rebalancing**
  - **International; equity markets**
- **Key feature: imperfect substitutability between domestic and foreign assets due to exchange rate risk**
- **Q: Can we link portfolio shifts / capital flows to exchange rate (risk) and returns?**
- **Related to earlier portfolio balance models (Kouri 1982; Branson & Henderson 1985) – little evidence**
- **Hau & Rey (2006; RFS, AER P&P), Tille and van Wincoop (2007)**

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# Two Contributions

- **Portfolio balance (PB) model based on HR 2006**
  - **Discrete time setting with 3 periods – each period revealing information**
  - **Derive 4 empirically testable propositions about link between portfolio rebalancing, returns and risk**
- **Empirical test of PB model**
  - **Rel. novel dataset: >1000 mutual funds & institutional investors; semi-annual data; 1998-2002 (large n, small t); from 4 currency areas (US, UK, CA, EA); representative of overall portfolio equity holdings (→ CPIS)**

## Model

$$RB_{j,t}^f = \omega_{j,t}^f - \omega_{j,t-1}^f \left( 1 + r_{j,t}^f / 1 + r_{j,t}^P \right)$$

$$RB_{j,t}^f = c + \alpha \left( r_{j,t-k}^f - r_{j,t-k}^h \right) + D_t + \varepsilon_{j,t}$$

- **RB=0: passive investment strategy → shift in portfolio weights only due to price changes**
- **RB<0: active shift out of foreign equities**
- **$r_t$  measured in local currency – i.e. return plus exchange rate change**

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# Findings

- $-4 < \alpha < -12$  (US, EA) for  $k=0$
- $-6 < \alpha < -20$  (US, EA) for  $k=0$  &  $k=1$
- **Robustness**
  - different sizes of funds
  - pos. vs. neg. returns
  - splitting exchange rate & pure equity return components
  - Overall risk reduction
  - Marginal risk reduction (taking into account covariance structure of individual stocks)

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## Discussion

- **An alternative interpretation of results**
- **Some smaller queries**

## Main comment

- **Identified effects are large: 1% return differential leads to up to 20% rebalancing for EA investors**
  - **Semi-annual return differentials in 1998-2002 often much larger**
- **Assumption/claim: rebalancing occurs because of change in exchange rate exposure**
- **Q: If investors care so much about exchange rate risk, why don't they hedge it?**
  - **Costs? → FX exposure of debt securities usually largely hedged, but not for equities**
  - **Why? → maybe investors “like” FX risk (e.g. natural hedge as in HR 2006; small relative to return risk, etc.)**

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# What causes the rebalancing?

- **Argument: change in exchange rate exposure**
- **But maybe its something else...**
- **How does rebalancing actually take place?**
  - **Here: shift within asset classes, cross-border only**
  - **Do we have evidence in the data for this?**
  - **Necessary condition:  $\text{corr}(\Delta\text{stock}_f, \Delta\text{stock}_h) < 0$  or even  $\sim -1$**
- **What is not in the model**
  - **Risk free rate  $r$  assumed to be constant over time and identical across countries**
  - **No other financial assets available**

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## **An alternative interpretation**

- **Equity returns are correlated with exchange rates..**
- **but also with e.g. bond returns**
- **Alternative interpretation of results**
  - **Re-balancing could reflect shift across countries...**
  - **... or across asset classes**
  - **i.e. rebalancing due to change in expected returns across asset classes and across countries, rather than FX exposure**
- **What causes asset price reactions?**
  - **Asset pricing framework: ...**

# Asset pricing framework

- **Dynamic factor model**

$$r_t = E_{t-1}(r_t) + \beta'_{t-1} F_t + \varepsilon_t$$

$$F_t = X_t - E_{t-1}(X_t)$$

- **Three sets of factors:**

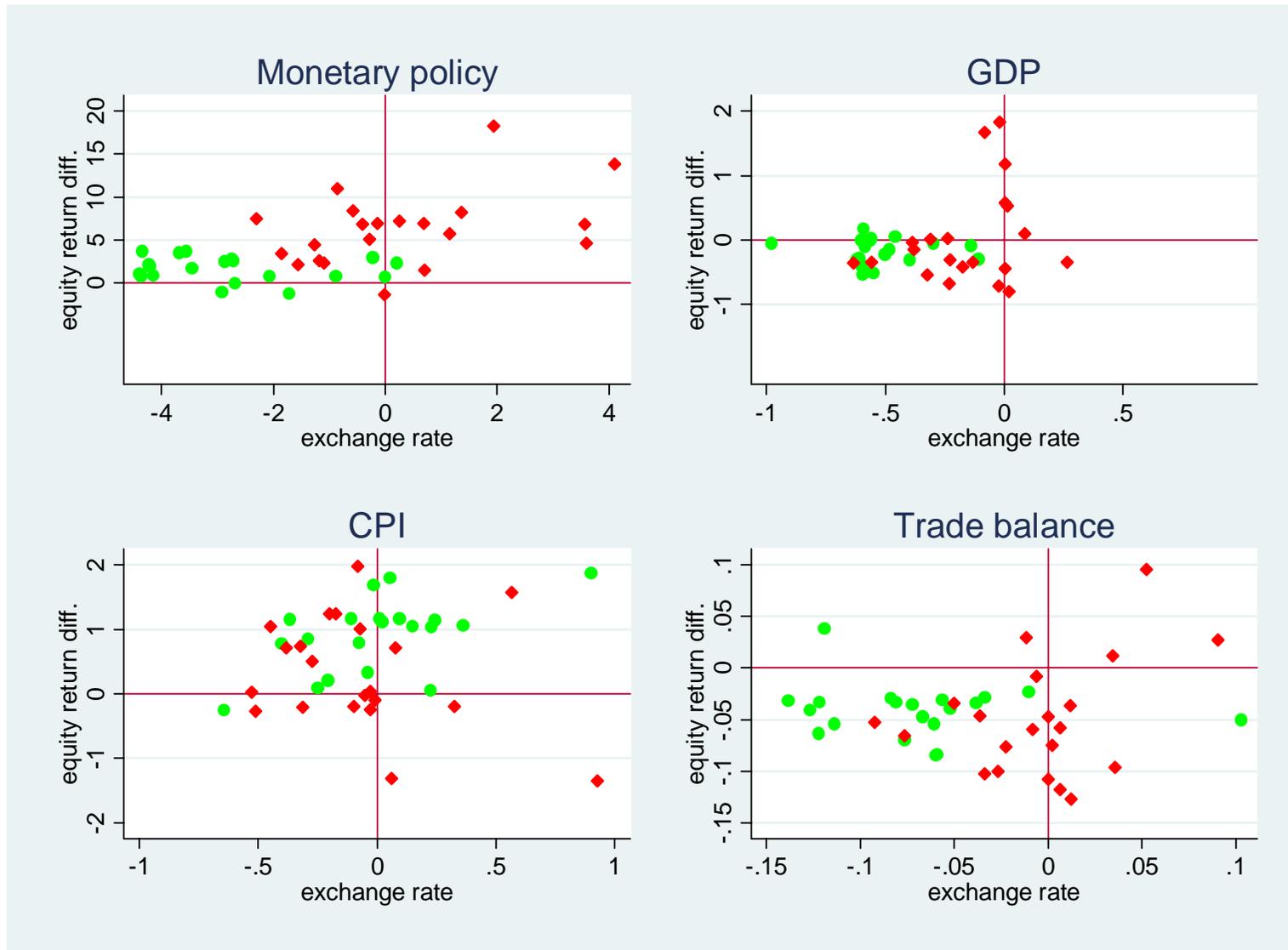
- **Cash flows (incl. expected dividends)**
- **Discount rate**
- **Risk premium (incl. risk aversion, exposure, uncertainty)**

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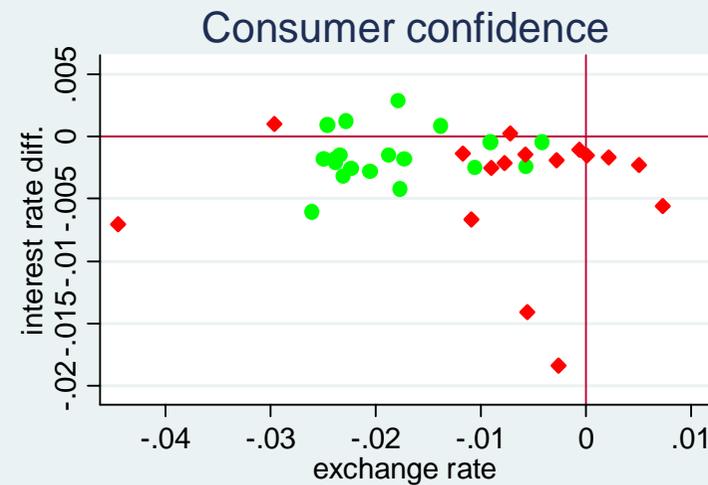
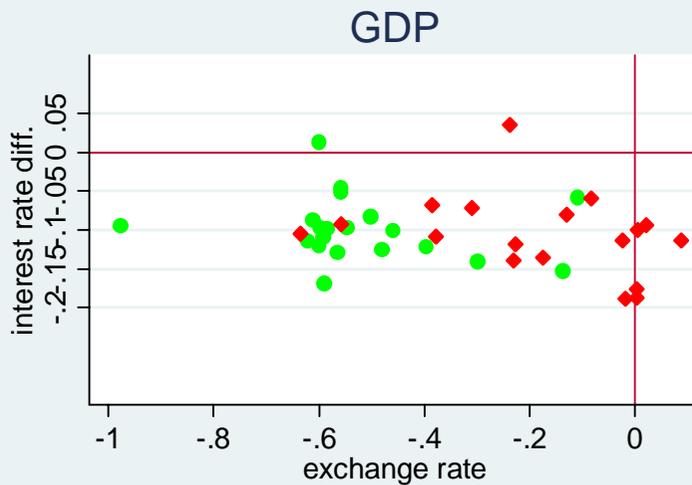
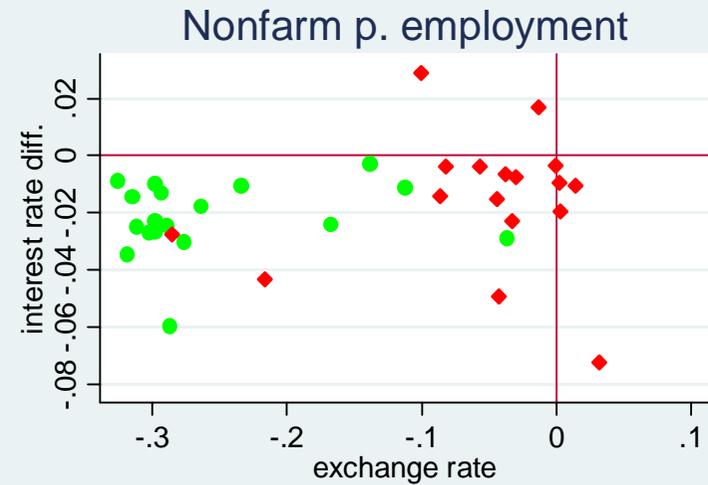
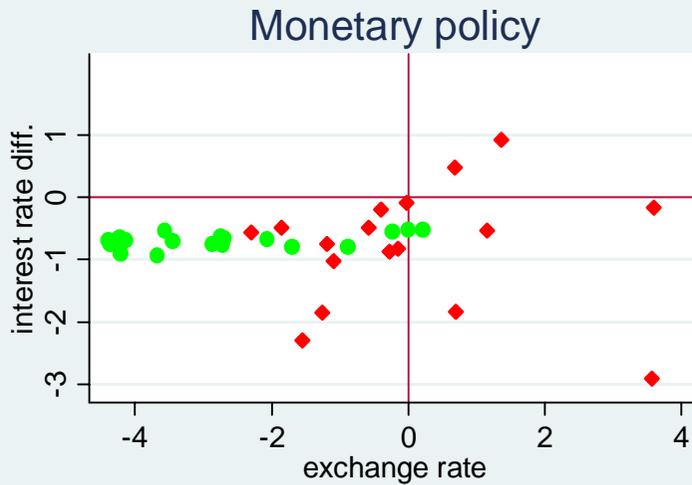
## **What drives asset prices?**

- **We need to understand what drives asset prices (and their comovements) to gauge what causes portfolio rebalancing**
- **What causes asset price reactions?**
  - ▣ **Type of shock matters (cash flow factor (dividends); discount factor; risk premium factor)**

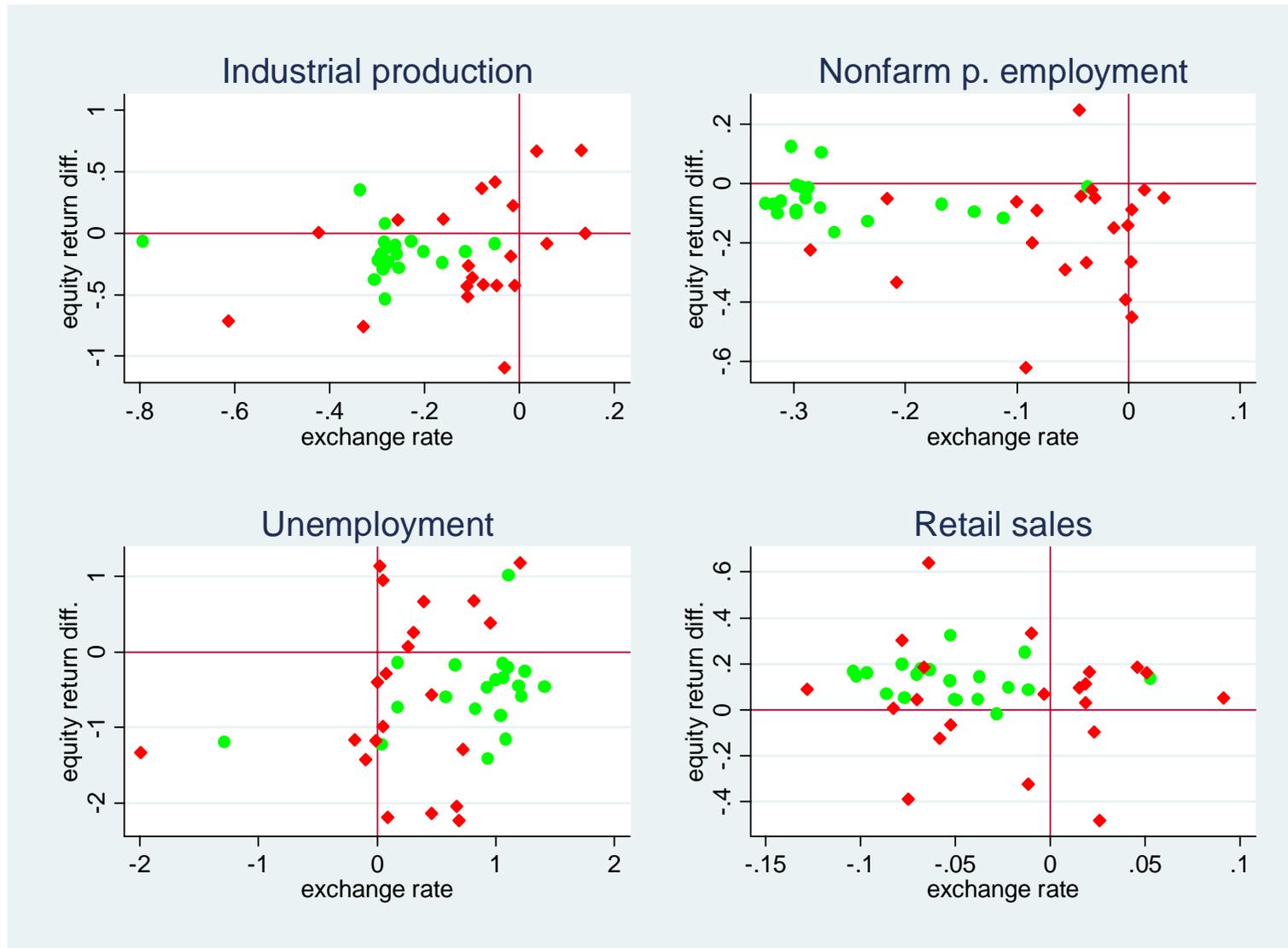
# Equity return diff. vs. exch. rate reaction



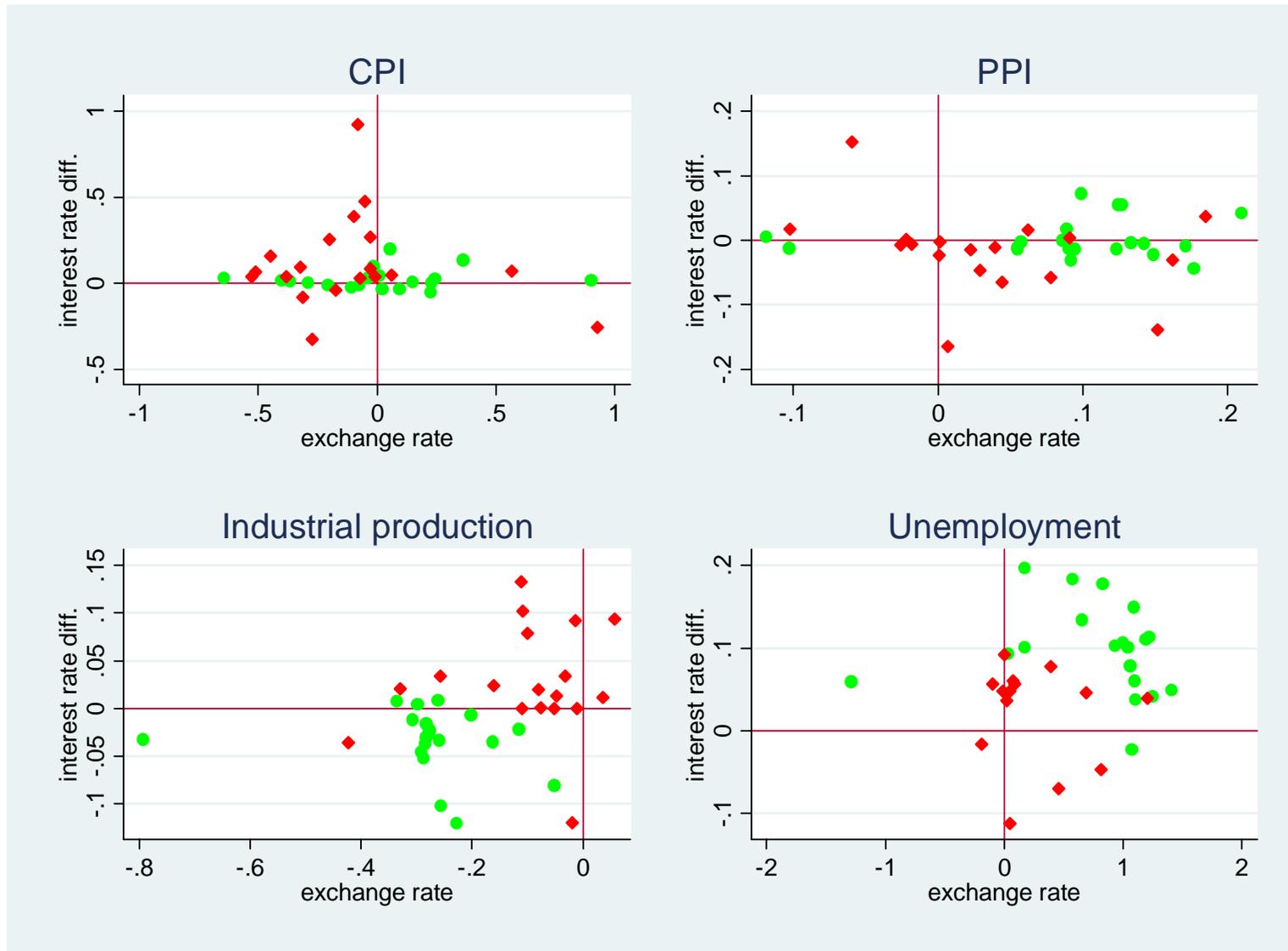
# Interest rate diff. vs. exch. rate reaction



# Equity return diff. vs. exch. rate reaction



# Interest rate diff. vs. exch. rate reaction



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## Source of asset price change matters

- **Shocks to discount rate likely to induce a negative correlation across asset classes and thus a re-balancing across assets (rather than countries)**
- **Need a richer structure to gauge type of PB; incl. other assets and time-varying, diff.  $r$** 
  - Discount rate shocks dominate in expansions; cash flow shocks in recessions (Boyd, Hu & Jagannathan 2006)
  - Substantial effect on exp. cash flows also by monetary policy shocks (Bernanke & Kuttner 2005, Ehrmann & Fratzscher 2005)
  - Strong time variations in stock-bond correlation over time (Baele, Bekaert & Inghelbrecht 2006)
  - Type of shock matters for exp. depreciation (Faust et al. 2007)

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## Other comments

- **What matters for portfolio decisions are *expectations*, not realised returns**
  - though difficult to tackle here
  - Assumption of positive correlation across expected and realised returns may not necessarily hold
- **Puzzling lagged (and large) effect of return differentials on portfolio rebalancing**
  - Flows /quantities maybe not flexible, but prices should adjust instantaneously
  - What does that imply for market efficiency?
  - Suggests source of return changes key

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## Other comments

- **Role of changes in risk preference / aversion**
- **Time-variation: Negative correlation between exchange and equity returns for all periods and countries?**

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## Summary

- **Thorough modelling and novel approach**
- **Can we gauge what type of rebalancing dominates when and under what circumstances?**
  - **Richer model structure**
  - **Source and type of shock matters**
  - **Key for identifying role of exchange rate exposure**
- **Paper makes important contribution to understanding of portfolio rebalancing**