

Are Daily Cross-Border Equity Flows Pushed or Pulled?

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Outline

- Introduction / Motivations
- Related Literature
- Theoretical Underpinnings
- Data Description
- Empirical Methodology
- Results
- Conclusions



Motivations

- Cross-border flows have become more important over time.
- Flows are volatile.
- Concerns about capital flight destabilizing behavior of foreign flows.
- Little understanding of determinants of flows.



Motivations

- Empirical evidence is quite limited
 - Typically uses annual/monthly flow data and report strong contemporaneous correlations: cannot disentangle lead-lag dynamic relationships
 - Very few studies using higher frequencies (daily, intradaily), but they do not analyze cross-country dynamics and/or do not provide theoretical rationale for stylized facts



Related Literature

● Monthly/Quarterly Flows

- Brennan – Cao, Bohn – Tesar, Karolyi, Bekaert – Harvey - Lumsdaine.

● Push-pull literature

- Calvo – Leiderman - Reinhardt, Fernandez – Arias, Chuan – Claessens – Mamingi, Edison - Warnock.

● Daily Aggregate Flows

- Froot, O'Connell, Seasholes

● Who is informed in foreign markets?

- Grinblatt and Keloharju, Seasholes (2000), Cho, Kho, and Stulz (2001), Froot – Ramadorai (2001)

● Crisis literature



Contribution of the Paper

● New model for flows

- Better understanding of equilibrium flow dynamics with home-bias and extrapolative expectations.

● New Data

- Daily — can disentangle hypothesis
- Market-wide flows
 - All flows in and out of a market

● New findings

- World factors affect flows
- What's good for US is good for flows



The Model

- Continuous-time model.
- Two countries, D and F
 - one stock in each country
 - uncorrelated returns
 - fixed amount of shares outstanding
 - investors have log-utility functions
- Domestic Investors have more extrapolative expectations for foreign stock (imperfect information or behavioral)



Perfect and imperfect markets

- With perfect markets, equilibrium holdings are in proportion of own country's wealth relative to world's wealth; doubling of stock price has no effect on flows
- Home bias induces reallocation
- Extrapolative expectations effects



The Model

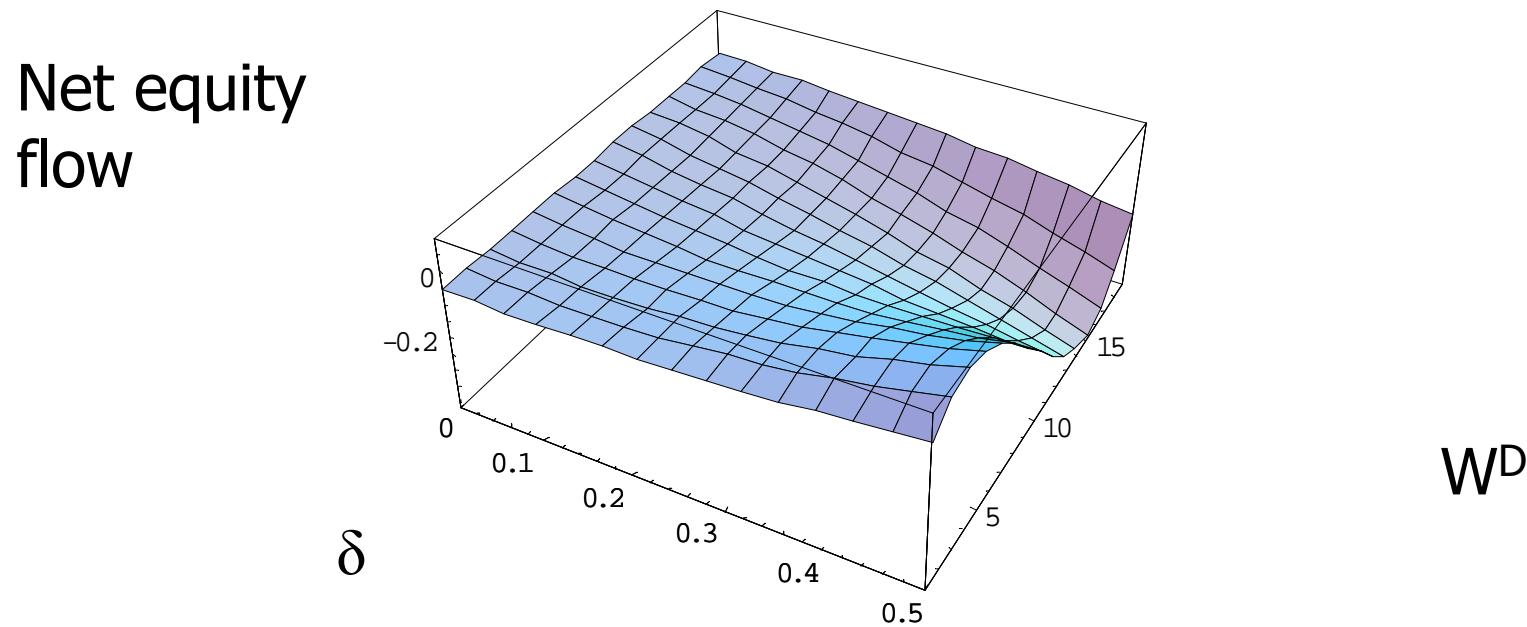
➊ Main Predictions:

- 1: Unexpectedly high returns on the *foreign* stock= net equity inflows
 - as long as domestic wealth is not too small compared to foreign wealth.
- 2: Unexpectedly high returns on the *domestic* stock= net equity inflows into the foreign country
 - but only when domestic wealth is large relative to foreign wealth.

➋ Numerical Illustration (see Figure 1B and 1C)



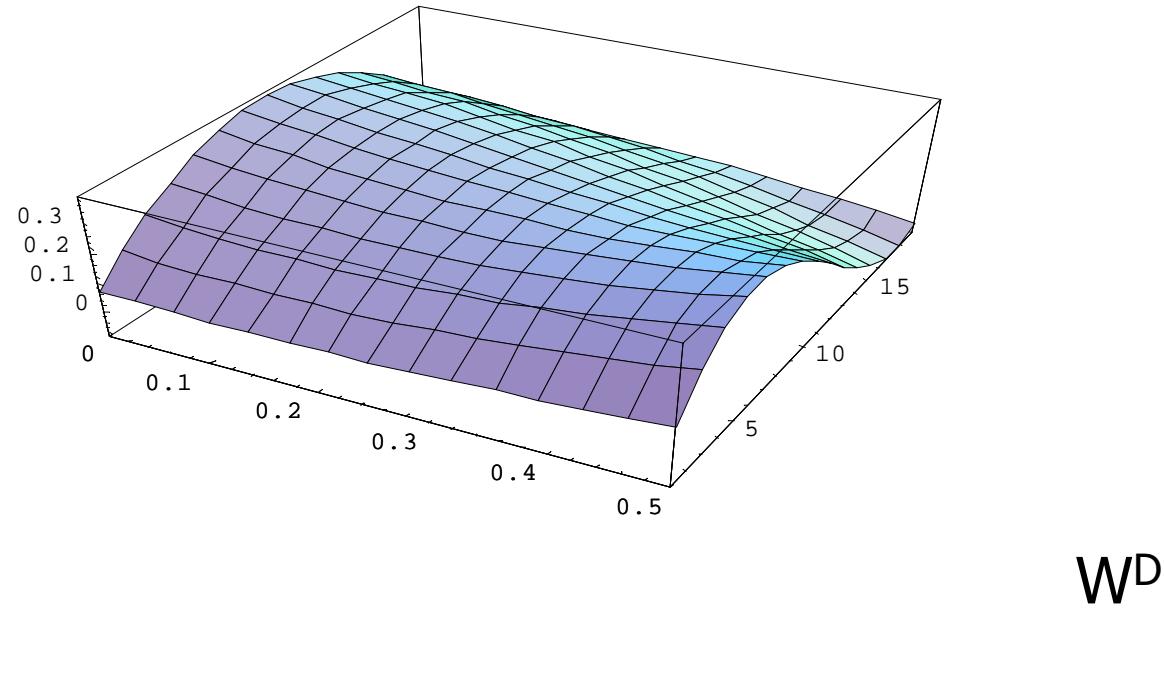
Doubling of foreign stock price: Home bias only

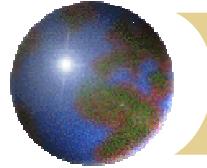




Doubling of foreign stock price: Home bias with extrapolative expectations

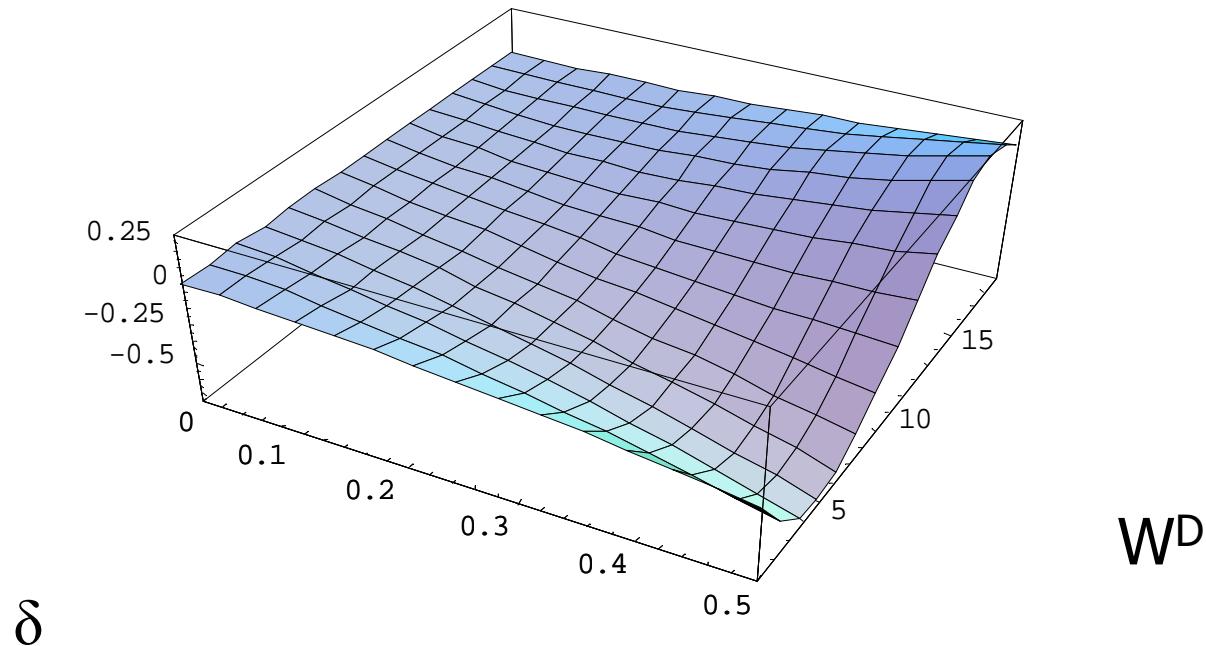
Net equity
flow





Doubling of domestic stock price: Home bias with extrapolative expectations

Net equity
flow





Data

- Need “high frequency” data to examine lead-lag in flow/return dynamics
 - Do flows lead, follow, or move with returns?
- Contacted over 60 Exchanges and Vendors
- Data for 9 emerging markets, 1996 – 2001
 - All foreign originated transactions recorded
- Returns, FX rates, and Market caps from Datastream



Empirical Methods

- Use Vector Autoregression (VAR) to uncover lead-lag dynamics

- Granger Causality Tests
- Impulse Response Functions

$$f_t = \alpha_f + \sum_{i=1}^k \lambda_i^{(r)} f_{t-i} + \sum_{j=1}^k \beta_j^{(r)} r_{t-j} + \varepsilon_{t,f}$$

$$r_t = \alpha_r + \sum_{i=1}^k \lambda_i^{(f)} f_{t-i} + \sum_{j=1}^k \beta_j^{(f)} r_{t-j} + \varepsilon_{t,r}$$



Empirical Results: Local Analysis

- Flows are much more persistent than returns
 - even after controlling for past returns
- Variation explained by VAR's in Flow equations>> than explained variation in return equations
- Lagged Flows are predictors of current returns
 - Mixed "weak" effect after controlling for contemporaneous flows
→foreign investors do not appear to be better informed



Empirical Results: Local Analysis

- Flows follow Local Market Returns
 - in East Asian countries + Slovenia
- Impact of lagged returns is robust to contemporaneous effects
- Contemporaneous effects are important
 - Intradaily forecasting, price pressure, intradaily trend chasing



Empirical Results: Cross-country analysis

- Including regional returns does not alter previous local flows/returns relationships
- Lagged regional returns positively and significantly affect flows
 - in East Asian countries + India
- North American flows have the greatest effect
 - Impact is robust to contemporaneous and lagged local returns



Economic Importance of Cross-country analysis

- Past flows only 0.24
- 16.8 % increase to 0.285 with the addition of local returns
- 12.7 % additional increase to 0.325 with the addition of regional indices
- For East Asian countries regional effects are as large as local returns effect
 - bigger for Korea and Taiwan



Empirical Results: Robustness Checks

- FX Rates impact flows weakly and in 2 countries only
- Flows/returns relationships essentially unchanged
- Flows to other countries do not significantly affect relationships
- Major findings are confirmed with US\$ returns
- Robust to East Asian crisis
- Break analysis



Conclusions

- Proposed simple model of equilibrium cross-border flows
 - barriers and extrapolative expectations
- Model generally predicts
 - Flows increasing in local market performance
 - Flows increasing in large market performance
- Empirical Analysis convincingly supports model predictions for East Asian countries
- North American market returns are economically important factor in Asian equity flows.



Conclusions

- Capital can flow into or out of a country for reasons other than local fundamentals
- Capital flows can be pushed or pulled, but push factor is different from earlier literature