

The Effect of the China Connect

Chang Ma
Fudan University

John Rogers
Federal Reserve Board

Sili Zhou
Fudan University

Conference on China and World Economy Under the Cloud of Trade Disputes: New Challenges

December 1, 2020

** The views expressed here are solely our own and should not be interpreted as reflecting the views of the Board Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System.*

Roadmap

- 1 Introduction
- 2 Institutional Details
- 3 Theoretical Motivation and Hypothesis Development
- 4 Data
- 5 Empirical Results
- 6 Conclusions

Motivation

- 1 Two views about opening capital markets to foreign investors

Motivation

- 1 Two views about opening capital markets to foreign investors
 - ▶ Efficient allocation (e.g. Chari and Henry 2004, 2008, Bekaert, Harvey and Lundblad 2005, Gupta and Yuan 2009, Larrian and Stumpner 2017)
 - ★ cost of capital falls
 - ★ investment booms
 - ★ growth rate increases

Motivation

- 1 Two views about opening capital markets to foreign investors
 - ▶ Efficient allocation (e.g. Chari and Henry 2004, 2008, Bekaert, Harvey and Lundblad 2005, Gupta and Yuan 2009, Larrian and Stumpner 2017)
 - ★ cost of capital falls
 - ★ investment booms
 - ★ growth rate increases
 - ▶ Speculative capital flows (e.g. Reinhart and Reinhart 2008, Rey 2015, Miranda-Agrippino and Rey 2020, Han and Wei 2018)
 - ★ sudden stop episodes
 - ★ global financial cycle

Motivation

- ① Two views about opening capital markets to foreign investors
 - ▶ Efficient allocation (e.g. Chari and Henry 2004, 2008, Bekaert, Harvey and Lundblad 2005, Gupta and Yuan 2009, Larrian and Stumpner 2017)
 - ★ cost of capital falls
 - ★ investment booms
 - ★ growth rate increases
 - ▶ Speculative capital flows (e.g. Reinhart and Reinhart 2008, Rey 2015, Miranda-Agrippino and Rey 2020, Han and Wei 2018)
 - ★ sudden stop episodes
 - ★ global financial cycle
- ② Previous literature estimates benefits of liberalization but not much on costs
 - ▶ e.g. Chari and Henry (2004, 2008), Bekaert et al. (2005), Mitton (2006), Moshirian, Tian, Zhang and Zhang (2020)

Motivation

- ① Two views about opening capital markets to foreign investors
 - ▶ Efficient allocation (e.g. Chari and Henry 2004, 2008, Bekaert, Harvey and Lundblad 2005, Gupta and Yuan 2009, Larrian and Stumpner 2017)
 - ★ cost of capital falls
 - ★ investment booms
 - ★ growth rate increases
 - ▶ Speculative capital flows (e.g. Reinhart and Reinhart 2008, Rey 2015, Miranda-Agrippino and Rey 2020, Han and Wei 2018)
 - ★ sudden stop episodes
 - ★ global financial cycle
- ② Previous literature estimates benefits of liberalization but not much on costs
 - ▶ e.g. Chari and Henry (2004, 2008), Bekaert et al. (2005), Mitton (2006), Moshirian, Tian, Zhang and Zhang (2020)
- ③ Related policy discussion on the effectiveness of capital controls
 - ▶ e.g. IMF (2012), Erten, Korinek, and Ocampo (2019), Rebucci and Ma (2020)

Motivation

- ① Two views about opening capital markets to foreign investors
 - ▶ Efficient allocation (e.g. Chari and Henry 2004, 2008, Bekaert, Harvey and Lundblad 2005, Gupta and Yuan 2009, Larrian and Stumpner 2017)
 - ★ cost of capital falls
 - ★ investment booms
 - ★ growth rate increases
 - ▶ Speculative capital flows (e.g. Reinhart and Reinhart 2008, Rey 2015, Miranda-Agrippino and Rey 2020, Han and Wei 2018)
 - ★ sudden stop episodes
 - ★ global financial cycle
- ② Previous literature estimates benefits of liberalization but not much on costs
 - ▶ e.g. Chari and Henry (2004, 2008), Bekaert et al. (2005), Mitton (2006), Moshirian, Tian, Zhang and Zhang (2020)
- ③ Related policy discussion on the effectiveness of capital controls
 - ▶ e.g. IMF (2012), Erten, Korinek, and Ocampo (2019), Rebucci and Ma (2020)
- ④ The empirical effect of capital controls is mixed
 - ▶ measurement issue; need a “shock” to capital controls

What We Do

Use the launch of China Connect as a policy experiment to study

- the effect of liberalization (relaxation of capital controls)

What We Do

Use the launch of China Connect as a policy experiment to study

- the effect of liberalization (relaxation of capital controls)

Why China Connect?

- by far the cleanest policy experiment for identification (Two Groups)
- rich firm-level heterogeneity

What We Do

Use the launch of China Connect as a policy experiment to study

- the effect of liberalization (relaxation of capital controls)

Why China Connect?

- by far the cleanest policy experiment for identification (Two Groups)
- rich firm-level heterogeneity

Findings

- benefits: more financial integration (risk-sharing)
 - ▶ financing costs (lower)
 - ▶ investment boom
 - ▶ profitability (higher)

What We Do

Use the launch of China Connect as a policy experiment to study

- the effect of liberalization (relaxation of capital controls)

Why China Connect?

- by far the cleanest policy experiment for identification (Two Groups)
- rich firm-level heterogeneity

Findings

- benefits: more financial integration (risk-sharing)
 - ▶ financing costs (lower)
 - ▶ investment boom
 - ▶ profitability (higher)
- costs: under the influence of *Global Financial Cycle*
 - ▶ Corporate investment more sensitive to external shocks because Key speech
 - ★ cost of funding channel (risk free rate + risk-premium)
 - ★ connect creates a “hole” in the overall “wall” of capital controls

Contribution to the Literature

1 Effects of capital account liberalization

- ▶ e.g. Henry (2000a,b, 2003), Bekaert, et al. (2005), Chari and Henry (2004, 2008), Quinn and Toyoda (2008), Mitton (2006), Gupta and Yuan (2009), Moshirian, Tian, Zhang and Zhang (2020), etc.

2 Global financial cycles and intl transmission of monetary shocks

- ▶ e.g. Rey (2015), Miranda-Agrippino and Rey (2019), di Giovanni et al. (2017), Cerutti et al. (2019), Han and Wei (2018), etc.

3 Effects of capital controls

- ▶ e.g. Lorenzoni (2008), Jeanne and Korinek (2018), Forbes et al. (2015), Ostry et al. (2012), Erten, Korinek, and Ocampo (2019), Rebucci and Ma (2020) etc.

4 Literature on China Connect

- ▶ e.g. Xing, Xu, Zheng and Zhang (2018), Liu, Wang, and Wei (2018), Bian, Chan, and Shi (2020), etc.

5 Corporate investment and macro/global uncertainty

- ▶ e.g. Ottonello and Winberry (forthcoming), Husted-Rogers-Sun (2019)

The China Connect

Important equity market liberalization of the Chinese market in mid-2010's

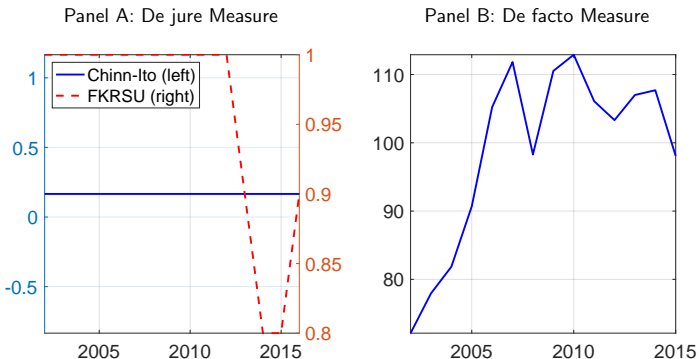
- Shanghai-Hong Kong Stock Connect announced April 2014
 - ▶ implemented in Shanghai exchange in Nov. 2014
 - ▶ extended to the Shenzhen exchange in Dec. 2016.
- Allows investors in mainland China and Hong Kong (including non-Chinese) to trade **eligible stocks** listed on the other market
 - ▶ transactions cleared through the exchange in home market
 - ▶ any foreign investors + domestic investors with at least 0.5 million RMB
 - ▶ aggregate quotas imposed daily and short selling forbidden.
- Clean identification (connected v.s. unconnected firms)

Unique Feature of the China Connect

The China Connect is a unique setting because

- Only a set of stocks can be traded.
- Overall Chinese capital controls policy remained in place.
- Very carefully designed policy experiment,
 - gradual approach as in Song and Xiong (2018)

Figure: Chinese Capital Account Restrictions



Institutional Details: Selection of Firms

- Eligible Securities for Northbound Trading under Shanghai Connect
 - ▶ All the constituent stocks of the **SSE 180 Index** and the **SSE 380 Index**
 - ▶ All the SSE-listed A shares that are not included as constituent stocks of the relevant indices but which have corresponding H shares listed on SEHK (**A-H dual listed**)
 - ▶ EXCEPT
 - ★ SSE-listed shares which are not traded in RMB;
 - ★ SSE-listed shares which are under risk alert (shares of “ST companies, “*ST companies and shares subject to the delisting process under the SSE Rules)
- Eligible Securities for Northbound Trading under Shenzhen Connect
 - ▶ All the constituent stocks of the **SZSE Component Index** and the **SZSE Small/Mid Cap Innovation Index** which have a market capitalization of not less RMB 6 billion
 - ▶ all the SZSE-listed A shares which have corresponding H shares listed on SEHK (**A-H dual listed**)
 - ▶ EXCEPT
 - ★ SZSE-listed shares which are not traded in RMB
 - ★ SZSE-listed shares which are under risk alert
- NOTE: Eligible securities will be included and excluded based on the adjustments made to the indexes.

Theoretical Framework

- The neoclassical approach to investment (see Chari and Henry (2008))
 - Marginal product of capital = Cost of funding

Theoretical Framework

- The neoclassical approach to investment (see Chari and Henry (2008))
 - Marginal product of capital = Cost of funding
- Before the Connect,

$$E[f'_i(k_i)] = E[R_{it}] \quad (1)$$

$$E[R_{it}] = r + \gamma \text{cov}(r_i, r_D) \quad (2)$$

Theoretical Framework

- The neoclassical approach to investment (see Chari and Henry (2008))
 - Marginal product of capital = Cost of funding
- Before the Connect,

$$E[f'_i(k_i)] = E[R_{it}] \quad (1)$$

$$E[R_{it}] = r + \gamma \text{cov}(r_i, r_D) \quad (2)$$

- After the Connect,

$$\underbrace{E[f'_i(k_i^*)]}_{\text{No effect}} = E[R_{it}^*] \quad (3)$$

$$E[R_{it}^*] = \underbrace{r^*}_{\text{Common shock}} + \underbrace{\gamma^* \text{cov}(r_i, r_W)}_{\text{Firm-specific risk premium}} \quad (4)$$

Effect of China Connect

Expanded market access effects: benefits

- Stock prices

$$\begin{aligned} \Delta E[R_i^*] &\equiv E[R_i] - E[R_i^*] \\ &= r - r^* + \underbrace{\gamma \text{DIFCOV}_i}_{\text{Risk-sharing}} + \underbrace{(\gamma - \gamma^*) \text{cov}(r_i, r_W)}_{\text{Difference in investors' risk-aversion}} \end{aligned}$$

where $\text{DIFCOV}_i = \text{cov}(r_i, r_M) - \text{cov}(r_i, r_W)$.

Effect of China Connect

Expanded market access effects: benefits

- Stock prices

$$\begin{aligned} \Delta E[R_i^*] &\equiv E[R_i] - E[R_i^*] \\ &= r - r^* + \underbrace{\gamma \text{DIFCOV}_i}_{\text{Risk-sharing}} + \underbrace{(\gamma - \gamma^*) \text{cov}(r_i, r_W)}_{\text{Difference in investors' risk-aversion}} \end{aligned}$$

where $\text{DIFCOV}_i = \text{cov}(r_i, r_M) - \text{cov}(r_i, r_W)$.

- Investment rates

$$\Delta E[f'_i(k_i^*)] = r - r^* + \gamma \text{DIFCOV}_i + (\gamma - \gamma^*) \text{cov}(r_i, r_W)$$

Effect of China Connect

Expanded market access effects: benefits

- Stock prices

$$\begin{aligned} \Delta E[R_i^*] &\equiv E[R_i] - E[R_i^*] \\ &= r - r^* + \underbrace{\gamma \text{DIFCOV}_i}_{\text{Risk-sharing}} + \underbrace{(\gamma - \gamma^*) \text{cov}(r_i, r_W)}_{\text{Difference in investors' risk-aversion}} \end{aligned}$$

where $\text{DIFCOV}_i = \text{cov}(r_i, r_M) - \text{cov}(r_i, r_W)$.

- Investment rates

$$\Delta E[f'_i(k_i^*)] = r - r^* + \gamma \text{DIFCOV}_i + (\gamma - \gamma^*) \text{cov}(r_i, r_W)$$

Additional effects of the Connect: costs

- Global Financial Cycle affects r^* and γ^* , and thus investment.
- Cost of funding channel

$$E[f'_i(k_i^*)] = E[R_{it}^*] = \underbrace{r^*}_{\text{Common shock}} + \underbrace{\gamma^* \text{cov}(r_i, r_W)}_{\text{Firm heterogeneity}}$$

Hypotheses

Hypothesis

Firms included in the Connect experience positive effects upon inclusion, such as higher stock prices and investment compared to firms left out of the program. Moreover, these effects are stronger for firms with a higher risk-sharing measure (i.e. a higher $DIFCOV_i$) and a higher covariance term with the global market (i.e. a higher $cov(r_i, r_W)$).

Hypothesis

Firms included in the Connect program become more sensitive to external shocks than unconnected firms, after the Connect. Moreover, firms with relatively higher sensitivity to the global market (i.e., higher $cov(r_i, r_W)$) in the Connect program have more sensitive investment expenditures to external shocks after the Connect.

Empirical Approach: Diff-in-Diff

Test for benefits: (stock price; investments; other outcomes)

$$Y_{it} = \alpha + \beta_0 * \text{Connect}_i + \beta_1 * \text{DIFCOV}_i + \beta_2 * \text{Connect}_i * \text{DIFCOV}_i + \text{Control}_{it} + \varepsilon_{it}$$

Test for costs: augmented version of the standard investment-Q specification.

$$Y_{it} = \alpha_i + \alpha_s + \beta_1 \text{Connect}_{it} + \beta_2 \text{MPS}_t^{\text{US}} + \beta_3 \text{MPS}_t^{\text{US}} \times \text{Connect}_{it} + \Gamma Z_{it} + \varepsilon_{it}$$

Quarterly-frequency regression: 2002-2019

- We control for firm fixed effect and year fixed effect
- Firm-level and macro-level control
- Standard errors at firm and year level

Careful attention to selection issues

Battery of robustness

Data Sources

U.S. Monetary Policy Shock

- (Sum of) Target, FG, and LSAP surprises from Rogers, Scotti, Wright (2018)
- Surprises in 2-hr window around FOMC announcements.
- Aggregate to quarterly frequency following Ottonello and Winberry (2018)
 - Simple sum of monthly, or
 - Weighted by time in month of FOMC meeting (Kuttner, 2001)

Chinese firm investment data from CSMAR Database

- Quarterly frequency, 2002-2019

US Monetary Policy Shock: Summary Statistics

| | Daily | Quarterly Sum | Quarterly Value-weighted |
|--------|--------------|----------------------|---------------------------------|
| Mean | -0.017 | -0.032 | -0.018 |
| Median | -0.007 | 0.000 | 0.000 |
| Std | 0.116 | 0.148 | 0.098 |
| Min | -0.603 | -0.635 | -0.574 |
| Max | 0.301 | 0.333 | 0.200 |
| Num | 222 | 121 | 121 |

Firm-level Data

Sample selection

- Time: 2002-2019
- Start from all A-share stocks and drop B-share stocks
- Drop financial and utility firms
- Require firms to have at least two years of annual reports
- Exclude firms that began to be listed in 2014
- Drop obs. with missing values for investment, Tobin's Q and cash flow

Final sample includes 109,774 firm-quarter obs and 2,120 unique firms.

Variable construction

Dependent variable

- Investment = $\frac{\text{Capital expenditure}}{\text{Lag total assets (book value)}}$
- Capital expenditure = cash payments for acquisition of fixed assets, intangible assets and long-term assets - cash receipts from selling those assets + cash paid for operating lease

Firm-level controls

- Size: log of total assets
- Tobin's Q = $\frac{\text{Total assets (book)} - \text{Equity (book)} + \text{Equity (Market)}}{\text{Total assets (Book)}}$
- Cash flow = $\frac{\text{EBIT} + \text{depreciation and amortization} - \text{interest expenses and taxes}}{\text{Lag total assets}}$
- Sales growth: growth rate of revenue

Winsorize our sample at the top and bottom 1%.

Industry and Year Distribution

| Panel A: Industry Distribution | | | | Panel B: Year Distribution | | | |
|----------------------------------|--------|-------|------------|----------------------------|--------|-------|------------|
| Industry | #Obs | #Firm | Percentage | Year | #Obs | #Firm | Percentage |
| Automobiles & Components | 5549 | 104 | 5.05% | 2002 | 2515 | 865 | 2.29% |
| Capital Goods | 22205 | 452 | 20.23% | 2003 | 3498 | 929 | 3.19% |
| Commercial Services & Supplies | 3819 | 64 | 3.48% | 2004 | 3844 | 1026 | 3.50% |
| Communications Equipment | 2467 | 50 | 2.25% | 2005 | 4073 | 1037 | 3.71% |
| Computer & Electronic Equipment | 6438 | 142 | 5.86% | 2006 | 4040 | 1060 | 3.68% |
| Computer Application | 6255 | 144 | 5.70% | 2007 | 4374 | 1167 | 3.98% |
| Consumer Durables & Apparel | 6336 | 131 | 5.77% | 2008 | 4781 | 1257 | 4.36% |
| Consumer Services | 2001 | 36 | 1.82% | 2009 | 5040 | 1290 | 4.59% |
| Energy | 3590 | 63 | 3.27% | 2010 | 5856 | 1604 | 5.33% |
| Food & Staples Retailing | 493 | 10 | 0.45% | 2011 | 7106 | 1908 | 6.47% |
| Food, Beverage & Tobacco | 6717 | 119 | 6.12% | 2012 | 8014 | 2097 | 7.30% |
| Health Care Devices and Services | 1290 | 30 | 1.18% | 2013 | 8311 | 2118 | 7.57% |
| Household & Personal Products | 454 | 8 | 0.41% | 2014 | 8143 | 2118 | 7.42% |
| Materials | 20536 | 379 | 18.71% | 2015 | 7751 | 2115 | 7.06% |
| Media | 2960 | 60 | 2.70% | 2016 | 7943 | 2119 | 7.24% |
| Medical Biology | 9161 | 166 | 8.35% | 2017 | 8047 | 2114 | 7.33% |
| Retailing | 3189 | 51 | 2.91% | 2018 | 8093 | 2115 | 7.37% |
| Semiconductors | 1000 | 20 | 0.91% | 2019 | 8345 | 2116 | 7.60% |
| Telecom Services | 349 | 7 | 0.32% | | | | |
| Transportation | 4965 | 84 | 4.52% | | | | |
| Total | 109774 | 2120 | 100.00% | Total | 109774 | | 100.00% |

Summary Statistics

Table: Firm-level Variables: Summary Statistics

| | Obs | Mean | Std.Dev. | Min | Max |
|------------------|--------|--------|----------|--------|--------|
| Capex | 109774 | 0.032 | 0.042 | -0.039 | 0.273 |
| Size | 109774 | 21.813 | 1.302 | 12.314 | 28.625 |
| Tobin Q | 109774 | 2.517 | 1.852 | 0.790 | 18.719 |
| Cash Flow | 109774 | 0.034 | 0.045 | -0.236 | 0.244 |
| Sale Growth | 109774 | 0.390 | 0.781 | -0.912 | 3.700 |
| Local GDP Growth | 109774 | 0.096 | 0.029 | -0.022 | 0.194 |

Summary statistics are consistent with other work (see Cao et al. (2016)).

Sample Selection Issues

- Would like firms to be randomly selected into the Connect. Would be surprising anywhere ...

Sample Selection Issues

- Would like firms to be randomly selected into the Connect. Would be surprising anywhere ... and shocking in China!

Sample Selection Issues

- Would like firms to be randomly selected into the Connect. Would be surprising anywhere ... and shocking in China!
- We do the following things to address this:
 - ▶ diff-in-diff estimation around Connect announcement (natural experiment)
 - ▶ test for parallel (pre-Connect) trends
 - ▶ do Heckman two-stage regression
 - ▶ re-estimate on probit model-implied “sample of common support”

Sample Selection Issues

- Would like firms to be randomly selected into the Connect. Would be surprising anywhere ... and shocking in China!
- We do the following things to address this:
 - ▶ diff-in-diff estimation around Connect announcement (natural experiment)
 - ▶ test for parallel (pre-Connect) trends
 - ▶ do Heckman two-stage regression
 - ▶ re-estimate on probit model-implied “sample of common support”
- Kweichou Moutai and Wuliangye Yibin, two top liquor firms/brands.
 - ▶ Moutai (SSE listed since 2001) one of China’s most valuable liquor companies with market cap. 108 billion RMB.
 - ▶ Wuliangye Yibin, listed on SZE has market cap. 38 billion RMB.
 - ▶ Moutai included in the Connect at end of 2014, Wuliangye Yibin was not.
 - ▶ Probit model formalizes the differences between such companies that led to different Connect selection outcomes. Model-implied probabilities define region of common support used to examine robustness of baseline estimates.

Summary Statistics: Connected vs. Unconnected Firms

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---------------|--------|-------|-----------------|--------|-------|--------------------|-----------|
| | Connected (a) | | | Unconnected (b) | | | Difference (a)-(b) | |
| | Mean | Median | S.D | Mean | Median | S.D | Mean Diff | T-test |
| <i>Panel A: One Quarter before Shanghai- Hong Kong Connect (2014Q3)</i> | | | | | | | | |
| Capex | 0.034 | 0.026 | 0.032 | 0.024 | 0.013 | 0.031 | 0.011 | *** 4.54 |
| Size | 23.077 | 22.917 | 1.337 | 21.803 | 21.772 | 1.255 | 1.273 | *** 13.03 |
| Tobin Q | 1.685 | 1.413 | 0.924 | 2.329 | 1.596 | 2.049 | -0.644 | *** -5.57 |
| Cash Flow | 0.035 | 0.029 | 0.032 | 0.010 | 0.008 | 0.037 | 0.026 | *** 9.90 |
| M/B | 2.684 | 2.128 | 1.849 | 5.075 | 2.950 | 6.325 | -2.390 | *** -7.03 |
| Cash | 0.144 | 0.120 | 0.094 | 0.140 | 0.111 | 0.105 | 0.005 | 0.62 |
| Age | 12.683 | 13.000 | 5.482 | 14.571 | 15.000 | 4.791 | -1.888 | *** -4.85 |
| Sales growth | 0.538 | 0.519 | 0.174 | 0.570 | 0.518 | 0.330 | -0.031 | 1.63 |
| Global Cov% | 0.067 | 0.067 | 0.057 | 0.069 | 0.067 | 0.060 | -0.002 | -0.23 |
| DIFCOV% | 0.317 | 0.313 | 0.109 | 0.349 | 0.346 | 0.104 | -0.032 | *** -3.98 |
| Return Volatility | 0.020 | 0.018 | 0.006 | 0.021 | 0.021 | 0.006 | -0.002 | *** -3.85 |
| MarketCap | 23.104 | 22.944 | 0.782 | 22.263 | 22.113 | 0.677 | 0.841 | *** 14.92 |
| Leverage | 0.244 | 0.243 | 0.151 | 0.253 | 0.241 | 0.182 | -0.009 | -0.69 |
| <i>Panel B: One Quarter before Shenzhen- Hong Kong Connect (2016Q3)</i> | | | | | | | | |
| Capex | 0.032 | 0.021 | 0.032 | 0.025 | 0.017 | 0.028 | 0.006 | *** 3.68 |
| Size | 22.419 | 22.298 | 0.985 | 21.512 | 21.496 | 0.850 | 0.907 | *** 17.37 |
| Tobin Q | 3.696 | 3.033 | 2.569 | 3.752 | 3.069 | 2.703 | -0.056 | -0.38 |
| Cash Flow | 0.040 | 0.034 | 0.039 | 0.021 | 0.020 | 0.033 | 0.018 | *** 8.86 |
| M/B | 4.732 | 3.966 | 3.184 | 5.460 | 4.300 | 5.381 | -0.728 | *** -2.89 |
| Cash | 0.164 | 0.129 | 0.113 | 0.149 | 0.122 | 0.101 | 0.015 | ** 2.45 |
| Age | 9.867 | 7.000 | 5.819 | 9.615 | 6.000 | 6.043 | 0.253 | 0.75 |
| Sales growth | 0.577 | 0.553 | 0.196 | 0.605 | 0.553 | 0.319 | -0.028 | * -1.91 |
| Global Cov% | 0.127 | 0.128 | 0.076 | 0.130 | 0.134 | 0.083 | -0.003 | -0.54 |
| DIFCOV% | 1.167 | 1.052 | 0.512 | 1.234 | 1.138 | 0.503 | -0.067 | ** -2.32 |
| Return Volatility | 0.020 | 0.019 | 0.005 | 0.022 | 0.021 | 0.006 | -0.002 | *** -7.60 |
| MarketCap | 23.328 | 23.248 | 0.592 | 22.515 | 22.458 | 0.402 | 0.812 | *** 27.63 |
| Leverage | 0.179 | 0.160 | 0.147 | 0.172 | 0.136 | 0.148 | 0.007 | 0.79 |

Correcting for Sample Selection

- Present results with and without correcting sample selection

| Panel A: First Wave of China Connect (2014) | | | | | | | | | | |
|---|-----------------------|--------------------------------|--------------------------|--------|-------------------|--------|--------|-----------------|--------|-----|
| Panel A1: Logit Model | | Panel A2: Effectiveness of PSM | | | | | | | | |
| Connect Dummy (Shanghai) | | Connected Firms | | | Unconnected Firms | | | Mean Difference | | |
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7)=(2)-(5) | | |
| | | N | Mean | S.D. | N | Mean | S.D. | | | |
| Stock Volatility | -7.605*** (1.177) | Stock Volatility | <i>Pre-match</i> 4,136 | 0.029 | 0.024% | 17,024 | 0.032 | 0.012% | -0.003 | *** |
| Market Cap | 0.901*** (0.015) | Stock Volatility | <i>Post-match</i> 3,805 | 0.029 | 0.024% | 3,571 | 0.029 | 0.024% | 0.000 | |
| ROA | 0.324 (0.366) | Market Cap | <i>Pre-match</i> 4,067 | 23.429 | 1.349% | 16,545 | 22.806 | 0.560% | 0.623 | *** |
| M/B | -0.301*** (0.008) | Market Cap | <i>Post-match</i> 3,805 | 23.314 | 1.212% | 3,571 | 23.168 | 1.423% | 0.145 | *** |
| Leverage | 0.460** (0.086) | ROA | <i>Pre-match</i> 4,204 | 0.023 | 0.048% | 17,568 | 0.020 | 0.026% | 0.003 | *** |
| Constant | -21.042*** (0.346) | ROA | <i>Post-match</i> 3,805 | 0.023 | 0.051% | 3,571 | 0.023 | 0.056% | 0.001 | |
| Observations | 46459 | M/B | <i>Pre-match</i> 4,067 | 3.008 | 3.650% | 16,545 | 5.469 | 4.423% | -2.461 | *** |
| Pseudo R ² | 0.152 | M/B | <i>Post-match</i> 3,805 | 3.117 | 3.819% | 3,571 | 4.158 | 7.038% | -1.041 | *** |
| | | Leverage | <i>Pre-match</i> 4,204 | 0.231 | 0.236% | 17,568 | 0.190 | 0.120% | 0.041 | *** |
| | | Leverage | <i>Post-match</i> 3,805 | 0.229 | 0.252% | 3,571 | 0.211 | 0.271% | 0.018 | *** |
| Panel B: Two Waves of China Connect (2014-2019) | | | | | | | | | | |
| Panel B1: Logit Model | | Panel B2: Effectiveness of PSM | | | | | | | | |
| Connect Dummy | | Connected Firms | | | Unconnected Firms | | | Mean Difference | | |
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7)=(2)-(5) | | |
| | | N | Mean | S.D. | N | Mean | S.D. | | | |
| Stock Volatility | -27.310*** (0.984) | Stock Volatility | <i>Pre-match</i> 20,195 | 0.025 | 0.008% | 88,432 | 0.028 | 0.004% | -0.003 | *** |
| Market Cap | 1.672*** (0.013) | Stock Volatility | <i>Post-match</i> 16,464 | 0.025 | 0.009% | 16,684 | 0.026 | 0.008% | 0.000 | *** |
| ROA | -7.353*** (0.263) | Market Cap | <i>Pre-match</i> 19,964 | 23.257 | 0.588% | 87,551 | 21.990 | 0.316% | 1.267 | *** |
| M/B | -0.170*** (0.004) | Market Cap | <i>Post-match</i> 16,464 | 23.067 | 0.555% | 16,684 | 23.069 | 0.691% | -0.002 | |
| Leverage | -0.409*** (0.066) | ROA | <i>Pre-match</i> 20,415 | 0.027 | 0.030% | 89,329 | 0.021 | 0.014% | 0.006 | *** |
| Constant | -37.733*** (0.296) | ROA | <i>Post-match</i> 16,464 | 0.026 | 0.033% | 16,684 | 0.027 | 0.035% | 0.000 | |
| Observations | 107173 | M/B | <i>Pre-match</i> 19,964 | 3.106 | 1.809% | 87,475 | 3.753 | 1.328% | -0.647 | *** |
| Pseudo R ² | 0.303 | M/B | <i>Post-match</i> 16,464 | 3.144 | 2.046% | 16,684 | 3.225 | 2.038% | -0.081 | *** |
| | | Leverage | <i>Pre-match</i> 20,415 | 0.223 | 0.108% | 89,329 | 0.228 | 0.057% | -0.006 | *** |
| | | Leverage | <i>Post-match</i> 16,464 | 0.221 | 0.121% | 16,684 | 0.219 | 0.128% | 0.002 | |

Hypothesis 1: positive effects of the Connect

Is being in the Connect a bad thing? No.

- if being in the Connect were bad, firms would lobby/ behave to stay out
- existing literature: following stock market liberalizations, firms exhibit sizable stock price revaluations, reduction in risk, and increased growth rate of capital stock (Chari and Henry (JFE 2008 and JF 2004))

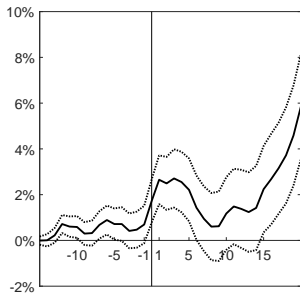
We also find connected firms have

- lower funding cost
- higher investment
- better performance

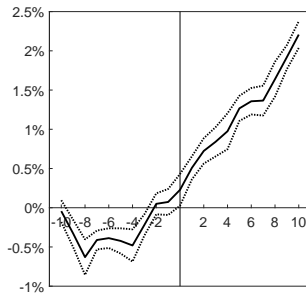
Risk-sharing channel works.

Positive Effect: Time-series Findings

Panel A: Stock Prices (Cumulative Abnormal Return)



Panel B: Investment Rates



Positive Effects: Panel Regression Results on Stock Prices

| | Month [-1] | | | Month [-1, 0] | | | Month [-1, 1] | | | Month [-1, 2] | | |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Connect | -0.002 (0.023) | -0.036 (0.024) | -0.033 (0.025) | 0.112*** (0.032) | 0.050 (0.034) | 0.045 (0.034) | 0.427*** (0.049) | 0.263*** (0.052) | 0.258*** (0.053) | 0.193*** (0.046) | 0.092* (0.049) | 0.098** (0.050) |
| Connect*DIFCOV | | 0.040 (0.032) | 0.035 (0.033) | | 0.090* (0.048) | 0.099** (0.049) | | 0.336*** (0.080) | 0.346*** (0.083) | | 0.146** (0.069) | 0.135* (0.071) |
| Connect*Global Cov | | | -0.041 (0.078) | | | 0.088 (0.112) | | | 0.071 (0.197) | | | -0.140 (0.178) |
| Global Cov | | | -0.039 (0.042) | | | 0.017 (0.056) | | | 0.088 (0.087) | | | 0.100 (0.085) |
| DIFCOV | | -0.079*** (0.012) | -0.082*** (0.012) | | -0.126*** (0.016) | -0.124*** (0.016) | | -0.257*** (0.023) | -0.249*** (0.024) | | -0.203*** (0.022) | -0.195*** (0.023) |
| MarketCap | 0.010* (0.005) | 0.008 (0.005) | 0.008 (0.005) | 0.008 (0.007) | 0.005 (0.007) | 0.005 (0.007) | 0.058*** (0.010) | 0.052*** (0.010) | 0.053*** (0.011) | 0.078*** (0.010) | 0.074*** (0.010) | 0.075*** (0.010) |
| Volatility | 5.532*** (0.415) | 5.674*** (0.409) | 5.679*** (0.409) | 12.606*** (0.580) | 13.088*** (0.595) | 13.089*** (0.594) | 13.031*** (0.766) | 14.891*** (0.832) | 14.878*** (0.831) | 12.899*** (0.736) | 14.533*** (0.805) | 14.512*** (0.804) |
| Constant | -0.289*** (0.075) | -0.228*** (0.075) | -0.222*** (0.075) | -0.423*** (0.102) | -0.331*** (0.102) | -0.332*** (0.103) | -1.342*** (0.147) | -1.167*** (0.152) | -1.180*** (0.153) | -1.540*** (0.141) | -1.416*** (0.146) | -1.436*** (0.147) |
| IMR | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2339 | 2260 | 2260 | 2312 | 2233 | 2233 | 2264 | 2187 | 2187 | 2196 | 2121 | 2121 |
| Adjusted R ² | 0.164 | 0.171 | 0.172 | 0.359 | 0.371 | 0.372 | 0.448 | 0.484 | 0.485 | 0.420 | 0.447 | 0.448 |

Positive Effects: Panel Regression Results on Investment

| | Investment | | | | | |
|-------------------------|---------------------|---------------------|---------------------|------------------------------------|---------------------|---------------------|
| | Panel A: Raw Sample | | | Panel B: Propensity Score Matching | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Connect | 0.007*** (0.001) | -0.001 (0.003) | -0.002 (0.004) | 0.005*** (0.001) | -0.001 (0.004) | -0.002 (0.004) |
| Connect*DIFCOV | | 0.016** (0.007) | 0.018* (0.008) | | 0.014* (0.007) | 0.017** (0.007) |
| Connect*Global Cov | | | 0.010 (0.018) | | | 0.013 (0.022) |
| Global Cov | | | 0.029** (0.012) | | | 0.039 (0.028) |
| DIFCOV | | -0.016** (0.005) | -0.013** (0.005) | | -0.013 (0.007) | -0.010 (0.008) |
| Size | -0.001 (0.001) | -0.002 (0.001) | -0.001 (0.001) | -0.001 (0.001) | -0.001 (0.001) | -0.001 (0.001) |
| Tobin's Q | 0.001** (0.000) | 0.001** (0.000) | 0.001** (0.000) | 0.001 (0.000) | 0.001 (0.001) | 0.001 (0.000) |
| Cash Flow | 0.190*** (0.010) | 0.189*** (0.012) | 0.192*** (0.011) | 0.225*** (0.016) | 0.221*** (0.017) | 0.226*** (0.017) |
| Sales Growth | 0.004*** (0.000) | 0.004*** (0.000) | 0.004*** (0.000) | 0.003*** (0.001) | 0.003*** (0.001) | 0.003*** (0.001) |
| GDP Growth | 0.044 (0.027) | 0.046 (0.025) | 0.045 (0.024) | -0.041 (0.061) | -0.031 (0.058) | -0.035 (0.051) |
| Constant | -0.004 (0.026) | 0.013 (0.032) | 0.009 (0.031) | -0.003 (0.035) | 0.010 (0.037) | 0.005 (0.035) |
| IMR | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 19404 | 18484 | 18484 | 7072 | 6804 | 6804 |
| Adjusted R ² | 0.100 | 0.107 | 0.109 | 0.129 | 0.132 | 0.136 |

Positive Effect on Firm Outcomes

| | EBIT (1) | Sales Growth (2) | Ln (Cost of Debt) (%) (3) | Change of ln(D/P)(%) (4) | Leverage (5) | Seasonal Equity Offering (6) |
|----------------|---------------------|----------------------|------------------------------|-----------------------------|----------------------|---------------------------------|
| Connect | 0.035* (0.017) | 0.038** (0.011) | -0.090** (0.027) | -0.053*** (0.007) | -0.036*** (0.009) | 0.018** (0.005) |
| Size | -0.008 (0.006) | -0.001 (0.002) | -0.003 (0.011) | 0.013** (0.004) | 0.009*** (0.002) | -0.012*** (0.002) |
| Tobin's Q | 0.005 (0.003) | -0.006*** (0.001) | 0.001 (0.009) | 0.010*** (0.001) | -0.002 (0.002) | 0.006 (0.004) |
| Cash Flow | 0.817*** (0.120) | 0.107* (0.054) | 0.533*** (0.134) | -0.531*** (0.124) | -0.221** (0.067) | -0.077 (0.076) |
| Sales Growth | 0.009 (0.005) | 0.986*** (0.001) | -0.012* (0.005) | 0.037*** (0.009) | 0.005*** (0.001) | 0.004 (0.003) |
| GDP Growth | -0.310 (0.439) | 0.179 (0.283) | -0.189 (0.305) | -0.373 (0.224) | -0.207 (0.153) | -0.067 (0.402) |
| Constant | 0.116 (0.098) | -0.359*** (0.038) | 0.011 (0.271) | -0.241** (0.082) | -0.176** (0.068) | 0.249*** (0.052) |
| IMR | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 19404 | 19404 | 19404 | 19404 | 19404 | 19404 |
| Adjusted R^2 | 0.004 | 0.980 | 0.025 | 0.010 | 0.039 | 0.003 |

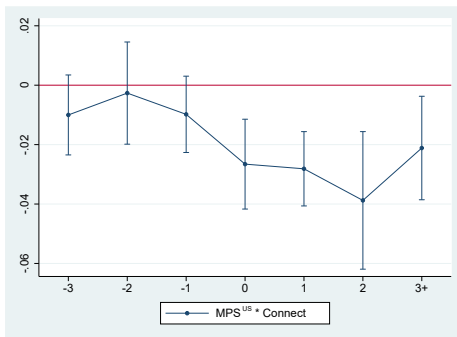
Results for Hypothesis 2

Augmented version of the standard investment-Q specification.

$$Y_{it} = \alpha_i + \alpha_s + \beta_1 \text{Connect}_{it} + \beta_2 \text{MPS}_t^{\text{US}} + \beta_3 \text{MPS}_t^{\text{US}} \times \text{Connect}_{it} + \Gamma Z_{it} + \varepsilon_{it}$$

| | Investment | | | | | | | | |
|--------------------|---------------------|----------------------|----------------------|---------------------|----------------------|----------------------|---------------------------|----------------------|----------------------|
| | OLS Regression | | | Heckman Two-Stage | | | Propensity Score Matching | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Connect | 0.001* (0.001) | 0.001 (0.001) | 0.001 (0.001) | 0.023*** (0.003) | 0.030*** (0.003) | 0.023*** (0.003) | 0.021*** (0.003) | 0.028*** (0.003) | 0.023*** (0.003) |
| MPS*Connect | | -0.015*** (0.005) | -0.018*** (0.005) | | -0.023*** (0.005) | -0.023*** (0.005) | | -0.015*** (0.005) | -0.014*** (0.004) |
| MPS | | -0.007*** (0.002) | -0.010*** (0.003) | | -0.009*** (0.002) | -0.011*** (0.003) | | -0.009*** (0.003) | -0.010*** (0.003) |
| Size | 0.001** (0.001) | | 0.001** (0.001) | -0.001* (0.001) | | -0.001** (0.001) | -0.003*** (0.001) | | -0.004*** (0.001) |
| Lag Tobin Q | 0.001*** (0.000) | | 0.001*** (0.000) | 0.001** (0.000) | | 0.001*** (0.000) | 0.001* (0.000) | | 0.000 (0.000) |
| Cash Flow | 0.163*** (0.009) | | 0.164*** (0.009) | 0.150*** (0.009) | | 0.151*** (0.009) | 0.110*** (0.011) | | 0.109*** (0.011) |
| Sales Growth | 0.002*** (0.001) | | 0.002*** (0.001) | 0.002*** (0.001) | | 0.002*** (0.001) | 0.004*** (0.001) | | 0.005*** (0.001) |
| GDP Growth | 0.035*** (0.017) | | 0.037** (0.017) | 0.038** (0.017) | | 0.041** (0.017) | 0.006 (0.025) | | 0.009 (0.025) |
| Constant | -0.021 (0.016) | 0.013** (0.006) | -0.024 (0.016) | 0.033* (0.019) | 0.007 (0.008) | 0.031* (0.019) | 0.072*** (0.026) | 0.002 (0.006) | 0.076*** (0.026) |
| IMR | No | No | No | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Quarter Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 109774 | 109774 | 109774 | 102862 | 102862 | 102862 | 30575 | 30575 | 30575 |
| Adjusted R-squared | 0.392 | 0.371 | 0.393 | 0.402 | 0.386 | 0.403 | 0.513 | 0.499 | 0.514 |

Parallel Trend Assumption Test



NOTE. The figure plots corporate investment sensitivity to MPS^{US} of connected firms relative to unconnected firms, i.e, the coefficients of $\{\beta_s\}_{s=-3}^3$ estimated from $Y_{it} = \alpha_i + \alpha_s + \sum_{s=-3}^3 \beta_s \text{Connect}_{it+s} \times MPS_t^{US} + MPS_t^{US} + \Gamma Z_{it} + \varepsilon_{it}$. We also present a 95 % confidence interval.

Robustness

We also run other robustness test

- Alter the definition of Connect dummy
- Preserve the two big waves of the Connect
- Add other macro variables
- Alternative specification to the baseline model
 - ▶ Industry fixed effects, including lagged dependent variable, alternative measure of monetary shock, including lagged monetary policy, drop A-H and A-B dual listed stocks
- Other measures of external shocks
 - ▶ VIX, Dollar Return, RMB/USD, Monetary Policy Uncertainty Index, New-based Economic Uncertainty Index, Global Economic Policy Uncertainty Index, World Uncertainty Index, Ted Rate

Robustness: Alternative specification to the baseline model

| | | Investment | | | | | |
|---|----------------------|----------------------|----------------------|--|----------------------|----------------------|----------------------|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>Panel A: Industry Fixed Effect</i> | | | | <i>Panel D: Alternative Measure of Monetary Surprise</i> | | | |
| MPS ^{US} *Connect | -0.010*** (0.003) | -0.015*** (0.004) | -0.013*** (0.003) | BRW*Connect | -0.017*** (0.005) | -0.020*** (0.006) | -0.024*** (0.006) |
| MPS ^{US} | -0.008*** (0.001) | -0.010*** (0.001) | -0.010*** (0.001) | BRW | -0.007*** (0.002) | -0.007*** (0.002) | -0.008*** (0.002) |
| Connect | 0.005*** (0.001) | 0.001 (0.001) | -0.009*** (0.003) | Connect | 0.001 (0.001) | 0.002** (0.001) | 0.024*** (0.003) |
| Observations | 109774 | 109774 | 102862 | Observations | 93336 | 89189 | 86953 |
| Adjusted R ² | 0.172 | 0.219 | 0.224 | Adjusted R ² | 0.382 | 0.410 | 0.414 |
| <i>Panel B: Drop Dual-listed Stocks</i> | | | | <i>Panel E: Including Lagged Dependent Variable</i> | | | |
| MPS ^{US} *Connect | -0.016*** (0.005) | -0.018*** (0.005) | -0.024*** (0.005) | MPS ^{US} *Connect | -0.023*** (0.005) | -0.024*** (0.005) | -0.027*** (0.005) |
| MPS ^{US} | -0.007*** (0.002) | -0.010*** (0.002) | -0.011*** (0.002) | MPS ^{US} | -0.007*** (0.003) | -0.009*** (0.003) | -0.009*** (0.003) |
| Connect | 0.002* (0.001) | 0.001 (0.001) | 0.025*** (0.003) | Connect | 0.000 (0.001) | 0.001 (0.001) | 0.013*** (0.002) |
| Observations | 101833 | 101833 | 95284 | Lag DV | 0.544*** (0.031) | 0.535*** (0.031) | 0.532*** (0.031) |
| Adjusted R ² | 0.365 | 0.387 | 0.397 | Observations | 105281 | 105281 | 102862 |
| <i>Panel C: Size</i> | | | | <i>Panel F: Including Lagged Monetary Policy Shock</i> | | | |
| MPS ^{US} *Connect | -0.011* (0.006) | -0.014** (0.006) | -0.019*** (0.006) | MPS ^{US} *Connect | -0.016*** (0.005) | -0.018*** (0.005) | -0.024*** (0.005) |
| MPS ^{US} *Size | -0.003 (0.002) | -0.003* (0.001) | -0.003* (0.002) | MPS ^{US} | -0.009*** (0.003) | -0.011*** (0.003) | -0.012*** (0.003) |
| MPS ^{US} | 0.049 (0.034) | 0.048* (0.029) | 0.053* (0.032) | Lag MPS ^{US} * Connect | 0.002 (0.005) | 0.001 (0.005) | 0.000 (0.005) |
| Connect | 0.001* (0.001) | 0.001 (0.001) | 0.024*** (0.003) | Lag MPS ^{US} | -0.005* (0.003) | -0.005* (0.003) | -0.007** (0.003) |
| Size | -0.000 (0.001) | 0.001** (0.001) | -0.002** (0.001) | Connect | 0.001 (0.001) | 0.001 (0.001) | 0.024*** (0.003) |
| Observations | 109774 | 109774 | 102862 | Observations | 109774 | 109774 | 102862 |
| Adjusted R ² | 0.371 | 0.393 | 0.403 | Adjusted R ² | 0.371 | 0.393 | 0.403 |
| Firm Controls | No | Yes | Yes | Firm Controls | No | Yes | Yes |
| IMR | No | No | Yes | IMR | No | No | Yes |
| Firm FE | Yes | Yes | Yes | Firm FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Year FE | Yes | Yes | Yes |
| Quarter Dummy | Yes | Yes | Yes | Quarter Dummy | Yes | Yes | Yes |

Robustness: Other measures of external shocks

| | Investment | | | | | |
|--|----------------------|----------------------|---|----------------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>Panel A: VIX Index from CBOE S&P 500</i> | | | <i>Panel E: News-based Economic Uncertainty Index from BBD</i> | | | |
| MPS ^{US} *Connect | -0.015*** (0.005) | -0.018*** (0.005) | -0.023*** (0.005) | MPS ^{US} *Connect | -0.018*** (0.005) | -0.020*** (0.005) |
| Log(VIX)*Connect | -0.001 (0.002) | -0.001 (0.002) | 0.002 (0.002) | EPU*Connect | 0.002 (0.001) | 0.001 (0.001) |
| Connect | 0.005 (0.004) | 0.003 (0.004) | 0.019*** (0.005) | Connect | -0.001 (0.002) | -0.001 (0.002) |
| Observations | 109774 | 109774 | 102862 | Observations | 109774 | 109774 |
| Adjusted R ² | 0.371 | 0.393 | 0.403 | Adjusted R ² | 0.371 | 0.393 |
| <i>Panel B: Dollar Index Return</i> | | | <i>Panel F: Global Economic Policy Uncertainty Index from BBD</i> | | | |
| MPS ^{US} *Connect | -0.008 (0.006) | -0.011** (0.005) | -0.017*** (0.006) | MPS ^{US} *Connect | -0.015*** (0.005) | -0.017*** (0.005) |
| Dollar Return*Connect | -0.012 (0.015) | -0.012 (0.015) | -0.009 (0.013) | GEPU *Connect | 0.000 (0.001) | -0.000 (0.001) |
| Connect | 0.001 (0.001) | 0.001 (0.001) | 0.023*** (0.003) | Connect | 0.001 (0.002) | 0.001 (0.002) |
| Observations | 109774 | 109774 | 102862 | Observations | 109774 | 109774 |
| Adjusted R ² | 0.372 | 0.393 | 0.403 | Adjusted R ² | 0.371 | 0.393 |
| <i>Panel C: Exchange Rate Return of RMBUSD</i> | | | <i>Panel G: World Uncertainty Index from ABF</i> | | | |
| MPS ^{US} *Connect | -0.014** (0.006) | -0.016*** (0.006) | -0.024*** (0.006) | MPS ^{US} *Connect | -0.015*** (0.005) | -0.017*** (0.005) |
| RMBUSD *Connect | 0.050*** (0.017) | 0.031* (0.017) | 0.038** (0.017) | WUI *Connect | 0.001 (0.000) | 0.000 (0.000) |
| Connect | 0.001 (0.001) | 0.001 (0.001) | 0.023*** (0.003) | Connect | 0.000 (0.001) | 0.001 (0.001) |
| Observations | 109774 | 109774 | 102862 | Observations | 109774 | 109774 |
| Adjusted R ² | 0.371 | 0.393 | 0.403 | Adjusted R ² | 0.371 | 0.393 |
| <i>Panel D: Monetary Policy Uncertainty Index from HRS</i> | | | <i>Panel H: Tedrate</i> | | | |
| MPS ^{US} *Connect | -0.015*** (0.005) | -0.018*** (0.005) | -0.023*** (0.005) | MPS ^{US} *Connect | -0.014*** (0.005) | -0.017*** (0.005) |
| MPU*Connect | -0.000 (0.001) | -0.000 (0.001) | -0.001 (0.001) | Tedrate *Connect | 0.007 (0.005) | 0.005 (0.005) |
| Connect | 0.001 (0.002) | 0.001 (0.001) | 0.025*** (0.003) | Connect | -0.001 (0.002) | -0.001 (0.002) |
| Observations | 109774 | 109774 | 102862 | Observations | 109774 | 109774 |
| Adjusted R ² | 0.371 | 0.393 | 0.403 | Adjusted R ² | 0.371 | 0.393 |
| IMR | No | No | Yes | IMR | No | No |
| Firm Controls | No | Yes | Yes | Firm Controls | No | Yes |
| Firm FE | Yes | Yes | Yes | Firm FE | Yes | Yes |
| Year FE | Yes | Yes | Yes | Year FE | Yes | Yes |
| Quarter Dummy | Yes | Yes | Yes | Quarter Dummy | Yes | Yes |

Placebo test: Chinese monetary policy

| Investment | | | | | | |
|--|------------------|------------------|------------------|----------------------|----------------------|----------------------|
| Panel A: Chinese Monetary Policy Shock | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| MPS ^{China} | 0.031 (0.038) | 0.028 (0.037) | 0.036 (0.036) | 0.026 (0.038) | 0.020 (0.037) | 0.025 (0.035) |
| Connect | 0.001 (0.001) | 0.002 (0.001) | 0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) |
| MPS ^{China} *Connect | | 0.037 (0.057) | 0.019 (0.055) | | 0.077 (0.059) | 0.065 (0.056) |
| MPS ^{US} | | | | -0.007*** (0.003) | -0.007** (0.003) | -0.009*** (0.003) |
| MPS ^{US} *Connect | | | | | -0.021*** (0.006) | -0.023*** (0.006) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Quarter Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 105639 | 105639 | 105639 | 105639 | 105639 | 105639 |
| Adjusted R^2 | 0.375 | 0.375 | 0.397 | 0.376 | 0.376 | 0.398 |

Chinese monetary policy shock identified by Chen, Ren and Zha (2018).

Placebo test: Pre-China Connect

| Investment | | | | | | |
|--|-----------------------|--------------------------------|---------------------|-----------------------|--------------------------------|---------------------|
| Panel B: Period before the China Connect | | | | | | |
| | Pre QFII 1998-2002 | Pre China Connect 2003-2013 | All 1998-2013 | Pre QFII 1998-2002 | Pre China Connect 2003-2013 | All 1998-2013 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| MPS ^{US} *Connect ₂₀₁₄ | -0.006 (0.006) | -0.001 (0.003) | -0.003 (0.002) | -0.006 (0.009) | -0.001 (0.003) | -0.003 (0.002) |
| MPS ^{US} | -0.010 (0.040) | -0.007** (0.003) | -0.006** (0.003) | -0.009 (0.050) | -0.007** (0.003) | -0.006** (0.003) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | No | No | No |
| Quarter Dummy | Yes | Yes | Yes | No | No | No |
| Sector*Quarter FE | No | No | No | Yes | Yes | Yes |
| Observations | 3393 | 55452 | 58845 | 3393 | 55452 | 58845 |
| Adjusted R^2 | 0.540 | 0.453 | 0.438 | 0.545 | 0.458 | 0.444 |

Effects of China Connect: Channels

- Directly raising capital from China Connect is unlikely
- Cost of funding channel at work
- We provide three sets of results

1. Stock price responses around FOMC

| | Return(0,+1) Market Adjusted Model | | | Return (0,+1) CAPM Model | | |
|----------------------------|------------------------------------|---------------------|----------------------|--------------------------|----------------------|----------------------|
| | Pre QFII | Pre China Connect | China Connect | Pre QFII | Pre China Connect | China Connect |
| | 2000-2003 | 2003-2014 | 2014-2019 | 2000-2003 | 2003-2014 | 2014-2019 |
| MPS ^{US} *Connect | -0.000 (0.002) | -0.004 (0.004) | -0.048*** (0.006) | 0.004 (0.002) | -0.004 (0.002) | -0.041*** (0.006) |
| MPS ^{US} | 0.004** (0.002) | -0.005** (0.002) | -0.045*** (0.004) | 0.000 (0.001) | -0.001 (0.001) | -0.032*** (0.004) |
| Connect | -0.001** (0.000) | 0.001*** (0.000) | -0.001*** (0.000) | 0.000 (0.000) | -0.000 (0.000) | -0.000 (0.000) |
| Constant | 0.001 (0.001) | -0.000 (0.000) | -0.001*** (0.000) | -0.002*** (0.001) | -0.003*** (0.000) | -0.005*** (0.000) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 24672 | 99427 | 89922 | 22627 | 97395 | 85777 |
| Adjusted R ² | 0.001 | 0.003 | 0.018 | 0.001 | 0.005 | 0.012 |

Effects of China Connect: Channels

Additional evidence

- 2. Risk Premium Channel: Replace *Connect* by $cov(r_i, r_W) * Connect$
- 3. External Financing Channel

| Investment | | | | | | | | | | | | |
|--|----------------------|----------------------|----------------------|-------------------------------------|----------------------|----------------------|----------------------|------------------------------|----------------------|----------------------|----------------------|----------------------|
| Panel A: Risk Premium Channel | | | | Panel B: External Financing Channel | | | | | | | | |
| | | | | Equity Dependence to Investment | | | | Long-term Debt to Investment | | | | |
| | | | | High | Low | High | Low | High | Low | High | Low | |
| | | | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | |
| (Global Cov*Connect) | 0.013** (0.006) | 0.011** (0.005) | 0.032*** (0.006) | MPS ^{US} *Connect | -0.026*** (0.006) | -0.013*** (0.005) | -0.031*** (0.007) | -0.019*** (0.005) | -0.024*** (0.006) | -0.012*** (0.004) | -0.030*** (0.007) | -0.017*** (0.005) |
| (Global Cov*Connect)*MPS ^{US} | -0.119*** (0.037) | -0.120*** (0.037) | -0.107*** (0.039) | MPS ^{US} | -0.010*** (0.003) | -0.009*** (0.002) | -0.011*** (0.003) | -0.009*** (0.002) | -0.008*** (0.003) | -0.011*** (0.002) | -0.009*** (0.003) | -0.011*** (0.002) |
| MPS ^{US} | -0.008*** (0.002) | -0.011*** (0.003) | -0.011*** (0.003) | Connect | 0.003** (0.001) | 0.000 (0.001) | 0.027*** (0.003) | 0.021*** (0.003) | 0.001 (0.001) | 0.002* (0.001) | 0.025*** (0.004) | 0.023*** (0.003) |
| | | | | Observations | 50518 | 59057 | 47064 | 55651 | 54754 | 54821 | 51737 | 50978 |
| | | | | Adjusted R ² | 0.468 | 0.376 | 0.482 | 0.387 | 0.435 | 0.433 | 0.444 | 0.444 |
| | | | | Firm Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | IMR | No | No | Yes | Yes | No | No | Yes | Yes |
| | | | | Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | Quarter FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Quarter Dummy | Yes | Yes | Yes | H0: $\beta^H = \beta^L$ | | | | | | | | |
| Observations | 107259 | 107259 | 101217 | χ^2 Test | 5.24** | | 4.61** | | 4.98** | | 5.48** | |
| Adjusted R ² | 0.379 | 0.400 | 0.406 | P-value | 0.022 | | 0.032 | | 0.026 | | 0.019 | |

We do not find too many significant differences in other dimensions

- Exposure to external sector (no difference in T-NT, but some in Foreign Sales)

Perhaps not many dollar external debt involved.

Exposure to External Sector

| Investment | | | | | | | | |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|---|----------------------|----------------------|----------------------|
| Panel A: Tradable v.s. Nontradable | | | | | Panel B: Multinational (MNC) v.s. Domestic (DC) | | | |
| | (1) High | (2) Low | (3) High | (4) Low | (5) MNC | (6) DC | (7) MNC | (8) DC |
| MPS ^{US} *Connect | -0.019*** (0.006) | -0.015*** (0.005) | -0.025*** (0.006) | -0.018*** (0.005) | -0.030*** (0.008) | -0.018*** (0.007) | -0.040*** (0.008) | -0.025*** (0.007) |
| MPS ^{US} | -0.010*** (0.003) | -0.008*** (0.002) | -0.011*** (0.003) | -0.009*** (0.002) | -0.011*** (0.003) | -0.010*** (0.002) | -0.012*** (0.003) | -0.010*** (0.002) |
| Connect | 0.000 (0.001) | 0.002 (0.001) | 0.026*** (0.003) | 0.017*** (0.004) | 0.004*** (0.001) | -0.003* (0.002) | 0.032*** (0.004) | 0.019*** (0.005) |
| Observations | 74086 | 35688 | 69374 | 33488 | 49682 | 41103 | 46597 | 38682 |
| Adjusted R ² | 0.391 | 0.398 | 0.402 | 0.408 | 0.472 | 0.395 | 0.483 | 0.401 |
| Firm Controls | Yes | Yes | Yes | Yes | No | No | Yes | Yes |
| IMR | No | No | Yes | Yes | No | No | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Quarter FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| H0: $\beta^H = \beta^L$ | | | | | | | | |
| χ^2 Test | 0.51 | | 1.54 | | 2.86* | | 4.08** | |
| P-value | 0.477 | | 0.214 | | 0.091 | | 0.043 | |

Conclusions

- We document the effect of China Connect through a clean identification
- After the launch of China Connect, Connected v.s. Non-connected firms
 - ▶ benefits (through a risk-sharing channel)
 - ★ increase in stock valuation
 - ★ investment boom
 - ★ reduction in financing costs
 - ★ increase in firm performance
 - ▶ but become more sensitive to external shocks (cost of funding channel)
 - ★ firm-level heterogeneity in responses.
- Policy implications
 - ▶ capital controls effective in curbing effects of the Global Financial Cycle
 - ▶ cautionary note on capital account liberalization.
 - ▶ a structural model needed to evaluate the welfare implication.

Rey's speech

*“There is a **global financial cycle** in capital flows, asset prices and in credit growth. This cycle comoves with the VIX, a measure of uncertainty and risk aversion of the markets. Asset markets in countries with more credit inflows are more sensitive to the global cycle. The global financial cycle is not aligned with countries specific macroeconomic conditions. Symptoms can go from benign to large asset price bubbles and excess credit creation, which are among the best predictors of financial crises. A VAR analysis suggests that **one of the determinants of the global financial cycle is monetary policy in the centre country**, which affects leverage of global banks, capital flows and credit growth in the international financial system. Whenever capital is freely mobile, the global financial cycle constrains national monetary policies regardless of the exchange rate regime.” . . . The global financial cycle transforms the trilemma into a “dilemma or an “irreconcilable duo: **independent monetary policies are possible if and only if the capital account is managed.**”*

— Hélène Rey, Jackson Hole 2013