Are Daily Cross-Border Equity Flows Pushed or Pulled?

John M. Griffin, Federico Nardari, René Stulz
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**

- **Daily Aggregate Flows**
  - Froot, O’Connell, Seasholes

- **Who is informed in foreign markets?**

- **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

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.

Numerical Illustration (see Figure 1B and 1C)
Doubling of foreign stock price: Home bias only

Net equity flow
Doubling of foreign stock price: 
Home bias with extrapolative expectations

Net equity flow

\[ \delta \]
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

\[
f_t = \alpha_f + \sum_{i=1}^{k} \lambda_i^{(r)} f_{t-i} + \sum_{j=1}^{k} \beta_i^{(r)} r_{t-j} + \epsilon_{t,f}
\]

\[
r_t = \alpha_r + \sum_{i=1}^{k} \lambda_i^{(f)} f_{t-i} + \sum_{j=1}^{k} \beta_i^{(f)} r_{t-j} + \epsilon_{t,r}
\]
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