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Demand Shock, Speculative Beta, and Asset Prices: Evidence from the Shanghai-Hong Kong Stock Connect Program*

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Abstract

Upon the announcement of the Shanghai-Hong Kong Stock Connect program, connected stocks in the Shanghai Stock Exchange experience significant value appreciation of 1.8% over a seven-day announcement window and significant increases in turnover and volatility compared with unconnected stocks with similar firm characteristics, especially for stocks with higher market beta. The beta effect on stock prices is stronger for stocks with higher beta-to-idiosyncratic variance ratios and is reversed within three months. The results support the speculative nature of beta and the multiplier effect of speculation on demand shocks as predicted by Hong, Scheinkman, and Xiong (2006) and Hong and Sraer (2016). The announcement of the Shenzhen-Hong Kong Stock Connect program serves as an out-of-sample test and confirms our findings.

Keywords: Demand shock; Speculative beta; Heterogeneous beliefs; Short-sale constraints; Market liberalization

JEL Classification: G11; G12; G15; G18

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Evidence from the Shanghai-Hong Kong Stock Connect Program

Abstract

Upon the announcement of the Shanghai-Hong Kong Stock Connect program, connected stocks in the Shanghai Stock Exchange experience significant value appreciation of 1.8% over a seven-day announcement window and significant increases in turnover and volatility compared with unconnected stocks with similar firm characteristics, especially for stocks with higher market beta. The beta effect on stock prices is stronger for stocks with higher beta-to-idiosyncratic variance ratios and is reversed within three months. The results support the speculative nature of beta and the multiplier effect of speculation on demand shocks as predicted by Hong, Scheinkman, and Xiong (2006) and Hong and Sraer (2016). The announcement of the Shenzhen-Hong Kong Stock Connect program serves as an out-of-sample test and confirms our findings.

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1. Introduction

Traditional asset pricing theories argue that the change in a stock's demand or supply should have virtually no effect on its price in a perfect market with no arbitrage opportunities (Scholes, 1972). However, extensive studies have found that demand curves are downward sloping when assets are not perfectly substitutable and arbitrage is limited. In their recent theoretical work, Hong, Scheinkman, and Xiong (2006) predict a multiplier effect on price sensitivity to demand or supply shocks due to speculative trading (p. 1083, Proposition 3) under the assumption of limited risk absorption capacity for stocks. They prove that when stock prices contain speculative bubbles due to heterogeneous beliefs and short-sale constraints, the slope of the demand curve steepens. Hong and Sraer (2016) further show that when investors disagree about the common factor of the market, a stock's speculative bubble grows with its market beta, which is referred to as the "speculative beta" effect. Taken together, recent progress in bubble theory predicts that price sensitivity to demand shocks is larger for stocks with a higher speculative market beta. In this paper, we provide empirical evidence consistent with these theoretical predictions using the event of the Shanghai-Hong Kong Stock Connect program.

In 2014, the Chinese government initiated the Shanghai-Hong Kong Stock Connect program, which allows investors in mainland China and Hong Kong to trade and settle on an eligible list of stocks listed on the other market through the exchange and clearing house in their home markets. The Shanghai-Hong Kong Stock Connect program provides an ideal setting to test the effect of demand shocks on stock prices and its interaction with speculative trading. First, the program introduces a large and unexpected demand shock for a subset of stocks (connected stocks) in mainland China, which has been under strict capital controls for decades. Second, famous as a "casino," the Chinese stock market is well known for its speculative nature.[1] For example, share turnover, which is commonly associated with intensive speculative trading, is much higher in the

[1] See, for example, Sarno and Taylor (1999), Allen, Qian, and Qian (2005), Hwang, Zhang, and Zhu (2006), Mei, Scheinkman, and Xiong (2009), Xiong and Yu (2011), and Andrade, Bian, and Burch (2013). Several features of the Chinese stock market are commonly viewed as responsible for abundant speculative trading. First, the market is relatively young and dominated by inexperienced individual investors who are more likely to hold diverse views on the prospects of stocks. Second, arbitrage activities are severely restricted in the market. For instance, short selling is constrained and derivatives markets are underdeveloped. Third, the supply of shares available for trade is limited. At the end of 2014, the total market capitalization to GDP ratio for China is 78%, only one half of that for the US (148%). Currency controls also prohibit most Chinese individual investors from investing abroad.

Chinese stock market than in other developed markets such as Hong Kong and the U.S. stock markets, as depicted in Figure 1.[2] There is also strong evidence that high-beta stocks are associated with substantially high turnover and earn significantly low expected returns.

We find that Shanghai connected stocks experience significant value appreciation (compared with unconnected stocks with similar firm characteristics) during the announcement of the program. More importantly, the value appreciation is larger for stocks with higher market beta. In addition, connected stocks experience significant increases in turnover and volatility, and such increases are also larger for high-beta stocks than for low-beta stocks. We further show that the multiplier effect of speculative beta is stronger in stocks with high beta-to-idiosyncratic variance ratios and is reversed within three months, suggesting that the beta effect is closely related to speculative trading rather than risk-based explanations.[3] Our results support the multiplier effect of speculation on the demand elasticity of price as predicted by Hong, Scheinkman, and Xiong (2006). Our evidence also confirms that the multiplier effect of speculation (measured by speculative market beta) manifests itself in turnover and return volatility.

We consider several alternative hypotheses in explaining our results. First, high-beta stocks may appreciate more not because they have a steeper demand curve, but because they experience a larger demand from Hong Kong investors. Using detailed stock-level holding data, we find no evidence that Hong Kong investors' holdings of Shanghai connected stocks after the commencement of the program are positively associated with a stock's Shanghai market beta. Second, stock prices may increase because the connect program conveys positive information about future firm performance (i.e., cash flow news). We address this concern by showing that connected stocks do not experience significant increases in their expected or realized cash flows after the program announcement in two consecutive years. Moreover, changes in connected stocks' expected and realized cash flows do not correlate with their Shanghai market beta. Third, stocks

[2] A common feature of the historical episodes of asset price bubbles is the coexistence of high prices and high trading volumes. See, for example, Cochrane (2002), Lamont and Thaler (2003), and Ofek and Richardson (2003) for evidence from the 1929 boom and the early 2000 Internet bubble. The numbers reported in Figure 1 are retrieved from the annual factbook of the respective stock exchanges.

[3] Hong and Sraer (2016) prove that "stocks experience overpricing only when the ratio of their cash flow beta to idiosyncratic variance is high enough." A large idiosyncratic variance prevents optimists from demanding too much for high-beta stocks, which drives down the price and makes pessimists possibly long the stocks. Thus, high-beta stocks with low idiosyncratic variance experience more overpricing than those with high idiosyncratic variance.

can experience revaluations due to the risk-sharing effect after market liberalization (i.e., discount rate news). Following Chari and Henry (2004), we construct measures of the difference in covariance (DIFCOV) to capture the risk-sharing effect. In multivariate regressions of announcement returns, we find that the interactive effect between the demand shock and market beta remains robust after controlling for the risk-sharing effect. Moreover, with a pure risk-sharing effect it is difficult to explain the reversal of the beta effect within three months. Fourth, we perform placebo tests to rule out the possibility that the return difference between connected and unconnected stocks is due to persistent differences in unobserved stock characteristics between these two groups of stocks. Finally, we use the Shenzhen-Hong Kong Stock Connect program announced on November 25, 2016 as an out-of-sample test and verify our conclusions.

We contribute to several strands of the literature. First, there is an extensive literature examining the speculative bubbles generated by heterogeneous beliefs and short-sale constraints (Miller, 1977; Harrison and Kreps, 1978; Morris, 1996; Chen, Hong, and Stein, 2002; Scheinkman and Xiong, 2003). A unique feature of these models is that it simultaneously generates high asset prices, high trading volume, and high price volatility, which is empirically observed in the episodes of price bubbles and has been a challenge to traditional asset pricing theories.

Second, the demand and supply effects on asset prices have also been widely examined. A number of empirical studies have documented abnormal returns associated with index constituent changes and concluded that the demand curve for these assets slopes down (Goetzmann and Garry, 1986; Harris and Gurel, 1986; Shleifer, 1986; Pruitt and Wei, 1989; Dhillon and Johnson, 1991; Beneish and Whaley, 1996; Lynch and Mendenhall, 1997; Hegde and McDermott, 2003; Kaul, Mehrotra, and Morck, 2000; Greenwood, 2005; Chakrabarti et al., 2005; Onayev and Zdorovtsov, 2008). Another line of research has examined institutional trades to show that unusually large demand can move asset prices (Goetzmann and Massa, 2003; Coval and Stafford, 2007). Recent studies suggest that the effect of downward-sloping demand curve is pervasive across various markets (Liu, Wang, Wei, and Zhong, 2019; Liu and Wang, 2020).

However, very few studies have investigated the interaction between speculative trading and demand/supply shocks. One exception is the theoretical work of Hong, Scheinkman, and Xiong (2006), which shows that in the presence of speculative overpricing, stock prices become more sensitive to asset supply. A related paper by Mei, Scheinkman, and Xiong (2009) empirically identifies the negative relation between speculative trading and asset float using the dual-listed A- and B-shares traded in Chinese stock markets, but it does not explicitly test how the price-supply sensitivity varies with the degree of speculation. Our paper is the first attempt to empirically test the multiplier effect of speculative overpricing on the slope of the demand curve.

Finally, we also contribute to the understanding of stock revaluation during market liberalization. Studies have shown that market liberalization leads to decreases in the cost of capital and increases in stock valuation (Bekaert and Harvey, 2000; Errunza and Miller, 2000; Henry, 2000; Huang and Yang, 2000; Bekaert, Harvey, and Lundblad, 2003; Chari and Henry, 2004). Chari and Henry (2004) estimate that the risk-sharing effect on average can explain two fifths of the total stock revaluation of investible stocks when countries liberalize their stock markets. Chan and Kwok (2017) find that the risk-sharing effect can explain about one fourth of the price revaluation of connected stocks from the initial proposal (April 2014) to the commencement (November 2014) of the Shanghai-Hong Kong Stock Connect program.[4] A recent paper by Bekaert, Ke, and Zhang (2021) finds that Chinese domestic stocks are overvalued compared with other international stock markets. Their findings suggest that a positive pricing effect based on the traditional risk-sharing channel during a market liberalization event in China is more difficult to detect. Our paper complements this literature by showing that stock prices may experience large appreciation upon the implementation of market liberalization due to the demand effect that can be amplified by speculative bubbles in stock prices. This price appreciation is a short-run phenomenon and is reversed in the near future.

The reminder of this paper is organized as follows. Section 2 introduces the institutional background. Section 3 develops our main hypotheses. Section 4 presents the empirical results. Section 5 discusses alternative hypotheses and performs additional tests. Section 6 presents an out-of-sample test. Section 7 concludes the paper.

2. Institutional Background

[4] In this study, we are mainly interested in how the demand shock and its interaction with speculation trading affect the price of connected stocks. Thus, our analyses in this paper focus on the event window starting from November 10, 2014 when the program was finally approved and the exact commencement date was confirmed.

The Shanghai-Hong Kong Stock Connect program is a pilot program established by the Chinese government to link the stock markets in Shanghai and Hong Kong. The Binhai New Area in Tianjin City of China and the Bank of China first initiated the idea of the program back in 2007. Regulators later postponed the program for nearly seven years. On April 10, 2014, Chinese Premier Li Keqiang presented the program again at the Boao Forum in Hainan Province, China. Immediately following Li's speech that day, the China Securities Regulatory Commission (CSRC) and the Hong Kong Securities and Futures Commission (HKSFC) jointly released guidelines for the pilot program. However, the future of the program remained unclear to the market at that time due to the uncertainty regarding the final approval by the government, details regarding implementation, and the exact execution date of the program.

The program and initial lists of eligible stocks were finally approved seven months later and officially announced on November 10, 2014 (our event date) by the CSRC and HKSFC, which confirmed that the program would be launched on November 17, 2014. The Shanghai-Hong Kong Stock Connect program allows investors in mainland China and Hong Kong to trade and settle on an eligible list of stocks listed on the other market through the exchange and clearing houses in their home markets.[5] Mutual stock market access between mainland China and Hong Kong is enabled through the Northbound Shanghai Trading Link and the Southbound Hong Kong Trading Link under the Shanghai-Hong Kong Stock Connect program. The Northbound Shanghai Trading Link refers to the practice that Hong Kong investors, through their appointed Hong Kong brokers and a securities-trading service company established by the Stock Exchange of Hong Kong Limited (SEHK) in Shanghai, can trade eligible shares under the Shanghai-Hong Kong Stock Connect program listed on the Shanghai Stock Exchange (SSE) by routing orders to the SSE. The Southbound Hong Kong Trading Link under the Shanghai-Hong Kong Stock Connect program is defined similarly. The link between the Shanghai and Hong Kong stock exchanges "creates" the second largest stock exchange in the world. The program is viewed as a major step toward opening up China's capital markets to international investors and as part of the financial reform underway in China.

[5] Investors in Hong Kong refer to investors who own security accounts in Hong Kong and thus may include Hong Kong residents, mainland Chinese residents, and foreign investors who trade through Hong Kong securities companies.

Before the launch of the program, Chinese regulators imposed tight restrictions on foreign investment in the country's financial markets. One potential channel to access the Chinese stock market is through the B-shares (USD/HKD-denominated shares) market. However, the B-shares market stopped issuing new shares in 2001 and is thinly traded. Another alternative channel is participating in China's Qualified Foreign Institutional Investor (QFII) program. However, the QFII program has a limited quota and is accessible only to selected and government-approved foreign institutions. Unlike the QFII program, the Shanghai-Hong Kong Stock Connect program is accessible to both individual and institutional investors. All Hong Kong investors are allowed to trade eligible shares listed on the Shanghai Stock Exchange. Mainland investors with more than 500,000 *yuan* in their stock market accounts are qualified to trade eligible Hong Kong shares through the program.

Eligible shares under the Connect program consist of representative large- and mid-cap stocks with high growth and established earnings records. Specifically, eligible stocks in the Shanghai Stock Exchange include all constituent stocks of the Shanghai Stock Exchange 180 and 380 Indices and stocks that are dual-listed in Hong Kong, excluding stocks either not traded in *yuan* or stocks included on the exchange's "risk alert board."[6] Eligible stocks in the Hong Kong Stock Exchange include the constituent stocks of the Hang Seng Composite Large Cap Index and the Hang Seng Composite Mid Cap Index and stocks that are dual-listed in Shanghai, excluding stocks not traded in Hong Kong dollars. On the first day of trading, there were 568 and 268 eligible stocks in the Shanghai and Hong Kong exchanges, accounting for 59% and 69% of the total market cap of each market, respectively.[7] The designated stock list for the Shanghai-Hong Kong Stock Connect program has experienced several minor addition and deletion events, mainly due to the change of the SSE180/380 Index. Each addition/deletion only affects a small number of stocks. We focus on the initiations of the Shanghai-Hong Kong Stock Connect to explore a large cross section of stocks that are affected by demand shocks simultaneously.

[6] According to the SSE listing rules, any SSE-listed company that is in the delisting process or whose operation is unstable due to financial or other reasons, to the extent that it runs the risk of being delisted or exposing investors' interest to undue damage, is earmarked and traded on the "risk alert board."

[7] For the detailed list of eligible stocks, please refer to the following website: http://www.hkex.com.hk/Mutual-Market/Stock-Connect/Eligible-Stocks.

Trading through the Shanghai-Hong Kong Stock Connect program is subject to daily and aggregate quotas. The daily quota for the net buying value of cross-border trades is 13 billion *yuan* for Shanghai-listed shares and 10.5 billion *yuan* for Hong Kong-listed shares, which represents approximately one fifth of the daily turnover in each market. The aggregate quota is 300 billion *yuan* for Shanghai-listed shares and 250 billion *yuan* for Hong Kong-listed shares, which represents 2% of the total market capitalization and is similar in size to the QFII program.

3. Hypothesis Development

The Shanghai-Hong Kong Stock Connect program has several unique features that facilitate testing the predictions of the speculative trading models put forth by Hong, Scheinkman, and Xiong (2006) and Hong and Sraer (2016). First, the connect program introduces a large exogenous demand shock to connected stocks. Second, as only a limited number of stocks are included in the connect program, unconnected stocks with similar characteristics can be used as the control group to identify the effect of the demand shock. Third, the demand shocks are simultaneous, which enables a cross-sectional study by holding other factors constant.[8]

The Shanghai-Hong Kong Stock Connect program allows Hong Kong investors to enter the Shanghai stock market. The inflow of Hong Kong investors' capital leads to positive demand shocks on the connected stocks in the Shanghai Stock Exchange. Anticipating the demand shock, investors in the Shanghai stock market react positively and connected stocks should experience significant value appreciation on the announcement day if the demand curve is downward sloping. We thus propose our first hypothesis.

Hypothesis 1: *Upon the announcement of the Shanghai-Hong Kong Stock Connect program, connected stocks in Shanghai experience significantly higher abnormal returns than unconnected stocks with similar firm characteristics due to the anticipation of positive demand shocks from Hong Kong investors.*

Hong, Scheinkman, and Xiong (2006) show that price sensitivity to demand shocks becomes larger in the presence of speculative trading (due to heterogeneous beliefs and short-sale

[8] Liu, Shu, and Wei (2017) also use an unexpected event, the Bo Xilai political scandal, as an exogenous shock to test the prediction of the political uncertainty model of Pástor and Veronesi (2012, 2013). They find that the Bo scandal caused stock prices to drop, especially for politically sensitive firms, and conclude that their evidence supports the existence of priced political risk.

constraints) than in the absence of speculative trading. The so-called multiplier effect arises because stock prices increase due to not only the downward-sloping demand curve, but also the increase in the value of the resale options when there is a positive demand shock. A larger demand means that only a smaller divergence of opinion is needed in the future for investors to resell their shares, leading to a more valuable resale option today.[9]

Hong and Sraer (2016) further postulate and empirically verify that high-beta securities are more sensitive to aggregate disagreement and experience greater divergence of opinion than low-beta assets. Therefore, assets with a higher market beta are subject to a higher degree of speculative overpricing, when short-sale constraints are binding given a reasonable level of disagreement. Taken together, the arguments in Hong, Scheinkman, and Xiong (2006) and Hong and Sraer (2016) suggest that the price sensitivity to demand shocks should be larger for high-beta stocks than for low-beta stocks. We develop our second hypothesis based on this theoretical prediction.

Hypothesis 2: *Connected stocks in Shanghai with high market beta experience a larger positive price reaction upon the announcement of the connect program than connected stocks with low market beta.*

A number of studies (Scheinkman and Xiong, 2003; Hong, Scheinkman, and Xiong, 2006; Mei, Scheinkman, and Xiong, 2009) have suggested that the effects of demand shock and its interaction with speculative trading due to heterogeneous beliefs and short-sale constraints are not only reflected in high stock prices but also associated with high turnover and high return volatility. To see the intuition, one can consider the model as in Hong, Scheinkman, and Xiong (2006). When there is a positive demand shock (or a decrease in effective supply), it will take a smaller divergence of opinion for the optimistic group to hold all the shares tomorrow, and therefore leads to a higher average share turnover and a higher return volatility. The effects of demand/supply shocks are stronger in high beta stocks because high beta stocks are subject to larger divergence of opinion and are more prone to speculative trading.

We formalize these arguments in the following hypothesis.

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[9] This result also holds in a static setting without dynamic trading motives. For example, suppose that there is a continuum of investors whose beliefs follow a normal distribution $N(\mu, \sigma^2)$, and each investor can decide to either hold one share or sit out of the market. For a given level of share supply s, the marginal investor who holds belief Z^s consumes the supply such that $1 - \Phi(Z^s) = s$. One can easily verify that $\partial Z^s / \partial s$ is an increasing function with respect to σ.

Hypothesis 3: *Connected stocks in Shanghai experience increases in turnover and in volatility after the announcement of the program. These increases are larger for connected stocks with a high market beta than for those with a low market beta.*

As argued by Hong and Sraer (2016), optimists demand less of high-beta stocks when idiosyncratic variance is high, which drives down the price and makes pessimists possibly long the stocks.[10] Thus, stocks experience overpricing only when their beta-to-idiosyncratic variance ratios are high enough.

Moreover, the existence of the speculative bubble component in stock prices relies on the assumption of limited risk absorption capacity for stocks as in Hong, Scheinkman, and Xiong (2006). In other words, limits to arbitrage prevent the bubble component in stock prices from being arbitraged away quickly (Shleifer and Vishny, 1997). If the beta effect is indeed due to speculation rather than risk sharing, we should observe the beta effect reversing after the mispricing is corrected in the future. Our final hypothesis is stated as follows.

Hypothesis 4: *If the multiplier effect of speculative beta is due to the interaction between demand shocks and speculation, it should be stronger when the ratio of beta to idiosyncratic variance is high. In addition, the speculative beta effect should be reversed over time.*

4. Empirical Results

4.1 Data description and summary statistics

We collect the lists of eligible stocks and detailed investor holding data at the stock level for the Shanghai-Hong Kong (Shenzhen-Hong Kong) Stock Connect program from the Shanghai (Shenzhen) Stock Exchange and the Stock Exchange of Hong Kong. We obtain stock return data and firm-level financial and accounting data for listed companies from the CSMAR database.

We start with 568 stocks listed on the Shanghai Stock Exchange that can be traded by Hong Kong and foreign investors through the northbound trading service of the Shanghai-Hong Kong Stock Connect program. Of the 568 connected stocks, only 519 have valid return data to calculate

[10] Idiosyncratic risk matters for investors' portfolios when markets are incomplete. See, for example, Treynor and Black (1973), Merton (1987), Shleifer and Vishny (1997), Pontiff (2006), Lam and Wei (2011), and Stambaugh, Yu, and Yuan (2015), among others.

cumulative abnormal returns (CARs) surrounding the event date of November 10, 2014 and valid data of main firm characteristics. We match the 519 connected stocks with all the unconnected A-share stocks using a propensity-score matching procedure.[11] We implement this procedure by first estimating a logit regression to model the probability that a firm is a treatment firm using five firm characteristics, including firm size (SIZE), book-to-market ratio (BM), return-on-assets (ROA), Shanghai market beta ($BETA_{SH}$), and total volatility (TVOL) at the end of October 2014. We then find each treatment firm a matched control firm using the nearest neighbor matching technique without replacement and setting the caliper to 0.20.[12] This procedure yields a final sample of 440 treatment (connected) firms with valid control (unconnected) firms.

To provide a comprehensive analysis on the construction of our sample, we report the mean and median of firm characteristics for the (matched and unmatched) connected and unconnected stocks in Table 1. Panel A of Table 1 presents the firm characteristics for all connected stocks, unconnected SH stocks, and unconnected SZ stocks, separately. Among all A-share stocks with valid data of stock returns and main firm characteristics, there are 519 connected stocks (which are all SH stocks), 324 unconnected SH stocks, and 1,318 unconnected SZ stocks. More than 60% of SH stocks are connected (519/(519+324) = 62%). In addition, it is evident that the average size of unconnected SH stocks is smaller than that of connected stocks. And the average size of unconnected SZ stocks is slightly larger than that of the unconnected SH stocks. To enlarge the sample size and improve the matching outcome of firm characteristics, we include both unconnected SH and SZ stocks when we construct the matched sample.

Panel B of Table 1 presents the firm characteristics for matched and unmatched connected stocks. Due to the fact that connected stocks are on average different from unconnected stocks in several firm characteristics such as size, if we construct a full-matched sample (caliper is set to 1.0

[11] Our control sample includes unconnected A-share stocks from both the Shanghai and Shenzhen Stock Exchanges. As A-share stocks listed in the Shenzhen Stock Exchange are not included in the Shanghai-Hong Kong Stock Connect program, we have plenty of unconnected stocks that can match the firm characteristics of connected stocks. In unreported results, we show that all the results throughout the paper are robust after controlling for exchange fixed effects.

[12] The "caliper" sets the maximum permitted difference between matched subjects. A tighter caliper increases the closeness of the matching. Our results remain qualitatively similar if we set the caliper to 1.0 so that every connected stock has a valid match (i.e., 519 stocks in each group). We repeat our main analysis based on the full-matched sample and report the results in Table A4 of the Internet Appendix.

so that each connected treatment stock is matched with an unconnected control stock), there will be significant differences between the treatment and control groups.[13] In order to improve the matching results, we require a caliper of 0.2 when we perform the propensity-score matching procedure, which means that some connected stocks will drop out from the sample because they cannot find proper matching stocks. Our final sample includes 440 connected stocks, which means that 79 connected stocks drop out of the sample. Panel B of Table 1 shows that these unmatched connected stocks have larger size and higher BM than matched connected stocks.

We then analyze the composition of control stocks. In the matched sample with 440 matched pairs of connected and unconnected control stocks, there are 77 unconnected SH control stocks and 363 unconnected SZ control stocks. In Panel C of Table 1, we report the mean and median of firm characteristics for unconnected SH and SZ control stocks separately. We find that unconnected SH control stocks on average have smaller size, higher BM, lower ROA, higher leverage, and higher Amihud illiquidity than unconnected SZ control stocks.

Panel A in Table 2 summarizes the firm characteristics of connected stocks in our matched sample. These stocks are generally large and mature. On average, a sample stock has a size (defined as the natural logarithm of market capitalization in thousand *yuan*) of 15.952, a book-to-market ratio of 0.616, an ROA of 0.047, and a leverage of 0.199. These connected stocks have higher return sensitivities with respect to the Shanghai market index than to the Hong Kong market index. They have a $BETA_{SH}$ of 1.228 and a $BETA_{HK}$ of 0.487 on average. The average total volatility (TVOL) and the average idiosyncratic volatility with respect to the Shanghai market ($IVOL_{SH}$) are 0.353 and 0.303, respectively. Our sample stocks are liquid stocks, with an average daily turnover ratio (TURNOVER) of 1.7% and an Amihud (2002) illiquidity measure (AMIHUD) of 0.030×10^{-8} (i.e., a trade size of 1 million *yuan* moves the price by 0.03%). Connected stocks on average experience a raw return of 2.1% in October 2014 ($RET_{\{-1,0\}}$), the month before the program announcement.

Panel B in Table 2 compares the main characteristics of the connected stocks with their propensity-score-matched (PS-matched) unconnected stocks. The results show that there are no

[13] We report the average firm characteristics of connected and unconnected stocks for full-matched sample in the Internet Appendix (Panel A in Table A4). It is evident that there are significant differences in SIZE, BM, TVOL, $IVOL_{SH}$, $BETA_{HK}$, and AMIHUD between connected and unconnected stocks for the full matched sample.

significant differences in most of the firm characteristics, such as SIZE, BM, ROA, LEV, $BETA_{SH}$, TVOL, $IVOL_{SH}$, $BETA_{HK}$, TURNOVER, and $RET_{\{-1,0\}}$, between connected stocks and their matched stocks, except for a mild difference in the Amihud illiquidity measure.

4.2 Abnormal returns around the program announcement

4.2.1 The demand shock and aggregate revaluation

In this section, we test the positive price effect of demand shocks upon the announcement of the Shanghai-Hong Kong Stock Connect program as predicted by Hypothesis 1. As connected stocks may be different from the universe of all unconnected stocks, the abnormal returns of connected stocks during the program announcement may reflect not only the connection effect but also the differences between the connected stocks and the rest of the market. To address the endogeneity and selection problem, we use the matched sample throughout the analysis.

In the univariate analysis, we calculate the CARs for the connected and PS-matched unconnected stocks during three-day (-1, 1), five-day (-2, 2), and seven-day (-3, 3) event windows. We report the average CARs for the two groups and test whether there is a significant difference between them. In Panel A of Table 3, we study the event window from day -1 to day 1. Consistent with Hypothesis 1, we observe that the connected stocks experience a 1.348% higher market-adjusted CAR (CAR_{MktAdj}) than the matched unconnected stocks in the three-day period with a *t*-statistic of 4.83. The difference in CARs based on the market model (CAR_{MKT}) is 1.348% with a *t*-statistic of 5.04. The differences in CARs based on the Fama-French three-factor model (CAR_{FF3}), the Carhart four-factor model ($CAR_{Carhart}$), and the characteristic model of Daniel, Grinblatt, Titman, and Wermers (1997) (hereafter "DGTW") are 0.915% (*t*-stat = 3.56), 0.850% (*t*-stat = 3.36), and 0.970% (*t*-stat = 3.79), respectively, which are slightly smaller in magnitude but remain significant at the 1% level. In Panels B and C of Table 3, we extend the event window to (-2, 2) and (-3, 3) and find that the difference in CARs grows larger and becomes more significant. For instance, the difference in CAR_{MKT} reaches 1.547% (*t*-stat = 4.64) with the window (-2, 2) and further increases to 1.864% (*t*-stat = 4.61) with the window (-3, 3). It is worth noting that the market returns are virtually zero during these three event-window periods.

It is worth noting that the announcement CARs of connected stocks decrease in both economic and statistical significance when we use shorter event windows. For example, while the announcement CAR_{FF3} and $CAR_{Carhart}$ of connected stocks are significant at the 5% level for the event window (-3, 3), they are only significant at the 10% level for the event window (-2, 2) and become almost insignificant for the event window (-1, 1). This observation motivates further analysis on the event CARs of connected stocks around program announcement. We find that the positive stock price reaction of connected stocks to the program announcement mainly starts on day 0 and lasts for a few days up to day 3. Therefore, when we shrink the event window, the CARs of connected stocks gradually become weaker. If we use a shorter event window but still cover the period from day 0 to day 3, the price appreciation of connected stocks is always significant and robust. We report the announcement CARs of connected stocks with alternative shorter event windows of (-2, 3), (-1, 3), and (0, 3) in Panel D of Table 3. We show that all CARs including CAR_{FF3} and $CAR_{Carhart}$ are significantly positive at the 5% level for all these shorter event windows.[14] We further investigate the CARs beyond day 3 and find that none of the CARs are significant during event window (4, 6), suggesting that the announcement effect is almost fully reflected in stock prices up to day 3 and does not drift further after day 3. Overall, this result confirms that the stock prices of connected stocks react positively to the demand shock upon the program announcement.

Our matched sample contains 32 AH dual-listed companies (i.e., A-shares in Shanghai and H-shares in Hong Kong).[15] The demand effect of the connect program on these AH dual-listed companies may be ambiguous because their H-shares were traded by Hong Kong investors before the start of the connect program. We hence repeat the analysis in the subsample excluding the AH dual-listed stocks. Unreported tables show that the results remain similar.

To better understand the announcement effect of the connect program on stock prices, we plot the difference in CAR_{MKT} between connected and unconnected stocks over the event window (-15, 20) in Figure 2. It is evident that the connected stocks experience significantly higher abnormal

[14] In unreported results, we also repeat the regression analyses of the connect and speculative beta effects on CARs using shorter event windows of (-2, 3), (-1, 3), and (0, 3). The results remain qualitatively similar as those using the seven-day event window of (-3, 3).

[15] In November 2014, there are in total 80 AH dual-listed companies with valid trading data. Only the 63 AH stocks listed on the Shanghai Stock Exchange are connected through the Shanghai-Hong Kong connect program while the 17 AH stocks listed on the Shenzhen Stock Exchange are not connected. In our final matched sample, we have 440 connected stocks with 32 AH stocks listed on the Shanghai Stock Exchange. Nearly half of the AH stocks drop out from the matched sample because AH stocks are usually very large firms, which are difficult to find a good match in unconnected stocks.

returns than the unconnected stocks around the event day. The difference in CAR_{MKT} between the connected and matched unconnected stocks peaks three days after the event and flattens out afterward. This suggests that the effect of the program announcement is incorporated into prices reasonably quickly. The price appreciation remains stable after the event within the (-15, 20) window.

To control for various firm characteristics that may drive the return difference between connected and matched unconnected stocks around the event window, we conduct the following regression analysis:

$$CAR_i = a_0 + a_1 \times CONNECT_i + \boldsymbol{b} \times \boldsymbol{z_i} + e_i, \tag{1}$$

where the dependent variable CAR (in %) represents the market-adjusted CAR (CAR_{MktAdj}), the CAR based on the market model (CAR_{MKT}), the Fama-French three-factor model (CAR_{FF3}), the Carhart four-factor model ($CAR_{Carhart}$), or the DGTW benchmark-adjusted CAR (CAR_{DGTW}) during the announcement window (-3, 3). CONNECT is a dummy variable that equals one for connected stocks and zero for unconnected stocks, and **z** is a vector of control variables that include $BETA_{SH}$, SIZE, BM, ROA, LEV, $IVOL_{SH}$, AMIHUD, TURNOVER, and $RET_{\{-1,0\}}$. SIZE is measured at the end of October 2014. $BETA_{SH}$, $IVOL_{SH}$, AMIHUD, and TURNOVER are measured using data during the 12-month period before the announcement (i.e., from November 2013 to October 2014). BM, ROA, and LEV are calculated based on the financial data at the end of 2013.

The results are reported in Table 4. We first conduct the regression of CAR on the CONNECT dummy without other control variables. The results are essentially the same as those reported in the univariate analysis. The coefficients on CONNECT are 1.827, 1.864, 1.239, 1.189, and 1.213 for CAR_{MktAdj}, CAR_{MKT}, CAR_{FF3}, $CAR_{Carhart}$, and CAR_{DGTW}, respectively, and are all significantly positive at the 1% level. We next control for various firm characteristics in the regression. The coefficients on the CONNECT dummy remain statistically significant at the 1% level, which are 1.798, 1.813, 1.188, 1.154, and 1.317 for CAR_{MktAdj}, CAR_{MKT}, CAR_{FF3}, $CAR_{Carhart}$, and CAR_{DGTW}, respectively. These results suggest that after controlling for various firm characteristics, the connected stocks still experience significantly higher CARs than the PS-matched unconnected stocks during the announcement of the program. The differences in CARs range from 1.2% to 1.8% for different models.

As a robustness check, we repeat our regression analysis of announcement CARs for the 3-day (-1, 1) and 5-day (-2, 2) event windows. The results are reported in the Internet Appendix (Table A1 and A2). We find that for both (-1, 1) and (-2, 2) event windows, the coefficients on CONNECT and CONNECT×BETASH are all significantly positive at the 5% level, suggesting that the previous conclusions based on the event window (-3, 3) remain the same for shorter event windows. However, the magnitudes of the coefficients are in general smaller when the event window becomes shorter. For example, the coefficient on CONNECT ranges from 1.154 to 1.864 for the event window (-3, 3) (in Table 4), but it only ranges from 0.985 to 1.547 for the event window (-2, 2) (Panel A in Table A2), and ranges from 0.789 to 1.348 for the event window (-1, 1) (Panel A in Table A1). The results confirm our finding that it takes several days for the stock prices to fully react to the program announcement.

In sum, we document in both univariate and regression analyses that the connected stocks experience a significant price appreciation compared with their PS-matched unconnected stocks around the announcement of the connect program. The price appreciation is approximately 1.8% during the seven-day announcement window, which translates to more than US$41 billion in market value. The results support Hypothesis 1 that there exists a positive demand effect on the prices of connected stocks around the announcement of the connect program.

4.2.2 The speculative nature of market beta in China

Before we test the multiplier effect based on market beta, we provide evidence on the speculative nature of market beta in China based on all listed firms from 2006 to 2015. First, we show that high-beta stocks tend to have high turnover, which is widely believed to be a sign of speculative trading activities. We sort stocks into decile portfolios based on their market beta estimated from daily returns every year. We then calculate the average turnover for each portfolio in each year and take the average over the 10 years. In Figure 3, we plot the average turnover rate for the 10 beta-sorted portfolios. It is striking that turnover increases monotonically with market beta as shown in the figure.

Second, we document that high-beta stocks have low expected returns, which provides the most direct evidence of speculative trading based on asset prices. If market beta measures only a firm's systematic risk, the expected return should increase with market beta. However, if market beta is associated with substantially speculative overpricing, as predicted by Hong and Sraer (2016), high-beta stocks should have low future stock returns. For every month starting from January 2006, we sort all stocks into 10 portfolios based on their market beta estimated from past one-year daily returns. We then calculate the value-weighted portfolio returns over the next month. In Figure 4, we show the average portfolio alphas with respect to the Carhart four-factor model. It is evident that high-beta portfolios earn low expected returns. The high-minus-low beta portfolio earns a monthly risk-adjusted return of -1.45%, which is significant at the 5% level. In unreported results, we find that the risk-adjusted return spread of the high-minus-low beta portfolio during 2014-2015 is -3.45% per month, suggesting that the speculative beta effect around the program announcement is stronger than that during an average year.

In sum, we show that Chinese stocks with high market beta have substantially high turnover rates and experience significantly low future returns. The results support the prediction of speculative beta in Hong and Sraer (2016), which suggests that stocks with a high market beta are associated with high speculative trading when short-sale constraints are binding.

4.2.3 The speculative beta effect and revaluation in the cross section

In this section, we test Hypothesis 2, which states that connected stocks with a higher market beta experience a larger positive price appreciation upon the announcement of the connect program. The rationale behind the hypothesis follows from Hong, Scheinkman, and Xiong (2006), who suggest that the demand elasticity of price increases with the size of the speculative bubble, and from Hong and Sraer (2016), who argue that a stock's speculative overpricing increases with its market beta.

Using market beta as a proxy for speculative overpricing, we formally test the multiplier effect of beta. We calculate a stock's market beta with respect to the Shanghai Composite Index ($BETA_{SH}$) and extend model (1) by adding an interaction term between the CONNECT dummy and $BETA_{SH}$:

$$CAR_i = a_0 + a_1 \times CONNECT_i + a_2 \times CONNECT_i \times BETA_{SH,i} + a_3 \times BETA_{SH,i} + \boldsymbol{b} \times \boldsymbol{z_i} + e_i, \quad (2)$$

where CAR, CONNECT, and the control variables (represented by vector **z)** are as previously defined. The key variable of interest is the coefficient on the interaction term (a_2), which is predicted to be positive.

We report the results in Table 5. The coefficient on $BETA_{SH}$ measures the effect of beta on CAR for unconnected stocks. The estimate is negative but statistically insignificant at the 5% level for all specifications after controlling for various stock characteristics. The coefficient on the interaction term CONNECT×$BETA_{SH}$ measures the difference in the effect of beta on CAR between the connected and unconnected stocks, which captures the interaction effect between beta and the demand shock as only connected stocks experience the demand shock. Consistent with Hypothesis 2, we find a positive and significant coefficient on the interaction term, suggesting that the positive announcement effect on stock prices originated from the demand shock is more pronounced for connected stocks with high $BETA_{SH}$ than for those with low $BETA_{SH}$. The coefficients on the interaction term range from 3.740 to 5.471 across different regression specifications, indicating that a one-unit increase in the Shanghai market beta leads to an approximate 3.740-5.471% more increase in the CAR of connected stocks than that of matched unconnected stocks during the seven-day announcement window. The magnitude is economically large and statistically significant at the 1% level for all specifications. Overall, the evidence supports the prediction that the demand elasticity of price is higher for stocks with more speculative overpricing.

One potential concern about our results is whether the high announcement returns of high-beta stocks are driven by market-wide factors. For example, if the Shanghai stock market experiences significantly positive returns during the announcement of the program, the high-beta stocks naturally experience high announcement returns due to their high sensitivity to systematic factors. We argue that market-wide factors cannot explain our results for the following reasons. First, we investigate the CARs of connected stocks based on the market model and a number of commonly used factor models, which should already remove any effects from systematic factors. Second, we further control the effect of other common factors by matching connected stocks with unconnected stocks that have similar market beta and other firm characteristics, and by investigating the difference in CARs between the two groups of stocks. Finally, we find that the equal-weighted (value-weighted) cumulative *raw* return of the aggregate Shanghai stock market during the seven-day event window (-3, 3) is -0.34% (0.12%), which is small and obviously cannot explain the high announcement returns of high-beta stocks.

Chari and Henry (2004) develop an approach based on firm-level data and estimate that the risk-sharing effect can explain two fifths of the total stock revaluation of investible stocks when countries liberalize their stock markets. Following their method, Chan and Kwok (2017) find that the risk-sharing effect can explain about one fourth of the price revaluation of connected stocks from the initial announcement of Shanghai-Hong Kong connect program guideline (April 2014) to the commencement of the program (November 2014).[16] To make a comparison with previous literature, we attempt to estimate the economic significance of the speculative beta effect as a fraction of the price revaluation in a similar manner. For connected stocks, the average market beta is 1.228 and the coefficient on $CONNECT \times BETA_{SH}$ in column 1 is 4.676, which suggests that the speculative beta effect explains $1.228 \times 4.676 = 5.74\%$ of price appreciation among connected stocks during the seven-day announcement window. It is worth noting that the speculative beta effect mainly manifests itself during the seven-day announcement window. It does not show up before November as evident in our placebo test in Table 13 and neither after the announcement window as evident in our test for the window (4, 6) in Panel D of Table 3. For connected stocks, the average price revaluation is 4.04% per month between April and November. Therefore, if we focus on the time period between April-November 2014 as in Chan and Kwok (2017), the speculative beta effect explains $5.74/(4.04 \times 8) = 17.8\%$ of the total price revaluation during the eight-month period.

4.3 Changes in turnover and volatility after the announcement program

Speculative bubbles generated by heterogeneous beliefs and short-sale constraints are often associated with high turnover and high stock volatility (Scheinkman and Xiong, 2003). In particular, Hong, Scheinkman, and Xiong (2006) predict that in addition to price appreciation, a

[16] We replicate Chan and Kwok (2017) and confirm their findings. Table A6 in the Internet Appendix reports the results.

positive demand shock leads to increases in turnover and return volatility. Moreover, the increases in turnover and return volatility should be larger for stocks with a higher degree of speculative overpricing.

4.3.1 Changes in turnover

We first perform the following regression analysis for the change in turnover of connected stocks and their PS-matched unconnected stocks:

$$\Delta TURNOVER_i = a_0 + a_1 \times CONNECT_i + a_2 \times CONNECT_i \times BETA_{SH,i} + a_3 \times BETA_{SH,i} + \boldsymbol{b} \times \boldsymbol{z_i} + e_i, \quad (3)$$

where ΔTURNOVER is defined as the percentage change in turnover during the (0,10) window after the program announcement (the average daily turnover during (0,10) window scaled by the average daily turnover in the most recent month and then minus one). All the other variables are as previously defined.

We present the results in Table 6. In column 1, we regress the change in turnover on the CONNECT dummy alone without any controls. The coefficient estimate is 0.114 with a *t*-statistic of 2.63, which implies that connected stocks experience an 11.4% increase in turnover compared to matched unconnected stocks on average. After controlling for various firm characteristics, the result in column 2 shows that the coefficient on the CONNECT dummy remains quantitatively similar (coef. = 0.103; *t*-stat = 2.47).

After establishing the result that connected stocks on average experience an increase in turnover relative to matched unconnected stocks, we next turn to examine the interaction between the CONNECT dummy and $BETA_{SH}$. The results are reported in columns 3 and 4 of Table 6. It is evident that the coefficient on the interaction term is significantly positive, suggesting that the positive effect of the demand shock on turnover is significantly higher for high $BETA_{SH}$ stocks than for low $BETA_{SH}$ stocks. The coefficient is 0.318 (*t*-stat = 3.49) without control variables, suggesting that connected stocks with a one-unit increase in $BETA_{SH}$ experience a 31.8% higher increase in the average daily turnover than their matched unconnected stocks over the (0,10) window after the program announcement. The coefficient increases slightly to 0.374 after controlling for various firm characteristics and remains significant at the 1% level.

4.3.2 Changes in volatility

We now conduct the regression analysis of the change in volatility on the CONNECT dummy and its interaction term with $BETA_{SH}$:

$$\Delta VOLATILITY_i = a_0 + a_1 \times CONNECT_i + a_2 \times CONNECT_i \times BETA_{SH,i} \\ +a_3 \times BETA_{SH,i} + \boldsymbol{b} \times \boldsymbol{z_i} + e_i, \tag{4}$$

where ΔVOLATILITY is defined as the percentage change in volatility during the window (0,10) after the program announcement (the average daily volatility during window (0,10) scaled by the average daily volatility in the most recent month and then minus one). Daily volatility is calculated as the standard deviation of the 5-minute intraday return.

We report the regression results in Table 7. The first two columns report the results without the interaction term. The coefficient on the CONNECT dummy is 0.054 (*t*-stat = 2.33) for the specification without controls and 0.047 (*t*-stat = 2.10) after controlling for various firm characteristics, suggesting that connected stocks on average experience a nearly 5% higher increase in volatility than their unconnected counterparts. The next two columns present the results with the interaction term. The coefficient on the interaction term is 0.100 (*t*-stat = 3.06) without control variables, meaning that connected stocks with a one-unit increase in $BETA_{SH}$ experience a 10.0% higher increase in volatility than their matched unconnected stocks. The coefficient becomes 0.124 (*t*-stat = 2.14) after controlling for various firm characteristics.

Combining the results on turnover and volatility, we provide supporting evidence for Hypothesis 3. After the announcement of the Shanghai-Hong Kong Stock Connect program, connected stocks experience significant increases in turnover and volatility compared to their PS-matched unconnected stocks. More importantly, high $BETA_{SH}$ stocks experience significantly larger increases in turnover and volatility than low $BETA_{SH}$ stocks. The results confirm the theoretical prediction of Hong, Scheinkman, and Xiong (2006) that turnover and volatility increase more in response to a demand shock for stocks with a higher degree of speculative overpricing.

4.4 Connection, speculative beta, and the beta-to-idiosyncratic variance ratio

Market beta can be positively related to speculative overpricing due to heterogeneous beliefs about the aggregate market and short-sale constraints, as suggested by Hong and Sraer (2016). However, it is also commonly viewed as a measure of systematic risk. Connected stocks with high beta may appreciate more if investors in Shanghai expect them to experience a larger decline in firm risk after the connect program. To distinguish a speculation-based explanation from a risk-based explanation for the beta effect, we investigate an additional prediction derived from Hong and Sraer (2016). Optimists demand more of high-beta stocks when idiosyncratic variance is low. In equilibrium, pessimists are sidelined and there will be speculative overpricing for high-beta stocks. More specifically, if the beta effect is due to the interaction between demand shocks and speculative trading, this effect should be stronger when the ratio of market beta to idiosyncratic variance is higher (Hypothesis 4). A risk-based explanation does not offer such a prediction.

We classify connected stocks and their PS-matched unconnected stocks into a high (low) beta-to-idiosyncratic variance ratio subsample if their beta-to-idiosyncratic variance ratios are above (below) the sample median. We report the regression results of model (2) for the high and low beta-to-idiosyncratic variance ratio subsamples separately in Table 8. It is evident that the interaction between the CONNECT dummy and $BETA_{SH}$ is only significantly positive when the beta-to-idiosyncratic variance ratio is high but becomes insignificant when the ratio is low. Our results support the prediction from Hong and Sraer (2016) and suggest that the beta effect is explained by speculative trading rather than by change in a firm's systematic risk.

4.5 The beta effect over time

We further investigate the multiplier effect of beta on stock returns over the extended event window. If the beta effect is closely related to speculative overpricing, it will reverse over time as mispricing is gradually corrected (Hypothesis 4). By contrast, a risk-based explanation does not offer such a prediction. Table 9 reports the coefficients on the interaction term between the CONNECT dummy and $BETA_{SH}$ in regression model (2) for the event windows of (-3,3), (-3,10), (-3,20), (-3,40), and (-3,60). The results suggest that the beta effect starts to weaken 20 trading days after the program announcement and becomes insignificant for all CARs 60 trading days after the announcement. The reversal of the beta effect provides further support for the speculation-based explanation and poses a challenge for a pure risk-based explanation. While risk sharing explains a significant proportion of the stock price revaluation during market integration as suggested by previous literature, our evidence suggests that the demand effect and its interaction with speculative trading can also lead to significant price appreciation around the announcement of a market liberalization event. We will further discuss the risk-sharing explanation in details in section 5.3.

5. Alternative Hypothesis and Additional Tests

5.1 Does market beta proxy for the size of demand shocks?

Given the fixed supply curve over a relevant time horizon, stock price reaction is determined by both the slope of the demand curve and the size of the demand shock. Hong, Scheinkman, and Xiong (2006) argue that speculative overpricing amplifies stock price reaction upon a demand shock by steepening the slope of the demand curve. Following Hong and Sraer (2016), we use a stock's market beta as a proxy for the degree of speculative trading when investors disagree over the market or over a common factor of firms' cash flows. In other words, market beta affects the stock announcement return through its multiplier effect on the slope of the demand curve.

An alternative explanation posits that market beta may be positively correlated with the size of demand shocks. First, investors may demand more of high-beta stocks due to portfolio constraints. Theories in Black (1972) and Frazzini and Pedersen (2014) suggest that when investors face portfolio constraints so that they cannot gain optimal exposure to certain risk factors, they overweigh stocks with high sensitivity (or beta) with respect to these factors (commonly referred to as the "betting against beta" effect). The logic naturally extends to the case of market integration under restrictive capital controls. Foreign investors who face restrictions on how much they can invest in local stocks may overweigh stocks with high market beta to increase their exposure to the local market factor. Under the Shanghai-Hong Kong Stock Connect program, Hong Kong investors face aggregate and daily quotas that limit their holdings of Shanghai stocks and hence may demand more of high-beta stocks. Second, investors may demand more of high-beta stocks simply because they speculate that the Chinese stock market may rise in the near future. Either the "betting against beta" hypothesis or the "speculating on bull Chinese market" hypothesis can lead to a positive association between stock market beta and investor demand, which may explain our empirical finding that high-beta connected stocks experience larger price appreciation.

To examine these alternative hypotheses, we first look at the use of quotas after program commencement. We find that, on average, only 18.0% (17.8%) of the aggregate quota is used at the end of the first (second) month after the connect program takes effect. The existence of an unused quota suggests that the constraint for the "betting against beta" effect is unlikely to bind.

In addition, we directly investigate the relation between Hong Kong investors' holdings of Shanghai connected stocks and these stocks' Shanghai market beta after the commencement of the connect program. Due to data restrictions, we use two different samples. Right after the commencement of the Shanghai-Hong Kong Stock Connect program until March 17, 2017, Hong Kong investors' holdings of Shanghai connected stocks through the Shanghai-Hong Kong Stock Connect program at the stock level are not revealed to the public by the exchanges. We thus collect aggregate quarterly stock holdings of Hong Kong investors under the Shanghai-Hong Kong Stock Connect program from firm quarterly financial reports at the end of each of the four quarters after the announcement of the program (i.e., December 2014, March 2015, June 2015, and September 2015). The shortcoming of this sample is that because firms only disclose the holdings of their 10 largest shareholders, the data are missing for stocks of which Hong Kong investors hold so few shares that they do not enter the top-10 shareholder list. Starting from March 17, 2017, the HKSE discloses the details on Hong Kong investor holdings of Shanghai connected stocks through the Shanghai-Hong Kong Stock Connect program at the stock level. Our second sample is thus able to cover Hong Kong investors' holdings of all Shanghai connected stocks at each of the four quarter ends in 2017.

We regress a connected stock's Hong Kong investors' holding on its Shanghai market beta and a number of other firm characteristics, including SIZE, BM, ROA, LEV, $IVOL_{SH}$, AMIHUD, and TURNOVER. The results are reported in Table 10. Columns 1-3 (4-6) present the regression results for the first (second) sample. Columns 1 and 4 report the results with Shanghai market beta as the only independent variable. Columns 2 and 5 control for additional firm characteristics. Columns 3 and 6 further include time and industry fixed effects. All the results under different specifications suggest that a connected stock's Shanghai market beta is negatively or insignificantly related to Hong Kong investors' holdings. In addition, Hong Kong investors tend to buy more stocks with high profitability and high liquidity. In sum, the evidence from the actual holdings data after the commencement of the Shanghai-Hong Kong Stock Connect program indicates that high beta is not associated with high demand by Hong Kong investors, confirming that the beta effect cannot be explained by the size of the demand shock, but rather relates to the slope of the demand curve.

5.2 The demand effect or the information effect?

One commonly proposed alternative explanation for the demand effect is the information hypothesis. If the announcement of the connect program reflects new information about the future cash flows of connected stocks, the abnormally high announcement returns of those connected stocks may be driven by positive information about firm fundamentals.

The information effect usually takes place through two channels. First, the announcement of the event signals fundamental information about the firm that was previously unknown to the market. For example, the selection criteria may reveal new information about firm fundamentals. This is less of a concern here because all the criteria for inclusion in the connect program are based on publicly available information, such as the constituent stocks of the Shanghai Stock Exchange 180 and 380 Indices. Second, the event itself (and any policy changes associated with the event) *per se* may change the future cash flow of the firm. For example, the introduction of foreign ownership and foreign investment through the connect program may spur the growth of those connected firms by improving corporate governance. As this is a valid concern, we perform an additional test to address it.

We investigate the effect of the connect program and its interaction with Shanghai market beta on changes in firm expected and realized cash flows following the announcement of the connect program. We closely follow Liu, Shu, and Wei (2017) to measure changes in firm expected and realized cash flows. The results are reported in Table 11. Panel A presents the regressions of changes in firm expected cash flows. We measure changes in a firm's expected cash flow based on changes in analyst earnings forecasts. The dependent variable is the change in forecasted earnings per share (EPS) divided by the stock price at the end of October 2014 for 2014, 2015, and 2016. The change in forecasted EPS (ΔForecastEPS, in %) is defined as the difference between the median forecasted EPS in the six months after the announcement of the connect program and the median forecasted EPS in the six months before the announcement of the connect program. In all specifications, neither the coefficients on the connect dummy nor those on the interaction between CONNECT and Shanghai market beta are significant. These results suggest that connected stocks do not have substantially higher expected cash flows after the announcement of the connect program. Moreover, the expected cash flows of connected stocks do not change significantly with a firm's Shanghai market beta.

Panel B of Table 11 presents the regressions of changes in firm realized cash flows. We measure changes in realized cash flow based on changes in return on assets (ΔROA, in %), operating profits divided by assets (ΔOPOA, in %), and sales scaled by assets (ΔSOA, in %) from fiscal years 2014 to 2015. Similarly, we do not find significant coefficients on the CONNECT dummy and its interaction with the Shanghai market beta in all regressions. In unreported tables, we also investigate the changes in realized cash flow from fiscal year 2015 to fiscal year 2016. We do not find significant coefficients on the CONNECT dummy or on its interaction with the Shanghai market beta.

In sum, connected stocks do not experience significant increases in expected or realized cash flows after the announcement of the connect program. Moreover, the expected and realized cash flows of connected stocks do not depend on a firm's Shanghai market beta. Therefore, neither the connect effect nor the beta effect can be explained by information about changes in a firm's future cash flows.

5.3 Revaluation and risk sharing

The risk-sharing effect provides an alternative explanation for the revaluation around the announcement of the connect program. When Hong Kong investors are allowed to trade and hold the stocks in the Shanghai market, they participate in the risk sharing on these stocks, which will lead to changes in expected stock returns. Chari and Henry (2004) show that in scenarios ranging from complete liberalization to partial liberalization with strong segmentation, the change in the expected return of a stock upon market integration should be proportional to the change in the covariance of this stock's return with the return of a representative investor's portfolio before and after the integration. If the change in covariance increases with $BETA_{SH}$, the price appreciation we document around the announcement of the connect program may reflect the change in the expected return through the risk-sharing channel rather than the demand effect.

Following Chari and Henry (2004), we construct two measures of the difference in covariance (DIFCOV) and test the risk-sharing hypothesis by introducing an interaction term between CONNECT and DIFCOV in the regression of CARs:

$$CAR_i = a_0 + a_1 \times CONNECT_i + a_2 \times CONNECT_i \times BETA_{SH,i} + a_3 \times BETA_{SH,i} + a_4 \times CONNECT_i \times DIFCOV_i + a_5 \times DIFCOV_i + \boldsymbol{b} \times \boldsymbol{z_i} + e_i. \quad (5)$$

We consider two versions of DIFCOV. The first measure of the difference in covariance ($\text{DIFCOV}_{\text{HK}}$) is defined as the return covariance of an individual stock with the Shanghai market minus the return covariance of the stock with the Hong Kong market. We use the returns of the Shanghai Composite Index and Hang Seng Index as proxies for the returns of the Shanghai and Hong Kong markets, respectively. The second measure of the difference in covariance ($\text{DIFCOV}_{\text{MSCI}}$) is the difference between a stock's return covariance with the Shanghai market and its return covariance with the MSCI Global Market Index. $\text{DIFCOV}_{\text{HK}}$ is appropriate for Hong Kong investors who mainly invest in the Hong Kong stock market, whereas $\text{DIFCOV}_{\text{MSCI}}$ is most suitable for Hong Kong investors who invest globally. The risk-sharing hypothesis predicts that the regression coefficient on CONNECT × DIFCOV (a_4) is positive.

We report the regression results in Table 12. Column (1) reports the results for $\text{DIFCOV}_{\text{HK}}$. It is evident that after controlling for CONNECT × $\text{DIFCOV}_{\text{HK}}$, the coefficient on CONNECT × BETA_{SH} remains significantly positive. We also find that the coefficient on CONNECT × $\text{DIFCOV}_{\text{HK}}$ is insignificant. Column (2) reports the results for $\text{DIVCOV}_{\text{MSCI}}$. Similarly, the coefficient on CONNECT × BETA_{SH} remains positive and significant after controlling for CONNECT × $\text{DIFCOV}_{\text{MSCI}}$. The coefficient on CONNECT × $\text{DIFCOV}_{\text{MSCI}}$ is also positive, suggesting that risk-sharing also contributes to CARs.

While speculative bubbles generated by heterogeneous beliefs and short-sale constraints are shown to be often associated with high turnover and high price volatility, the risk-sharing effect does not have a directional prediction on the change in turnover or volatility of connected stocks in general. Nevertheless, to rule out the possibility that the beta effect on the change in turnover or volatility is due to the change in covariance, we also include an interaction term between CONNECT and one of the two DIFCOVs in the regression of the change in turnover or volatility. In the Internet Appendix (Table A3), we find that the coefficients on CONNECT × BETA_{SH}

remain significantly positive in all specifications, and both the economic magnitude and statistical significance of the coefficients are little affected after controlling for risk sharing. In addition, the coefficients on the interaction term between CONNECT and DIFCOV are statistically insignificant for both changes in turnover and volatility. Our results thus confirm that changes in covariance cannot explain the speculative beta effect on stock turnover and return volatility.

Overall, the results in Table 12 suggest that the speculative beta effect on stock prices is very robust even after we control for the risk-sharing effect. While risk sharing explains a significant proportion of the stock revaluation during market integration, an additional substantial part of the stock market appreciation in response to the program announcement is driven by the demand effect and its interaction with speculation on Shanghai stock prices. From a pure risk-sharing perspective, it is also difficult to explain our previous results that the beta effect is stronger when the beta-to-idiosyncratic variance ratio is higher and reverses in three months.

5.4 Placebo tests

In all of our previous tests, we match connected stocks with unconnected stocks based on their major firm characteristics. However, differences in returns around the program announcement and changes in turnover and return volatility after the program announcement may be driven by differences in unobserved stock characteristics between these two groups of stocks. In this case, such differences may be persistent and do not depend on the specific event time *per se*.

To rule out the explanation that unobserved differences between connected and unconnected stocks drive the pattern of returns, turnover, and volatility observed, we implement placebo tests. Specifically, we consider two pseudo announcement dates, October 10, 2014 and September 10, 2014, which are one and two months before the announcement date, respectively, and repeat the analyses in Tables 4-7 for these dates. If certain unobserved factors other than the connect program drive the relations we document, we expect to observe similar relations on those pseudo dates.

We report the results of our placebo tests in Table 13. We find that the effects of CONNECT and the interaction between CONNECT and $BETA_{SH}$ completely disappear on these randomly chosen dates for return (Panel A), turnover (Panel B), and volatility (Panel C). On either pseudo date, none of the coefficients on CONNECT are significant, which suggests that the connected and matched unconnected stocks have indistinguishable returns and changes in turnover and in volatility during any time outside the event window. Moreover, none of the coefficients on the interaction between CONNECT and $BETA_{SH}$ are significant for CARs, changes in turnover, or changes in volatility. The results confirm that the speculative beta effect only manifests itself during the announcement of the connect program, which introduces the anticipation of a large demand shock to the connected stocks. The placebo tests assure us that the relation we document is not driven by persistent heterogeneities between the connected and unconnected stocks.

5.5 Alternative beta estimation

While the Shanghai-Hong Kong Connect Program is finally approved and announced on November 10, 2014, the idea was presented by Chinese Premier Li Keqiang at the Boao Forum in Hainan Province, China on April 10, 2014. Although the details on the final approval and implementation of the pilot program was not available at that time, there could potentially be speculation in the market between April and November 2014, and thus introduce some bias in the estimation of beta. In addition, the estimation of beta in the market model may also involve bias due to illiquidity of small stocks (Dimson, 1979).

To alleviate the potential biases in beta estimation, we reestimate beta by making the following two modifications. First, we exclude the seven months from April to October 2014, which is potentially subject to the speculation in the market. Second, we follow Hong and Sraer (2016) by regressing a stock's excess return on the contemporaneous excess market return as well as five lags of the excess market return to account for the potential illiquidity of small stocks. The measure of beta is then defined as the sum of the six coefficients.

We then repeat our main analysis on the speculative beta effect on announcement CARs, turnover, and volatility by using the reestimated beta. We find that the results are very similar to what we report before. As a result, we present all the results based on the alternative beta estimation in the Table 14 as an important robustness test. Panel A of Table 14 presents the results of the speculative beta effect on announcement CARs. In all specifications, the coefficients on CONNECT×$BETA_{SH}$ are all significantly positive at the 1% level with a magnitude ranging from 3.055 to 4.624, which is very close to those reported in Table 5. Panel B reports the results of the speculative beta effect on changes in turnover and volatility after the program announcement. The coefficients on CONNECT×$BETA_{SH}$ are significantly positive at the 5% level after controlling for various stock characteristics, and the results are again very close to what we find in Table 6 (changes in turnover) and Table 7 (changes in volatility). The evidence validates that our results are robust to potential bias in beta estimation, such as early market speculation or illiquidity of small stocks.

5.6 Alternative measures of changes in turnover and volatility

There may also exist potential bias on measuring changes in turnover and volatility due to market speculation between April and October 2014. To alleviate this concern, we redefine changes in turnover and volatility by skipping the seven months before the program announcement on November 2014 and use the average daily turnover or volatility in March 2014 to scale the abnormal values. Specifically, we define the standardized change in turnover (ΔTURNOVER) as the average daily turnover of firm *i* in the window (0,10) after the program announcement divided by average daily turnover in March 2014 and then minus one. Similarly, we define the standardized change in volatility (ΔVOLATILITY) as the average daily volatility of firm *i* in the event window (0,10) after the program announcement divided by average daily volatility in March 2014 and then minus one.

We repeat our main analysis on changes in turnover and volatility by using the alternative definitions. The results are qualitatively similar to what we report before and thus we present the results based on the alternative definition of changes in turnover and volatility in Table 15 as a robustness check. Panel A of Table 15 presents the connection and speculative beta effect on the change in turnover. The coefficients on CONNECT and CONNECT×$BETA_{SH}$ are significantly positive at the 1% level. The economic magnitudes are slightly larger than those reported in Table 6. Panel B of Table 15 presents the connection and speculative beta effect on the change in volatility. The coefficients on CONNECT and CONNECT×$BETA_{SH}$ are significantly positive at the 5% level and the magnitudes are close to those reported in Table 7.

5.7 Alternative PS-matched sample using only SZ stocks as the control group

Given that the program was presented on April 10, 2014 but the implementation details, including the list of stocks, were officially announced on November 10, 2014, unconnected stocks may experience price appreciation during the seven-month period between the two dates due to market speculation and receive a negative surprise on November 10, 2014. Then our results based on the return difference between connected and matched unconnected stocks may overestimate the positive demand effect on the stock prices of connected stocks. Because the original proposal is only about Shanghai-Hong Kong Stock Connect and the Shenzhen-Hong Kong Connect is not proposed until two years later in August 2016, market speculation is less severe for unconnected SZ stocks. Using Shenzhen stocks as the control group can help alleviate the concern as Shenzhen stocks are less anticipated by the market to be included in the program at the time of 2014.

We thus construct a PS-matched sample using only Shenzhen stocks as the control group and repeat our main analysis based on this sample. The results are reported in the Internet Appendix (Table A5, Panels A-F). Panel A reports firm characteristics for connected stocks and PS-matched unconnected stocks. Panels B and C reports univariate and regression analyses for CARs of connected stocks and matched unconnected stocks during the program announcement. Panel D presents the results of the speculative beta effect on announcement CARs. Panels E and F present analysis of changes in turnover and volatility, respectively. We show that all our main results remain qualitatively similar when we use only SZ stocks as the control group. However, given the smaller pool of the control group by excluding unconnected SH stocks, the final matched sample is reduced to 429 pairs of connected and matched unconnected stocks.

5.8 Stock revaluation in the Hong Kong market

Our study mainly focuses on the revaluation of Shanghai stocks during the Shanghai-Hong Kong Stock Connect program for two major reasons. First, while the Shanghai stock market is largely a closed market before the connect program, the Hong Kong stock market is relatively open to foreign investors. Therefore, we expect the connection between the two markets to have a stronger effect on Shanghai stocks than on Hong Kong stocks. Second, the Hong Kong stock market is considered to be more developed and less subject to speculative trading. Therefore, we expect the effect of speculative overpricing on the demand elasticity of price to be stronger for Shanghai stocks than for Hong Kong stocks.

Nevertheless, we perform similar analyses for Hong Kong stocks in unreported tables. There are two main findings. First, connected Hong Kong stocks also experience more value appreciation during the program announcement than PS-matched unconnected stocks. However, the magnitude of the value appreciation is smaller and less significant than that of Shanghai connected stocks. Second, the interaction between the CONNECT dummy and a stock's Hong Kong beta is insignificant in CAR regressions. These results suggest that for an open market such as the Hong Kong stock market, the demand effect due to market integration is less significant. Moreover, as the Hong Kong stock market is more developed with more sophisticated investors and fewer market frictions, speculative trading is less prevalent and therefore the speculative beta effect is weaker.

5.9 Separate regression analysis of CARs during the program announcement for connected stocks versus propensity-score-matched unconnected stocks

Our analysis in Table 3 shows that while the connected stocks experience positive CARs, the propensity-score-matched unconnected stocks experience negative CARs around program announcement. This result brings out two questions: (i) whether the beta effect that we identify based on the difference of CARs between the connected stocks and matched connected stocks is indeed driven by the treatment sample rather than the control sample? and (ii) what factors may cause the negative abnormal returns of unconnected stocks during the program announcement and how do we interpret the results?

To answer the above two questions, we perform regression analysis of CARs around the program announcement for connected stocks and their propensity-score-matched unconnected stocks separately. We report the regression analysis in Table A9 of the Internet Appendix. Panel A reports the results for the connected stocks and Panel B for the propensity-score-matched unconnected stocks. The first major finding is that the coefficient on $BETA_{SH}$ is significantly positive for connected stocks, suggesting that the announcement CAR of connected stocks increases with their Shanghai market beta. More importantly, the coefficient on $BETA_{SH}$ is insignificant for propensity-score-matched unconnected stocks in all specifications. This result assures us that the beta effect that we document based on the difference in the market reaction between connected and matched unconnected stocks is only driven by the treatment sample but not the control sample.

Second, the program was presented on April 10, 2014, while the details including the list of stocks were announced on November 10. There might be early market reaction on unconnected stocks during the seven-month period between the two dates, leading to a negative surprise to unconnected stocks when the detailed list of connected stocks is finally announced in November 2014. To test this potential explanation, we include the cumulative return between April and October 2014 ($RET_{\{Apr, Oct\}}$) in the regression analysis. We find that the coefficient on $RET_{\{Apr, Oct\}}$ is indeed significantly negative for unconnected stocks, suggesting that the announcement CAR of unconnected stocks decreases with $RET_{\{Apr, Oct\}}$, which is consistent with the hypothesis that the more positively the market reacts on unconnected stocks between April and October, the more negative abnormal returns these unconnected stocks experience when the program is finally announced. Interestingly, we find that the coefficient on $RET_{\{Apr, Oct\}}$ is also significantly negative for connected stocks. This result suggests that there are also early market reactions on connected stocks. And the more positively the market reacts on the connected stocks between April and October, the less positive abnormal returns these connected stocks experience during the program announcement in November. Overall, our results suggest that there are early market reactions on both connected stocks and unconnected stocks with similar characteristics. Higher returns between April and October will lead to more negative returns for unconnected stocks and less positive returns for connected stocks. By taking the difference in announcement CARs of connected and unconnected stocks, our estimation of the connect effect captures not only the announcement effect but also the early market expectation of the program, which in fact helps us measure the overall effect of the connect program.

6. Out-of-Sample Test: the Shenzhen-Hong Kong Stock Connect Program

Since its official launch on November 17, 2014, the Shanghai-Hong Kong Stock Connect program has been operating smoothly. To further promote the development of capital markets in both mainland China and Hong Kong, the CSRC and the HKSFC agreed, in principle, upon the establishment of mutual stock market access between Shenzhen and Hong Kong (the Shenzhen-Hong Kong Stock Connect) on August 16, 2016.

The Shenzhen-Hong Kong Stock Connect program was officially approved and announced on November 25, 2016. The announcement confirmed that trading would commence on December 5, 2016. After the launch of Shenzhen-Hong Kong Stock Connect program, mutual stock market access between mainland China and Hong Kong is expanded through the Northbound Shenzhen

Trading Link and the Southbound Hong Kong Trading Link under the Shenzhen-Hong Kong Stock Connect program, which is similar to the Shanghai-Hong Kong Stock Connect program.

Eligible shares under the Northbound Shenzhen Trading Link consist of any constituent stocks of the SZSE Component Index and the SZSE Small/Mid Cap Innovation Index with a market capitalization of 6 billion *yuan* or above and all SZSE-listed stocks with both A- and H-shares. Eligible shares under the Southbound Hong Kong Trading Link consist of all constituent stocks of the Hang Seng Composite LargeCap Index and the Hang Seng Composite MidCap Index, any constituent stocks of the Hang Seng Composite SmallCap Index with a market capitalization of 5 billion HKD or above, and all SEHK-listed stocks with both A- and H-shares. On December 5, 2016, the first day of trading, there are 881 eligible stocks under the Northbound Shenzhen Trading Link and 417 eligible stocks under the Southbound Hong Kong Trading Link.

6.1 Announcement returns, connection, and the beta effect

The event of the Shenzhen-Hong Kong Stock Connect program serves as an opportunity for us to perform out-of-sample tests for our previous findings. We match the 881 SZSE-listed connected stocks with all the other A-share stocks that are not affected by the Shenzhen-Hong Kong Stock Connect program following the procedure described in Section 4.[17] We report the regression analysis of abnormal announcement returns in Table A7 of the Internet Appendix. The dependent variable is CAR based on the market model during the window (-3,3) around the announcement date of November 25, 2016. The coefficient on the CONNECT dummy is significantly positive with a magnitude of 0.471 after controlling for various firm characteristics. The result suggests that SZSE-listed connected stocks on average experience a 0.471% higher CAR than the PS-matched non-event stocks during the announcement of the Shenzhen-Hong Kong stock connect program. The magnitude is smaller than that during the announcement of the Shanghai-Hong Kong Stock Connect program, which is potentially due to the expectation of the event before the announcement and less uncertainty of the Shenzhen-Hong Kong Stock Connect program.

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[17] A-share stocks that are not affected by the Shenzhen-Hong Kong Stock Connect include the stocks that have never been included in either the Shanghai-Hong Kong Stock Connect or the Shenzhen-Hong Kong Stock Connect program and stocks that have already been included in the Shanghai-Hong Kong Stock Connect program.

Moreover, the coefficient on the interaction term CONNECT × $BETA_{SZ}$ is significantly positive with a magnitude of 1.645 after controlling for various firm characteristics. The result indicates that a one-unit increase in Shenzhen market beta leads to a 1.645% more increase in the CAR of SZSE-listed connected stocks than that of the non-event stocks during the seven-day announcement window.

Taken together, our results based on the Shenzhen-Hong Kong Stock Connect program provide out-of-sample evidence supporting our main hypotheses. We show that connected stocks experience significant higher price appreciation than stocks that are not affected by the program, especially for those stocks with a high Shenzhen market beta.

6.2 Hong Kong investors' holdings of Shenzhen connected stocks and firm characteristics

Different from the Shanghai-Hong Kong Stock Connect program, Hong Kong investors' holdings of connected stocks through the Shenzhen-Hong Kong Stock Connect program at the stock level are immediately disclosed by the Shenzhen Stock Exchange after the commencement of the program. This disclosure enables us to perform a timely analysis of the relation between the Hong Kong investors' demand of connected stocks and firm characteristics such as market beta, which complements our previous studies of the Shanghai-Hong Kong Stock Connect program.

We collect Hong Kong investors' holdings of all Shenzhen connected stocks at each of the four quarter ends right after the announcement of the program (December 2016, March 2017, June 2017, and September 2017). We regress Hong Kong investors' holdings of a stock on its market beta and a number of other firm characteristics. The results are reported in Table A8 of the Internet Appendix. Consistent with previous findings, there is no positive relation between Hong Kong investors' holdings and a stock's market beta. Instead, the coefficient on market beta is significantly negative, which suggests that Hong Kong investors demand less of high-beta stocks. The results confirm that the beta effect is not due to the size of the demand shock but rather due to the slope of the demand curve.

7. Conclusion

In this paper, we show that the demand effect and its interaction with speculative trading play an important role in determining asset prices during the announcement of a large market liberalization event, the Shanghai-Hong Kong Stock Connect program. Anticipating Hong Kong investors' demand, Chinese investors react positively to the announcement of the connect program. Connected stocks in the Shanghai Stock Exchange experience significant value appreciation compared with unconnected stocks with similar firm characteristics, especially for stocks with high market beta.

Due to heterogeneous beliefs about the aggregate market and short-sale constraints, stocks with high market beta are more prone to speculative trading as suggested by Hong and Sraer (2016). We show that high-beta stocks in China are associated with significantly high turnover and low expected returns, supporting the speculative nature of market beta. Moreover, the beta effect for announcement returns is stronger for stocks with high beta-to-idiosyncratic variance ratios as predicted by Hong and Sraer (2016) and is reversed within 60 trading days after the announcement. These additional results further distinguish a speculation-based explanation from a risk-based explanation. The interaction between the demand shock and the speculative beta in our results is consistent with the theoretical prediction in Hong, Scheinkman, and Xiong (2006) that the demand curve is steeper for stocks with a higher degree of speculative trading. We also use the Shenzhen-Hong Kong Stock Connect program more recently announced on November 25, 2016 as an out-of-sample check and find that our results and conclusions continue to hold.

Speculative trading is usually associated with high turnover and high return volatility. We further show that connected stocks experience substantial increases in turnover and return volatility after the announcement. Moreover, the increases in both turnover and volatility are larger for stocks with a higher Shanghai market beta. All of our evidence suggests that the beta effect is closely related to the speculative trading activities of Chinese investors.

Stock revaluation during market liberalization is often understood from the risk-sharing perspective. We point out that the demand effect and its interaction with stock market speculation can also have substantial effects on asset prices. We provide extensive evidence that our results are robust to alternative explanations, including the size of demand shocks, the information on future cash flows, the risk-sharing perspective, and the endogenous effect of persistent firm characteristics. One potential interesting direction for future work is to test the theoretical prediction of the multiplier effect of speculative trading on the price sensitivity to demand/supply shocks in other settings, such as constitutional changes in the stock index and institutional block trades in speculative markets.

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Appendix: Definition of variables

Variable	Definition
SIZE	Natural logarithm of the market capitalization (in thousand yuan).
BM	Book-to-market equity ratio, defined as the book value of equity divided by the market value of equity.
ROA	Return-on-assets, defined as net income divided by total assets.
LEV	Leverage, defined as the sum of short-term debt and long-term debt divided by total assets.
$BETA_{SH}$	Shanghai market beta, which is estimated from a market model using the return of Shanghai composite index as the market return. The model is estimated based on daily return over the past 12 months.
TVOL	Total volatility, defined as the (annualized) standard deviation of daily stock returns in the past 12 months.
$IVOL_{SH}$	Idiosyncratic volatility, defined as the (annualized) standard deviation of the daily residual returns from a Shanghai market index model in the past 12 months.
$BETA_{HK}$	Hong Kong market beta, which is estimated from a market model using the return of Hang Seng index as the market return. The model is estimated based on daily return over the past 12 months before program announcement.
TURNOVER	Average daily turnover over the past 12 months. Turnover is defined as trading volume (in shares) divided by total free-float shares outstanding.
AMIHUD	Amihud illiquidity measure, defined as the average ratio of daily absolute stock return to daily trading value (in yuan) $\times 10^8$ over the past 12 months.
$RET_{\{-1,0\}}$	Stock return in month $t-1$.
CAR_{MktAdj}	Cumulative market-adjusted abnormal return.
CAR_{MKT}	Cumulative abnormal return based on the market model. A 250-day pre-event window is used to estimate the coefficient on the market return and at least 30 days of available return data is required. A 30-day gap between the pre-event estimation period and the event window is used in order to avoid any microstructure effects and mechanical results.
CAR_{FF3}	Cumulative abnormal return based on the Fama-French three-factor model.
$CAR_{Carhart}$	Cumulative abnormal return based on the Carhart four-factor model.
CAR_{DGTW}	Cumulative benchmark-adjusted abnormal return following Daniel, Grinblatt, Titman, and Wermers (1997).

ΔTURNOVER	Change in turnover, defines as average daily turnover in the specified window after the program announcement divided by average daily turnover in the most recent month and then minus one.
ΔVOLATILITY	Change in return volatility, defined as average daily volatility in the specified window after the program announcement divided by average daily volatility in the most recent month and then minus one.
$DIFCOV_{HK}$	Difference between a stock's return covariance with the Shanghai market and its return covariance with the Hong Kong market. Covariances are estimated based on daily return over the past 12 months before program announcement.
$DIFCOV_{MSCI}$	Difference between a stock's covariance with the Shanghai market and its covariance with the MSCI Global index. Covariances are estimated based on daily return over the past 12 months before program announcement.
ΔForecastEPS2014	Change in analysts' earnings forecast per share (EPS) divided by the stock price at the end of October 2014 (in %) for year 2014, defined as the difference between the median forecasted EPS in six months after the announcement of the connect program and the median forecasted EPS in six months before the announcement of the connect program. ΔForecast EPS_2015 and ΔForecast EPS_2016 are similarly defined.
ΔROA	Change in ROA (return on assets).
ΔOPOA	Change in OPOA (operating profit divided by total assets).
ΔSOA	Change in SOA (sales divided by total assets).

Table 1. Firm characteristics for connected and unconnected stocks

Panel A reports the mean and median of firm characteristics for connected stocks (columns 1-2), unconnected SH stocks (columns 3-4), and unconnected SZ stocks (columns 5-6). Panel B reports the mean and median of firm characteristics for matched (columns 1-2) and unmatched connected stocks (columns 3-4). Panel C reports the firm characteristics for unconnected SH (columns 1-2) and SZ control stocks (columns 3-4). We start with all Shanghai-listed stocks that are eligible in the Shanghai-Hong Kong Stock Connect program as the treatment firms and all unconnected A-share stocks as the control firms. All firms in our sample are required to have valid accounting data and valid return data in October 2014. We implement the propensity-score-matching procedure by first estimating a logit regression to model the probability of being a treatment firm using firm size (SIZE), book-to-market ratio (BM), return-on-assets (ROA), total volatility (TVOL), and Shanghai market beta ($BETA_{SH}$). We then match each treatment firm to the control firms using the nearest neighbor matching technique (without replacement and with the caliper set at 0.20). The matched sample includes 440 connected firms and their corresponding propensity-score-matched unconnected control firms. All variables are winsorized at the 1% and 99% levels.

Panel A. Firm characteristics for connected stocks, unconnected SH stocks, and unconnected SZ stocks

	Connected stocks		Unconnected SH stocks		Unconnected SZ stocks	
N	519		324		1,318	
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean	Median	Mean	Median	Mean	Median
SIZE	16.179	15.990	15.087	15.048	15.206	15.108
BM	0.678	0.565	0.489	0.424	0.448	0.392
ROA	0.046	0.038	0.010	0.011	0.043	0.038
LEV	0.195	0.192	0.223	0.216	0.148	0.107
$BETA_{SH}$	1.209	1.200	1.156	1.169	1.244	1.258
TVOL	0.342	0.335	0.381	0.373	0.410	0.400
$IVOL_{SH}$	0.292	0.289	0.340	0.331	0.366	0.360
$BETA_{HK}$	0.497	0.491	0.412	0.425	0.423	0.422
TURNOVER	0.015	0.013	0.019	0.016	0.026	0.021
$AMIHUD\times10^8$	0.028	0.022	0.074	0.062	0.053	0.045
$RET_{\{-1,0\}}$	0.027	0.011	0.016	-0.007	0.014	-0.004

Panel B. Firm characteristics for matched and unmatched connected stocks

	Matched connected stocks		Unmatched connected stocks	
N	440		79	
	(1)	(2)	(3)	(4)
	Mean	Median	Mean	Median
SIZE	15.952	15.820	17.434	17.277
BM	0.616	0.523	1.041	1.022
ROA	0.047	0.039	0.044	0.031
LEV	0.199	0.196	0.172	0.161
$BETA_{SH}$	1.228	1.213	1.104	1.092
TVOL	0.353	0.343	0.282	0.270
$IVOL_{SH}$	0.303	0.295	0.229	0.213
$BETA_{HK}$	0.487	0.477	0.563	0.537
TURNOVER	0.017	0.014	0.006	0.005
$AMIHUD\times10^8$	0.030	0.024	0.016	0.009

$RET_{\{-1,0\}}$	0.021	0.005	0.058	0.034

Panel C. Firm characteristics for unconnected SH and SZ control stocks

	Unconnected SH control stocks		Unconnected SZ control stocks	
N	77		363	
	(1)	(2)	(3)	(4)
	Mean	Median	Mean	Median
SIZE	15.469	15.466	15.968	15.903
BM	0.699	0.608	0.575	0.464
ROA	0.003	0.006	0.055	0.045
LEV	0.279	0.295	0.181	0.163
$BETA_{SH}$	1.205	1.211	1.228	1.234
TVOL	0.351	0.361	0.353	0.351
$IVOL_{SH}$	0.303	0.306	0.303	0.302
$BETA_{HK}$	0.457	0.450	0.465	0.455
TURNOVER	0.014	0.014	0.015	0.013
AMIHUD$\times 10^8$	0.062	0.048	0.032	0.026
$RET_{\{-1,0\}}$	0.029	0.001	0.023	0.006

Table 2. Summary statistics

Panel A reports the mean, standard deviation, minimum, 25th percentile, median, 75th percentile, and maximum of various firm characteristics of all Shanghai connected stocks that have a valid propensity-score-matched firm in the matched sample. Panel B presents the comparison of firm characteristics for Shanghai connected stocks and their propensity-score-matched unconnected stocks. We start with all Shanghai-listed stocks that are eligible in the Shanghai-Hong Kong Stock Connect program as the treatment firms and all unconnected A-share stocks as the control firms. All firms in our sample are required to have valid accounting data and return data in October 2014. We implement the propensity-score-matching procedure by first estimating a logit regression to model the probability of being a treatment firm using firm size (SIZE), book-to-market ratio (BM), return-on-assets (ROA), total volatility (TVOL), and Shanghai market beta ($BETA_{SH}$). We then match each treatment firm to the control firms using the nearest neighbor matching technique (without replacement and with the caliper set at 0.20). Our final sample includes 440 connected firms and their corresponding propensity-score-matched unconnected firms. All variables are winsorized at the 1% and 99% levels.

Panel A. Firm characteristics of connected stocks in the matched sample

Variable	N	MEAN	STD.	MIN	P25	P50	P75	MAX
SIZE	440	15.952	0.778	14.338	15.410	15.820	16.359	18.256
BM	440	0.616	0.388	0.077	0.347	0.523	0.786	2.163
ROA	440	0.047	0.038	-0.077	0.022	0.039	0.067	0.204
LEV	440	0.199	0.150	0.000	0.061	0.196	0.307	0.600
$BETA_{SH}$	440	1.228	0.258	0.563	1.071	1.213	1.394	1.828
TVOL	440	0.353	0.078	0.201	0.298	0.343	0.404	0.553
$IVOL_{SH}$	440	0.303	0.081	0.156	0.244	0.295	0.357	0.510
$BETA_{HK}$	440	0.487	0.188	0.019	0.372	0.477	0.599	1.050
TURNOVER	440	0.017	0.010	0.002	0.010	0.014	0.021	0.054
$AMIHUD \times 10^8$	440	0.030	0.023	0.003	0.015	0.024	0.040	0.132
$RET_{\{-1,0\}}$	440	0.021	0.079	-0.116	-0.031	0.005	0.056	0.327

Panel B. Comparison of firm characteristics for connected and unconnected stocks in the matched sample

Variable	Connected	Unconnected	Difference	*t*-statistics
SIZE	15.952	15.880	0.072	1.38
BM	0.616	0.601	0.015	0.56
ROA	0.047	0.047	0.000	0.13
LEV	0.199	0.198	0.001	0.12
$BETA_{SH}$	1.228	1.224	0.004	0.24
TVOL	0.353	0.352	0.000	0.04
$IVOL_{SH}$	0.303	0.303	0.000	-0.05
$BETA_{HK}$	0.487	0.465	0.022	0.78
TURNOVER	0.017	0.015	0.002	0.86
$AMIHUD \times 10^8$	0.030	0.037	-0.006	-1.68
$RET_{\{-1,0\}}$	0.021	0.024	-0.003	-0.60

Table 3. Univariate analysis for CARs of connected stocks and propensity-score-matched unconnected stocks during the program announcement

Panel A reports the average market-adjusted CARs (CAR_{MktAdj}), CARs based on the market model (CAR_{MKT}), the Fama-French three-factor model (CAR_{FF3}), and the Carhart four-factor model ($CAR_{Carhart}$), and DGTW benchmark-adjusted CARs (CAR_{DGTW}) of connected stocks and their propensity-score-matched unconnected stocks during the announcement of the Shanghai-Hong Kong Stock Connect program. Panel A, Panel B, and Panel C report the CARs (in %) for the event windows (-1,1), (-2,2), and (-3,3), respectively. Panel D reports the CARs for connected stocks during the event windows (-2,3), (-1,3), (0,3), and (4,6), respectively. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	Connected	Unconnected	Difference
Panel A. Event Window (-1,1)			
CAR_{MktAdj}(-1,1)	1.606	0.258	1.348
	(7.70)	(1.39)	(4.83)
CAR_{MKT}(-1,1)	1.454	0.107	1.348
	(7.13)	(0.61)	(5.04)
CAR_{FF3}(-1,1)	0.227	-0.688	0.915
	(1.14)	(-4.23)	(3.56)
$CAR_{Carhart}$(-1,1)	0.267	-0.583	0.850
	(1.35)	(-3.70)	(3.36)
CAR_{DGTW}(-1,1)	0.451	-0.519	0.970
	(2.39)	(-2.99)	(3.79)
Panel B. Event Window (-2,2)			
CAR_{MktAdj}(-2,2)	1.660	0.156	1.503
	(6.71)	(0.72)	(4.56)
CAR_{MKT}(-2,2)	1.810	0.262	1.547
	(7.21)	(1.19)	(4.64)
CAR_{FF3}(-2,2)	0.435	-0.647	1.082
	(1.85)	(-3.06)	(3.42)
$CAR_{Carhart}$(-2,2)	0.452	-0.568	1.020
	(1.93)	(-2.71)	(3.25)
CAR_{DGTW}(-2,2)	0.619	-0.464	1.083
	(2.75)	(-2.17)	(3.49)
Panel C. Event Window (-3,3)			
CAR_{MktAdj}(-3,3)	2.208	0.381	1.827
	(7.84)	(1.34)	(4.56)
CAR_{MKT}(-3,3)	2.318	0.454	1.864
	(8.08)	(1.60)	(4.61)
CAR_{FF3}(-3,3)	0.686	-0.553	1.239
	(2.54)	(-2.07)	(3.26)
$CAR_{Carhart}$(-3,3)	0.709	-0.479	1.189
	(2.64)	(-1.80)	(3.15)
CAR_{DGTW}(-3,3)	0.857	-0.355	1.213
	(3.25)	(-1.31)	(3.21)
Observations	440	440	

Panel D. Event windows (-2,3), (-1,3), (0,3), and (4,6) for connected stocks

Event Window	(-2,3)	(-1,3)	(0,3)	(4,6)
CAR_{MktAdj}	2.361	2.586	2.553	-0.140
	(8.50)	(9.46)	(10.54)	(-1.14)
CAR_{MKT}	2.420	2.553	2.551	-0.098
	(8.54)	(9.33)	(10.45)	(-0.80)
CAR_{FF3}	0.605	0.514	0.526	-0.057
	(2.32)	(2.01)	(2.36)	(-0.36)
$CAR_{Carhart}$	0.630	0.550	0.545	-0.060
	(2.43)	(2.15)	(2.42)	(-0.38)
CAR_{DGTW}	0.873	0.895	0.906	-0.188
	(3.46)	(3.58)	(4.16)	(-1.26)
Observations	440	440	440	440

Table 4. Regression analysis for CARs of connected stocks and propensity-score-matched unconnected stocks during the program announcement

This table reports the regression analysis for CARs (in %) of connected stocks and propensity-score-matched unconnected stocks:

$$CAR_i = a_0 + a_1 CONNECT_i + \boldsymbol{bz_i} + \varepsilon_i,$$

where CAR represents the market-adjusted CARs (CAR_{MktAdj}), the CARs based on the market model (CAR_{MKT}), the Fama-French three-factor model (CAR_{FF3}), and the Carhart four-factor model ($CAR_{Carhart}$), and the DGTW benchmark-adjusted CARs (CAR_{DGTW}) during the announcement window (-3,3), respectively. CONNECT is a dummy variable, which equals one if the firm is in the connect program and zero otherwise. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), Shanghai market beta ($BETA_{SH}$), idiosyncratic volatility with respect to a Shanghai market model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	CAR_{MktAdj}(-3,3)		CAR_{MKT}(-3,3)		CAR_{FF3}(-3,3)		$CAR_{Carhart}$(-3,3)		CAR_{DGTW}(-3,3)	
CONNECT	1.827	1.798	1.864	1.813	1.239	1.188	1.189	1.154	1.213	1.317
	(4.56)	(4.63)	(4.61)	(4.67)	(3.26)	(3.14)	(3.15)	(3.07)	(3.21)	(3.42)
$BETA_{SH}$		1.240		3.969		1.806		1.703		-0.115
		(1.39)		(4.44)		(2.13)		(2.02)		(-0.13)
SIZE		1.030		0.739		0.348		0.318		0.100
		(2.52)		(1.84)		(0.91)		(0.83)		(0.24)
BM		0.797		0.282		-1.424		-1.379		-0.893
		(1.50)		(0.53)		(-2.63)		(-2.57)		(-1.61)
ROA		3.802		3.329		6.828		6.002		3.291
		(0.79)		(0.69)		(1.45)		(1.27)		(0.68)
LEV		2.380		1.976		0.409		0.615		1.415
		(1.71)		(1.43)		(0.30)		(0.45)		(1.04)
$IVOL_{SH}$		-16.643		-19.566		-10.849		-12.250		-4.291
		(-4.72)		(-5.59)		(-3.14)		(-3.59)		(-1.18)
AMIHUD		-0.841		-10.687		-12.927		-10.334		12.159
		(-0.08)		(-1.00)		(-1.20)		(-0.97)		(1.08)
TURNOVER		-42.338		-55.335		-30.033		-28.947		-16.463
		(-1.38)		(-1.82)		(-1.05)		(-1.02)		(-0.52)
$RET_{\{-1,0\}}$		-0.589		-0.723		-2.312		-2.228		-1.466
		(-0.23)		(-0.29)		(-0.91)		(-0.88)		(-0.58)
Constant	0.381	-12.904	0.454	-9.714	-0.553	-3.576	-0.479	-2.612	-0.355	-0.574
	(1.34)	(-1.95)	(1.60)	(-1.50)	(-2.07)	(-0.57)	(-1.80)	(-0.42)	(-1.31)	(-0.08)
Adj. R^2	0.022	0.114	0.023	0.127	0.011	0.049	0.010	0.048	0.011	0.011
Observations	880	880	880	880	880	880	880	880	880	880

Table 5. Announcement CARs, connection, and the speculative beta effect

This table reports the regression analysis for CARSs (in %) of connected stocks and propensity-score-matched unconnected stocks on the connect dummy and its interactions with Shanghai market beta:

$$CAR_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$

where CAR represents the market-adjusted CARs (CAR_{MktAdj}), the CARs based on the market model (CAR_{MKT}), the Fama-French three-factor model (CAR_{FF3}), and the Carhart four-factor model ($CAR_{Carhart}$), and the DGTW benchmark-adjusted CARs (CAR_{DGTW}) during the announcement window (-3,3), respectively. CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to a Shanghai market index model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	CAR_{MktAdj}(-3,3)		CAR_{MKT}(-3,3)		CAR_{FF3}(-3,3)		$CAR_{Carhart}$(-3,3)		CAR_{DGTW}(-3,3)	
CONNECT	-3.902	-4.679	-3.946	-4.894	-3.350	-3.927	-3.458	-4.054	-3.729	-3.785
	(-4.15)	(-2.49)	(-3.53)	(-2.68)	(-2.51)	(-3.23)	(-2.68)	(-3.27)	(-3.51)	(-3.21)
CONNECT×$BETA_{SH}$	4.676	5.282	4.734	5.471	3.740	4.172	3.788	4.248	4.033	4.162
	(5.69)	(3.56)	(4.97)	(3.71)	(3.41)	(4.01)	(3.61)	(4.10)	(4.80)	(4.54)
$BETA_{SH}$	-3.848	-1.575	-1.266	1.053	-1.354	-0.417	-1.611	-0.560	-2.995	-2.332
	(-2.20)	(-1.39)	(-0.70)	(0.92)	(-0.82)	(-0.37)	(-1.04)	(-0.52)	(-1.82)	(-1.77)
SIZE		1.054		0.765		0.367		0.337		0.119
		(1.20)		(0.97)		(0.56)		(0.53)		(0.13)
BM		0.681		0.162		-1.515		-1.472		-0.984
		(0.77)		(0.20)		(-1.93)		(-1.94)		(-1.20)
ROA		2.603		2.087		5.881		5.038		2.347
		(0.27)		(0.23)		(0.65)		(0.57)		(0.25)
LEV		2.313		1.906		0.356		0.561		1.362
		(1.08)		(0.96)		(0.17)		(0.28)		(0.59)
$IVOL_{SH}$		-17.134		-20.074		-11.236		-12.645		-4.678
		(-2.86)		(-3.35)		(-2.04)		(-2.40)		(-0.81)
AMIHUD		-1.140		-10.997		-13.164		-10.575		11.923
		(-0.07)		(-0.71)		(-0.91)		(-0.72)		(0.95)
TURNOVER		-43.544		-56.584		-30.986		-29.917		-17.413
		(-0.82)		(-1.11)		(-0.74)		(-0.71)		(-0.34)
$RET_{\{-1,0\}}$		-0.466		-0.596		-2.215		-2.129		-1.369
		(-0.18)		(-0.26)		(-1.59)		(-1.56)		(-0.44)
Constant	5.093	-9.531	2.004	-6.220	1.105	-0.912	1.493	0.101	3.311	2.084
	(3.12)	(-0.72)	(1.19)	(-0.52)	(0.65)	(-0.09)	(0.95)	(0.01)	(2.04)	(0.15)
Adj. R^2	0.032	0.125	0.033	0.138	0.016	0.057	0.015	0.056	0.018	0.018
Observations	880	880	880	880	880	880	880	880	880	880

Table 6. Change in turnover, connection, and the speculative beta effect

This table reports the regression analysis for the change in turnover of connected stocks and propensity-score-matched unconnected stocks:

$$\Delta TURNOVER_i = a_0 + a_1 CONNECT_i + \boldsymbol{bz_i} + \varepsilon_i,$$

$$\Delta TURNOVER_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$

where standardized change in turnover (ΔTURNOVER) is defined as the average daily turnover of firm i in the window (0,10) after the program announcement divided by average daily turnover in the most recent month and then minus one. CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to a Shanghai market index model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	ΔTURNOVER			
CONNECT	0.114	0.103	-0.276	-0.355
	(2.63)	(2.47)	(-2.38)	(-4.08)
CONNECT×$BETA_{SH}$			0.318	0.374
			(3.49)	(4.96)
$BETA_{SH}$		0.183	-0.159	-0.016
		(2.12)	(-0.97)	(-0.13)
SIZE		0.105		0.107
		(2.40)		(1.49)
BM		0.135		0.127
		(2.24)		(3.66)
ROA		-0.923		-1.008
		(-1.79)		(-1.61)
LEV		-0.077		-0.082
		(-0.45)		(-0.45)
$IVOL_{SH}$		-1.372		-1.407
		(-3.90)		(-2.41)
AMIHUD		-0.232		-0.253
		(-0.18)		(-0.18)
TURNOVER		-3.213		-3.298
		(-0.99)		(-0.86)
$RET_{\{-1,0\}}$		-1.494		-1.485
		(-6.93)		(-8.60)
Constant		-1.355		-1.117
		(-1.88)		(-1.12)
Adj. R^2	0.007	0.097	0.008	0.101
Observations	880	880	880	880

Table 7. Change in volatility, connection, and the speculative beta effect

This table reports the regression analysis for the change in volatility of connected stocks and propensity-score-matched unconnected stocks:

$$\Delta VOLATILITY_i = a_0 + a_1 CONNECT_i + \boldsymbol{bz_i} + \varepsilon_i,$$

$$\Delta VOLATILITY_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$

where standardized change in volatility (ΔVOLATILITY) is defined as the average daily volatility of firm *i* in the event window (0,10) after the program announcement divided by average daily volatility in the most recent month and then minus one. Daily volatility is calculated as the standard deviation of intraday 5-min returns. CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index. Control variables $\mathbf{z}$ include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to a Shanghai market index model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	ΔVOLATILITY			
CONNECT	0.054	0.047	-0.069	-0.105
	(2.33)	(2.10)	(-1.50)	(-1.42)
CONNECT×$BETA_{SH}$			0.100	0.124
			(3.06)	(2.14)
$BETA_{SH}$		0.167	0.042	0.101
		(3.42)	(0.57)	(2.01)
SIZE		0.069		0.069
		(2.89)		(1.24)
BM		0.046		0.043
		(1.32)		(1.17)
ROA		-0.281		-0.309
		(-1.04)		(-0.52)
LEV		0.002		0.000
		(0.02)		(0.00)
$IVOL_{SH}$		-0.695		-0.707
		(-3.36)		(-1.68)
AMIHUD		0.333		0.326
		(0.48)		(0.29)
TURNOVER		0.522		0.494
		(0.28)		(0.20)
$RET_{\{-1,0\}}$		-0.524		-0.521
		(-3.40)		(-5.08)
Constant		-1.055		-0.976
		(-2.71)		(-1.24)
Adj. R^2	0.005	0.057	0.009	0.058
Observations	880	880	880	880

Table 8. Connection, speculative beta, and the beta-to-idiosyncratic variance ratio

This table reports the regression analysis of the CAR (in %) during the program announcement on the connect dummy and its interactions with Shanghai market beta in high and low beta-to-idiosyncratic variance ratio subsamples, respectively:

$$CAR_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$

where CAR represents the CARs based on the market model (CAR_{MKT}) during the announcement window (-3,3). CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index. Idiosyncratic variance is calculated from daily return residuals based on a Shanghai market index model in the past 12 months. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to a Shanghai market index model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). The low (high) $IVOL_{SH}$ subsample includes firms with $IVOL_{SH}$ below (above) the sample median. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	Low ratio		High ratio	
CONNECT	-1.641	-2.387	-8.510	-9.688
	(-0.82)	(-0.74)	(-3.93)	(-9.97)
CONNECT×$BETA_{SH}$	2.653	3.471	8.229	8.993
	(1.44)	(1.18)	(4.26)	(10.74)
$BETA_{SH}$	-1.226	2.111	-5.192	1.690
	(-1.35)	(1.17)	(-1.35)	(0.39)
SIZE		0.309		0.877
		(0.66)		(0.87)
BM		0.096		0.027
		(0.09)		(0.03)
ROA		3.378		3.084
		(0.45)		(0.35)
LEV		2.111		1.938
		(1.74)		(0.96)
$IVOL_{SH}$		-19.824		-32.553
		(-2.87)		(-2.45)
AMIHUD		-1.297		-27.003
		(-0.05)		(-2.13)
TURNOVER		-59.730		-68.262
		(-1.36)		(-0.79)
$RET_{\{-1,0\}}$		-3.498		5.044
		(-1.73)		(1.48)
Constant	0.919	-0.479	8.214	-5.074
	(0.81)	(-0.05)	(1.93)	(-0.32)
Adj. R^2	0.010	0.059	0.055	0.166
Observations	440	440	440	440

Table 9. The speculative beta effect over extended event window

This table reports the regression analysis of the CARs (in %) during the program announcement on the connect dummy and its interactions with Shanghai market beta over the extended event window:

$$CAR_{i,(-3,t)} = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$

where $CAR_{i,(-3,t)}$ represents the market-adjusted CARs (CAR_{MktAdj}), the CARs based on the market model (CAR_{MKT}), the Fama-French three-factor model (CAR_{FF3}), and the Carhart four-factor model ($CAR_{Carhart}$), and the DGTW benchmark-adjusted CARs (CAR_{DGTW}) during the event window (-3,*t*) (*t* = 3, 10, 20, 40, 60). CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to a Shanghai market index model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). To save space, we only report the coefficients on the interaction term (a_2) in the above regression equation. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

Window	CAR_{MktAdj}	CAR_{MKT}	CAR_{FF3}	$CAR_{Carhart}$	CAR_{DGTW}
(-3, 3)	5.282	5.471	4.172	4.248	4.162
	(3.56)	(3.71)	(4.01)	(4.10)	(4.54)
(-3, 10)	5.268	5.671	4.597	4.662	4.577
	(5.71)	(5.66)	(6.96)	(6.78)	(8.24)
(-3, 20)	3.823	4.446	0.215	1.315	2.382
	(1.32)	(1.69)	(0.06)	(0.36)	(0.77)
(-3, 40)	5.601	6.571	-3.652	-1.257	4.331
	(1.67)	(2.15)	(-0.48)	(-0.19)	(1.28)
(-3, 60)	-1.569	0.301	-4.406	-3.584	-2.551
	(-0.32)	(0.06)	(-0.59)	(-0.46)	(-0.52)

Table 10. Alternative explanation: The slope of demand curve or the size of demand shock?

This table reports regression results of Hong Kong investors' holdings of Shanghai connected stocks through the Shanghai-Hong Kong Stock Connect program on Shanghai market beta ($BETA_{SH}$) and various firm characteristics, including market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to a Shanghai market model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), and turnover (TURNOVER). Columns (3) and (6) further control for time (T) and industry fixed effects (I). The first sample (2014Q4 – 2015Q3) includes Hong Kong investors' holdings of Shanghai connected stocks through the connect program at each of the four quarter ends after the announcement of the program (December 2014, March 2015, June 2015, and Septemp2015), during which holdings are only reported for Shanghai connected stocks if the Hong Kong Stock Connect is among the top 10 shareholders. The second sample (2017Q1 – 2017Q4) includes Hong Kong investors' holdings of Shanghai connected stocks through the connect program in each of the four quarter ends from March 2017 to December 2017, during which holdings are reported for all Shanghai connected stocks. Corresponding *t*-statistics associated with robust standard errors clustered at the firm level are reported in parentheses.

	2014Q4 – 2015Q3			2017Q1 – 2017Q4		
	(1)	(2)	(3)	(4)	(5)	(6)
$BETA_{SH}$	-0.651	-0.546	-0.510	-0.711	-0.399	-0.363
	(-1.37)	(-1.37)	(-1.18)	(-2.30)	(-1.71)	(-1.57)
SIZE		-0.139	-0.146		0.179	0.193
		(-0.87)	(-0.83)		(2.36)	(2.03)
BM		-0.514	-0.532		0.041	0.043
		(-3.28)	(-2.68)		(1.00)	(0.93)
ROA		11.262	10.140		10.418	9.753
		(4.54)	(3.82)		(4.28)	(4.23)
LEV		-0.715	-0.722		0.035	-0.081
		(-1.16)	(-0.96)		(0.13)	(-0.28)
$IVOL_{SH}$		0.731	0.688		-1.071	-1.448
		(0.28)	(0.26)		(-1.29)	(-1.58)
AMIHUD		-17.393	-19.286		-5.204	-5.675
		(-1.91)	(-1.86)		(-2.31)	(-2.14)
TURNOVER		-19.529	-21.525		-1.202	-0.396
		(-1.52)	(-1.68)		(-0.24)	(-0.08)
Constant	1.947	4.420	4.637	1.440	-1.917	-2.379
	(2.99)	(1.24)	(1.18)	(3.52)	(-1.42)	(-1.34)
Fixed effects	No	No	T, I	No	No	T, I
Adj. R^2	0.012	0.248	0.248	0.015	0.147	0.155
Observations	412	412	412	2,120	2,088	2,088

Table 11. Alternative explanations: The demand effect or the information effect?

This table reports the regression results of the change in analysts' earnings forecast per share (EPS) and future firm accounting performance on the connect dummy and its interaction with Shanghai market beta. In Panel A, the dependent variable is the change in forecasted EPS divided by the stock price at the end of October 2014 (in %) for years 2014, 2015, and 2016, respectively. The change in forecasted EPS (ΔForecastEPS) is defined as the difference between the median forecasted EPS in the six months after the announcement of the connect program and the median forecasted EPS in the six months before the announcement of the connect program. In Panel B, the dependent variables are the changes in earnings divided by total assets (ΔROA, in %), operating profits divided by total assets (ΔOPOA, in %), and sales divided by total assets (ΔSOA, in %) from fiscal 2014 to fiscal 2015. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

Panel A. Regression results of expected cash flow

	(1)	(2)	(3)	(4)	(5)	(6)
	ΔForecastEPS2014	ΔForecastEPS2015	ΔForecastEPS2016	ΔForecastEPS2014	ΔForecastEPS2015	ΔForecastEPS 016
CONNECT	0.113	0.167	0.098	0.440	0.056	-0.007
	(0.96)	(1.24)	(0.55)	(0.76)	(0.09)	(-0.01)
CONNECT×$BETA_{SH}$				-0.266	0.091	0.085
				(-0.56)	(0.18)	(0.14)
$BETA_{SH}$	-0.129	-0.030	0.000	0.015	-0.077	-0.045
	(-0.53)	(-0.10)	(0.00)	(0.05)	(-0.20)	(-0.09)
SIZE	0.296	0.177	0.232	0.294	0.177	0.232
	(2.56)	(1.15)	(1.25)	(2.55)	(1.16)	(1.26)
BM	-0.098	-0.085	-0.178	-0.090	-0.088	-0.180
	(-0.59)	(-0.33)	(-0.54)	(-0.54)	(-0.34)	(-0.55)
ROA	0.857	-2.054	-2.661	0.947	-2.085	-2.689
	(0.59)	(-1.30)	(-1.32)	(0.65)	(-1.30)	(-1.33)
LEV	-0.686	-0.807	-0.990	-0.686	-0.807	-0.990
	(-1.58)	(-1.41)	(-1.28)	(-1.58)	(-1.41)	(-1.28)
$IVOL_{SH}$	-1.496	-0.641	-2.442	-1.483	-0.649	-2.451
	(-1.64)	(-0.55)	(-1.55)	(-1.62)	(-0.56)	(-1.55)
AMIHUD	11.629	7.386	11.937	11.664	7.369	11.915
	(2.75)	(1.72)	(2.23)	(2.75)	(1.71)	(2.22)
TURNOVER	20.918	15.136	36.783	20.892	15.120	36.788
	(2.85)	(1.54)	(2.83)	(2.84)	(1.53)	(2.83)
$RET_{\{-1,0\}}$	1.246	2.965	3.450	1.235	2.969	3.453
	(1.46)	(3.07)	(2.90)	(1.44)	(3.07)	(2.90)
Constant	-5.091	-3.300	-3.973	-5.243	-3.246	-3.922
	(-2.53)	(-1.30)	(-1.30)	(-2.50)	(-1.25)	(-1.26)
Adj. R^2	0.018	0.018	0.021	0.017	0.017	0.019
Observations	494	597	576	494	597	576

Panel B. Regression results of realized cash flow

	(1)	(2)	(3)	(4)	(5)	(6)
	ΔROA	ΔOPOA	ΔSOA	ΔROA	ΔOPOA	ΔSOA
CONNECT	-0.030	0.050	0.163	1.384	1.607	3.372
	(-0.11)	(0.18)	(0.13)	(0.97)	(1.05)	(0.47)
CONNECT×$BETA_{SH}$				-1.154	-1.271	-2.619
				(-1.03)	(-1.05)	(-0.45)
$BETA_{SH}$	0.354	0.588	2.897	0.956	1.252	4.265
	(0.57)	(0.87)	(0.89)	(1.19)	(1.40)	(0.99)
SIZE	0.005	0.034	0.050	0.003	0.032	0.044
	(0.02)	(0.14)	(0.03)	(0.01)	(0.13)	(0.03)
BM	-0.065	0.122	-3.022	-0.036	0.154	-2.956
	(-0.18)	(0.33)	(-1.88)	(-0.10)	(0.41)	(-1.83)
ROA	-9.711	-10.358	-37.934	-9.487	-10.111	-37.426
	(-2.45)	(-2.48)	(-3.35)	(-2.41)	(-2.44)	(-3.34)
LEV	-0.627	-0.449	-8.773	-0.616	-0.437	-8.747
	(-0.61)	(-0.42)	(-1.70)	(-0.60)	(-0.41)	(-1.70)
$IVOL_{SH}$	-0.851	-0.439	-0.168	-0.735	-0.311	0.095
	(-0.37)	(-0.18)	(-0.02)	(-0.33)	(-0.13)	(0.01)
AMIHUD	0.268	1.793	-8.522	0.471	2.016	-8.061
	(0.03)	(0.17)	(-0.16)	(0.05)	(0.20)	(-0.15)
TURNOVER	2.506	8.062	-12.774	3.119	8.738	-11.381
	(0.12)	(0.37)	(-0.10)	(0.15)	(0.40)	(-0.09)
$RET_{\{-1,0\}}$	1.319	0.937	5.642	1.249	0.859	5.482
	(0.78)	(0.54)	(0.72)	(0.74)	(0.50)	(0.70)
CONSTANT	-0.710	-2.004	-5.981	-1.490	-2.864	-7.753
	(-0.17)	(-0.45)	(-0.24)	(-0.37)	(-0.66)	(-0.30)
Adj. R^2	0.006	0.011	0.007	0.006	0.011	0.006
Observations	742	742	742	742	742	742

Table 12. Alternative explanation: Risk sharing

This table reports the regression results of the CAR (in %) during the program announcement on the connect dummy and its interactions with Shanghai market beta, $DIVCOV_{HK}$, and $DIVCOV_{MSCI}$:

$$CAR_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i}$$
$$+ a_4 CONNECT_i \times DIFCOV_i + a_5 DIFCOV_i + \boldsymbol{b}\boldsymbol{z_i} + \varepsilon_i,$$

where CAR represents the CARs based on the market model (CAR_{MKT}) during the announcement window (-3,3). CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is stock beta with respect to the Shanghai market index. $DIFCOV_{HK}$ is constructed as the difference between a stock's return covariance with the Shanghai market and its return covariance with the Hong Kong market. $DIFCOV_{MSCI}$ is between a stock's return covariance with the Shanghai market and its return covariance with the MSCI Global index. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to the Shanghai market index model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	(1)	(2)
CONNECT	-4.565	-4.814
	(-2.85)	(-2.73)
CONNECT×$BETA_{SH}$	5.148	5.389
	(3.77)	(3.66)
$BETA_{SH}$	0.989	0.980
	(0.89)	(0.85)
CONNECT×$DIFCOV_{HK}$	-2.440	
	(-0.67)	
$DIFCOV_{HK}$	7.701	
	(1.57)	
CONNECT×$DIFCOV_{MSCI}$		4.153
		(3.52)
$DIFCOV_{MSCI}$		1.299
		(0.61)
SIZE	0.437	0.658
	(0.74)	(0.92)
BM	-0.024	0.144
	(-0.03)	(0.19)
ROA	3.342	2.550
	(0.44)	(0.30)
LEV	1.805	1.898
	(1.05)	(0.99)
$IVOL_{SH}$	-16.569	-18.850
	(-3.06)	(-3.21)
AMIHUD	-14.289	-11.776
	(-0.99)	(-0.80)
TURNOVER	-69.553	-60.328
	(-1.54)	(-1.23)
$RET_{\{-1,0\}}$	-0.956	-0.683
	(-0.51)	(-0.31)
Constant	-1.551	-4.726
	(-0.17)	(-0.43)
Adj. R^2	0.148	0.139
Observations	880	880

Table 13. Placebo tests

This table reports the placebo tests for the CAR, change in turnover, and change in volatility. We choose two pseudo trading dates, October 10 and September 10, 2014, which are one and two months before the program announcement date. Panels A, B, and C report the results for the CARs based on the market model (CAR_{MKT}(-3,3), in %), change of turnover (ΔTURNOVER), and change of volatility (ΔVOLATILITY), respectively. Control variables include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), beta with respect to the Shanghai market index model ($BETA_{SH}$), idiosyncratic volatility with respect to a Shanghai market model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

Panel A. Cumulative abnormal returns (Dependent variable = CAR_{MKT} (-3,3))

	10/10/2014		09/10/2014	
CONNECT	-0.301	-3.660	0.559	0.800
	(-0.78)	(-3.05)	(0.74)	(0.45)
CONNECT×$BETA_{SH}$		0.672		-0.198
		(1.05)		(-0.16)
$BETA_{SH}$	-2.279	-3.691	-2.231	-2.122
	(-2.81)	(-7.55)	(-3.15)	(-1.91)
SIZE	-0.243	-0.251	-1.625	-1.624
	(-0.65)	(-0.84)	(-5.09)	(-2.99)
BM	-0.071	-0.113	0.329	0.335
	(-0.12)	(-0.13)	(0.69)	(0.77)
ROA	-20.661	-21.185	-10.109	-10.043
	(-3.53)	(-2.94)	(-2.28)	(-1.47)
LEV	-2.243	-2.336	1.519	1.528
	(-1.53)	(-1.22)	(1.36)	(2.56)
$IVOL_{SH}$	-10.065	-10.025	-14.703	-14.709
	(-3.36)	(-3.58)	(-5.90)	(-27.23)
AMIHUD	-1.507	-1.989	3.157	3.243
	(-0.13)	(-0.34)	(0.34)	(0.23)
TURNOVER	-58.654	-58.712	-36.720	-36.573
	(-2.28)	(-5.98)	(-1.45)	(-0.95)
$RET_{\{-1,0\}}$	0.581	0.654	3.196	3.207
	(0.26)	(0.42)	(1.28)	(1.95)
Constant	12.641	14.619	32.497	32.333
	(1.94)	(2.62)	(5.84)	(2.98)
Adj. R^2	0.083	0.085	0.212	0.211
Observations.	894	894	894	894

Panel B. Changes in turnover (Dependent variable = ΔTURNOVER)

	10/10/2014		09/10/2014	
CONNECT	0.507	1.571	0.147	0.322
	(1.18)	(0.89)	(1.03)	(2.95)
CONNECT×$BETA_{SH}$		-0.847		-0.144
		(-0.69)		(-0.65)
$BETA_{SH}$	0.053	0.501	0.017	0.097
	(0.14)	(0.97)	(0.11)	(1.85)
SIZE	-0.113	-0.110	-0.184	-0.183
	(-0.80)	(-0.67)	(-2.82)	(-4.02)
BM	0.759	0.772	0.561	0.565
	(0.80)	(0.66)	(1.62)	(2.70)
ROA	2.868	3.034	1.129	1.177
	(1.15)	(1.39)	(0.91)	(4.66)
LEV	2.007	2.036	-0.712	-0.706
	(1.16)	(2.78)	(-1.46)	(-1.75)
$IVOL_{SH}$	-0.538	-0.551	0.655	0.651
	(-0.19)	(-0.17)	(0.63)	(1.34)
AMIHUD	5.229	5.382	1.034	1.096
	(0.33)	(0.36)	(0.43)	(1.13)
TURNOVER	-4.682	-4.663	-17.295	-17.189
	(-0.35)	(-0.27)	(-2.05)	(-2.19)
$RET_{\{-1,0\}}$	-1.738	-1.761	-0.004	0.004
	(-1.46)	(-3.24)	(0.00)	(0.00)
Constant	1.077	0.450	2.980	2.861
	(0.36)	(0.20)	(1.99)	(4.71)
Adj. R^2	-0.004	-0.005	0.015	0.014
Observations	894	894	894	894

Panel C. Changes in volatility (Dependent variable = ΔVOLATILITY)

	October 10, 2014		September 10, 2014	
CONNECT	-0.025	-0.002	0.020	-0.029
	(-1.15)	(-0.05)	(0.92)	(-0.76)
CONNECT×$BETA_{SH}$		-0.019		0.040
		(-0.76)		(0.79)
$BETA_{SH}$	-0.057	-0.047	-0.004	-0.027
	(-1.30)	(-0.81)	(-0.09)	(-1.21)
SIZE	-0.076	-0.076	-0.116	-0.116
	(-3.90)	(-8.90)	(-5.34)	(-4.54)
BM	-0.072	-0.072	0.007	0.006
	(-2.40)	(-3.10)	(0.23)	(0.45)
ROA	-0.577	-0.573	-0.428	-0.441
	(-1.79)	(-3.66)	(-1.52)	(-1.77)
LEV	-0.161	-0.160	-0.139	-0.140
	(-2.13)	(-3.03)	(-1.67)	(-2.33)
$IVOL_{SH}$	-0.450	-0.451	-0.276	-0.274
	(-2.69)	(-8.53)	(-1.62)	(-1.63)
AMIHUD	-1.619	-1.616	0.323	0.306
	(-2.84)	(-4.72)	(0.46)	(0.40)
TURNOVER	-3.941	-3.940	-3.137	-3.167
	(-3.11)	(-3.37)	(-1.94)	(-1.67)
$RET_{\{-1,0\}}$	-0.476	-0.477	-0.537	-0.539
	(-4.99)	(-9.60)	(-3.84)	(-4.39)
Constant	1.805	1.791	2.148	2.181
	(5.34)	(7.73)	(5.69)	(4.66)
Adj. R^2	0.063	0.062	0.103	0.102
Observations	891	891	893	893

Table 14. The speculative beta effect for announcement CARs and changes in turnover and volatility: Alternative beta estimation

This table reports the speculative beta effect for announcement CARs (Panel A) and changes in turnover and volatility (Panel B) of connected stocks and propensity-score-matched unconnected stocks using alternative beta estimation:

$$CAR_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + bz_i + \varepsilon_i,$$

$$\Delta TURNOVER_i \ (or\ \Delta VOLATILITY_i) = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + bz_i + \varepsilon_i,$$

where CAR represents the cumulative market-adjusted abnormal returns (CAR_{MktAdj}), the CARs based on the market model (CAR_{MKT}), the Fama-French three-factor model (CAR_{FF3}), and the Carhart four-factor model ($CAR_{Carhart}$), or the cumulative DGTW benchmark-adjusted abnormal returns (CAR_{DGTW}) during the announcement window (-3,3). ΔTURNOVER is standardized change in turnover defined as the average daily turnover of firm *i* in the window (0,10) after the program announcement divided by average daily turnover in the most recent month and then minus one. ΔVOLATILITY is standardized change in volatility defined as the average daily volatility of firm *i* in the event window (0,10) after the program announcement divided by average daily volatility in the most recent month and then minus one. CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index, which is estimated by regressing a stock's excess return on the contemporaneous excess market return and five lags of the excess market return using the past 12 months of daily returns before April 2014 (from April 2013 to March 2014) and summing up the six coefficients. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

Panel A. Announcement CARs

	CAR_{MktAdj}(-3,3)		CAR_{MKT}(-3,3)		CAR_{FF3}(-3,3)		$CAR_{Carhart}$(-3,3)		CAR_{DGTW}(-3,3)	
CONNECT	-2.977	-3.822	-3.079	-4.171	-2.751	-3.442	-2.722	-3.430	-3.049	-3.167
	(-3.34)	(-2.32)	(-3.36)	(-2.61)	(-2.40)	(-2.70)	(-2.59)	(-2.84)	(-3.00)	(-2.56)
CONNECT×$BETA_{SH}$	3.794	4.380	3.868	4.624	3.112	3.593	3.055	3.559	3.349	3.514
	(5.69)	(3.77)	(5.59)	(4.03)	(3.74)	(3.71)	(4.08)	(3.97)	(5.32)	(4.40)
$BETA_{SH}$	-2.281	-0.651	-1.334	0.542	-1.256	-0.065	-1.536	-0.231	-1.860	-1.418
	(-2.14)	(-0.91)	(-1.49)	(1.12)	(-1.27)	(-0.10)	(-1.74)	(-0.42)	(-1.44)	(-1.61)
SIZE		1.041		0.833		0.421		0.381		0.066
		(1.19)		(1.01)		(0.63)		(0.59)		(0.07)
BM		0.705		0.245		-1.479		-1.435		-0.992
		(0.80)		(0.30)		(-1.97)		(-1.95)		(-1.21)
ROA		2.662		2.042		6.464		5.553		2.274
		(0.26)		(0.22)		(0.69)		(0.61)		(0.23)
LEV		2.295		1.847		0.483		0.666		1.327
		(1.01)		(0.86)		(0.22)		(0.32)		(0.54)
$IVOL_{SH}$		-17.593		-22.594		-13.131		-14.309		-4.000
		(-3.13)		(-3.99)		(-2.61)		(-2.95)		(-0.74)
AMIHUD		-1.694		-10.578		-12.167		-9.790		10.786
		(-0.11)		(-0.65)		(-0.82)		(-0.65)		(0.87)
TURNOVER		-41.238		-46.853		-28.996		-27.848		-18.163
		(-0.74)		(-0.86)		(-0.67)		(-0.63)		(-0.33)
$RET_{\{-1,0\}}$		-0.381		-0.316		-2.011		-1.947		-1.395
		(-0.14)		(-0.13)		(-1.43)		(-1.42)		(-0.44)

Constant	5.815	-9.045	3.416	-6.140	1.041	-1.763	1.470	-0.617	3.275	3.008
	(10.01)	(-0.73)	(4.97)	(-0.53)	(0.95)	(-0.19)	(1.50)	(-0.07)	(4.54)	(0.24)
Adj. R^2	0.043	0.125	0.031	0.136	0.017	0.061	0.015	0.059	0.020	0.020
Observations	880	880	880	880	880	880	880	880	880	880

Panel B. Changes in turnover and volatility

	ΔTURNOVER		ΔVOLATILITY	
CONNECT	-0.332	-0.397	-0.188	-0.224
	(-2.89)	(-2.68)	(-2.35)	(-1.94)
CONNECT×$BETA_{SH}$	0.358	0.401	0.194	0.217
	(4.21)	(3.72)	(3.05)	(2.55)
$BETA_{SH}$	-0.186	-0.043	-0.016	0.040
	(-1.90)	(-0.48)	(-0.28)	(0.74)
SIZE		0.121		0.077
		(1.67)		(1.36)
BM		0.114		0.034
		(3.10)		(0.83)
ROA		-0.987		-0.320
		(-1.63)		(-0.54)
LEV		-0.114		-0.020
		(-0.61)		(-0.12)
$IVOL_{SH}$		-1.526		-0.776
		(-2.81)		(-1.88)
AMIHUD		-0.055		0.422
		(-0.04)		(0.44)
TURNOVER		-2.394		0.967
		(-0.67)		(0.40)
$RET_{\{-1,0\}}$		-1.501		-0.528
		(-9.62)		(-5.33)
Constant	0.286	-1.271	0.069	-1.000
	(2.76)	(-1.27)	(1.30)	(-1.30)
Adj. R^2	0.022	0.118	0.025	0.077
Observations	880	880	880	880

Table 15. Changes in turnover and volatility, connection, and the speculative beta effect: alternative measure of changes in turnover and volatility

This table reports the regression analysis for the changes in turnover (Panel A) and volatility (Panel B) of connected stocks and propensity-score-matched unconnected stocks using alternative measure of change in turnover and volatility:

$$\Delta TURNOVER_i = a_0 + a_1 CONNECT_i + \boldsymbol{bz_i} + \varepsilon_i,$$
$$\Delta TURNOVER_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$
$$\Delta VOLATILITY_i = a_0 + a_1 CONNECT_i + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$
$$\Delta VOLATILITY_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i \times BETA_{SH,i} + a_3 BETA_{SH,i} + \boldsymbol{bz_i} + \varepsilon_i,$$

where ΔTURNOVER is standardized change in turnover defined as the average daily turnover of firm *i* in the window (0,10) after the program announcement divided by average daily turnover in March 2014 and then minus one. ΔVOLATILITY is standardized change in volatility defined as the average daily volatility of firm *i* in the event window (0,10) after the program announcement divided by average daily volatility in March 2014 and then minus one. CONNECT is a dummy variable that equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), idiosyncratic volatility with respect to a Shanghai market index model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), and past one-month return ($RET_{\{-1,0\}}$). Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

Panel A. Changes in turnover, connection, and the speculative beta effect

Dep. Var.	ΔTURNOVER			
CONNECT	0.144	0.175	-0.322	-0.361
	(2.62)	(3.14)	(-2.10)	(-4.04)
CONNECT×$BETA_{SH}$			0.426	0.463
			(2.72)	(4.22)
$BETA_{SH}$		-0.088	-0.179	-0.097
		(-0.46)	(-0.67)	(-0.65)
SIZE		0.164		0.167
		(1.63)		(1.32)
BM		0.335		0.320
		(2.56)		(3.53)
ROA		-1.787		-1.955
		(-1.91)		(-2.26)
LEV		-0.077		-0.090
		(-0.25)		(-0.40)
$IVOL_{SH}$		-3.331		-3.382
		(-4.93)		(-3.87)
AMIHUD		3.135		3.015
		(0.81)		(0.85)
TURNOVER		-10.952		-11.313
		(-1.49)		(-1.41)
$RET_{\{-1,0\}}$		1.745		1.768
		(2.90)		(1.73)
Constant		-0.933		-0.427
		(-0.55)		(-0.21)
Adj. R^2	0.002	0.132	0.018	0.136
Observations	880	880	880	880

Panel B. Changes in volatility, connection, and the speculative beta effect

	ΔVOLATILITY			
CONNECT	0.052	0.051	-0.081	-0.172
	(2.56)	(2.67)	(-1.40)	(-1.38)
CONNECT×$BETA_{SH}$			0.109	0.182
			(2.82)	(2.66)
$BETA_{SH}$		0.137	-0.046	0.040
		(2.01)	(-0.28)	(0.38)
SIZE		0.002		0.003
		(0.07)		(0.04)
BM		0.001		-0.003
		(0.03)		(-0.03)
ROA		-0.758		-0.798
		(-1.89)		(-1.14)
LEV		-0.277		-0.281
		(-2.46)		(-2.02)
$IVOL_{SH}$		-1.908		-1.920
		(-6.72)		(-2.97)
AMIHUD		-1.008		-1.041
		(-1.12)		(-1.06)
TURNOVER		0.951		0.861
		(0.39)		(0.25)
$RET_{\{-1,0\}}$		1.501		1.507
		(7.31)		(5.82)
Constant		0.638		0.760
		(1.18)		(0.76)
Adj. R^2	0.002	0.145	0.005	0.147
Observations	880	880	880	880

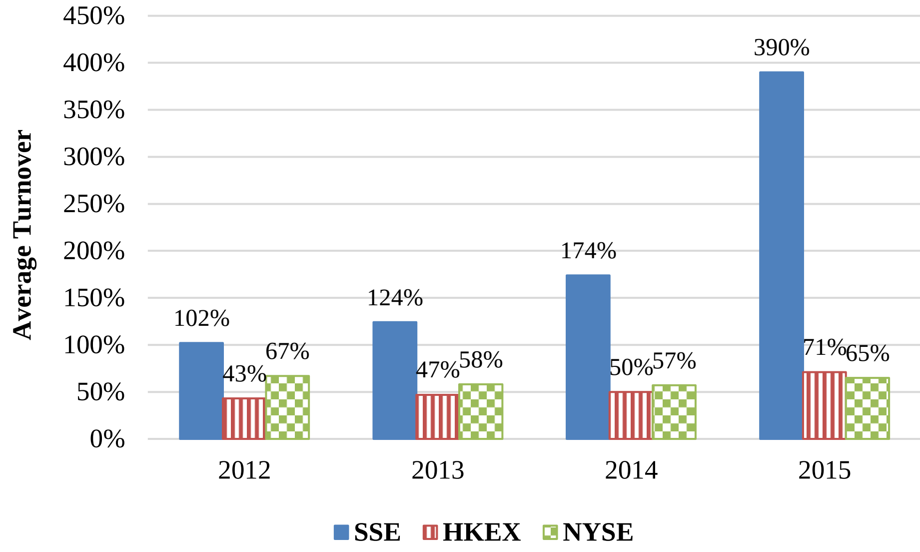

Figure 1. Average turnover across exchanges.
This figure plots the average share turnover for stock listed in three stock exchanges, including Shanghai Stock Exchange (SSE), Stock Exchange of Hong Kong (HKSE), and New York Stock Exchange (NYSE) during 2012-2015.

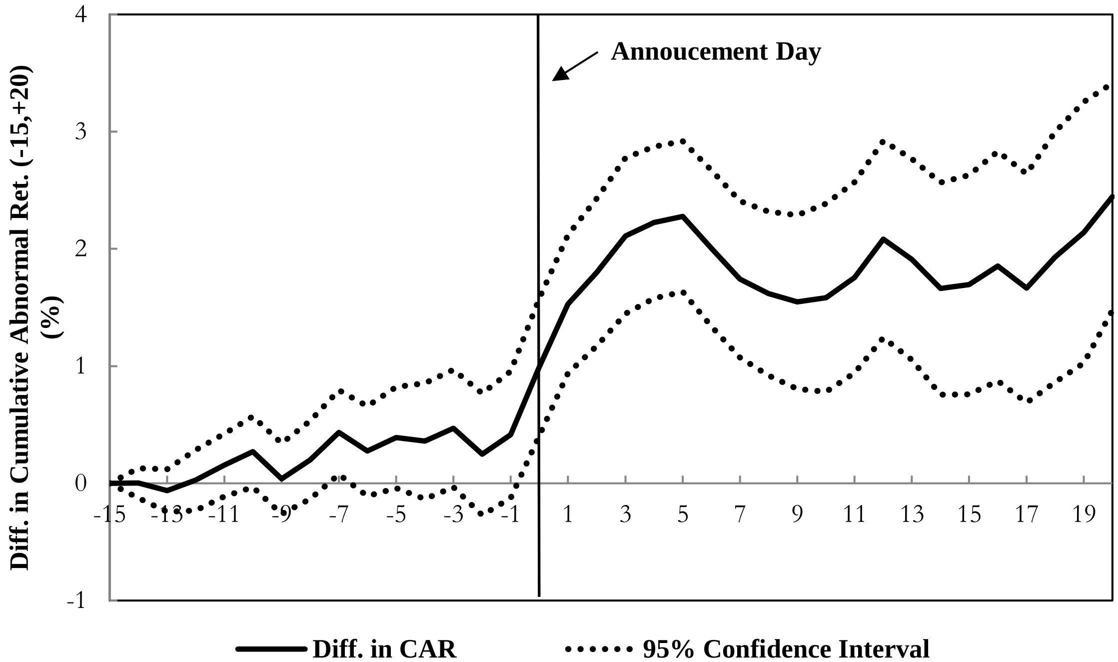

Figure 2. Differences in CARs between connected and propensity-score-matched unconnected stocks around the announcement of the Shanghai-Hong Kong Stock Connect program.
This figure plots the differences in CARs (in %) based on the market model (CAR_{MKT}) between connected and matched unconnected stocks in the (-15, 20) window around the announcement of Shanghai-Hong Kong Stock Connect program (the solid line). The 95% confidence intervals are plotted by dotted lines.

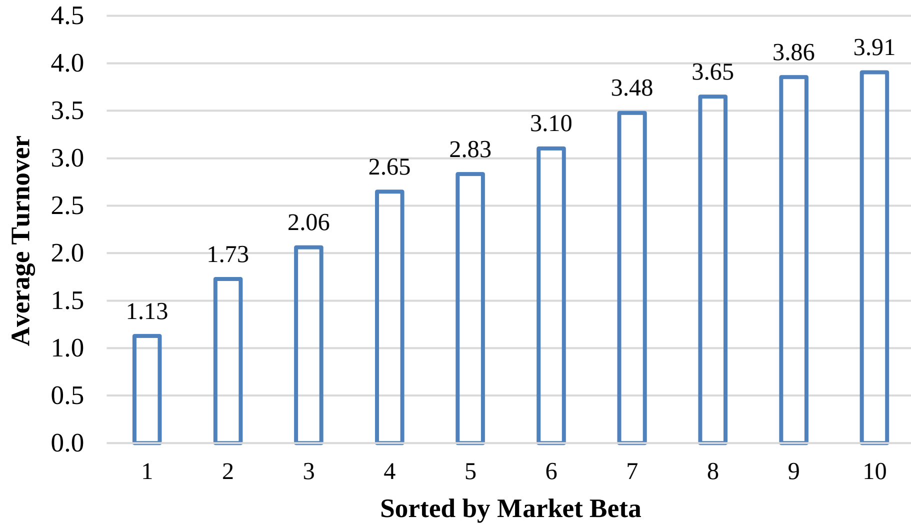

Figure 3. Average turnover in the ten decile portfolios of Chinese A-share stocks ranked by market beta. This figure plots the average annual turnover in the ten portfolios of Chinese A-share stocks ranked by market beta over 2006-2015. Stocks are first sorted into decile portfolios by their market beta estimated from daily returns every year. We then calculate average turnover for each portfolio in each year and take the average over the ten years. Market beta is estimated from the market model based on daily returns over each year. The sample includes all listed A-shares that have at least 100 trading days in each year.

Figure 4. Carhart four-factor alphas of decile portfolios of Chinese A-share stocks ranked by market beta. This figure plots the Carhart four-factor alphas (in %) of decile portfolios of Chinese A-share stocks ranked by market beta over 2006-2015. Stocks are first sorted into decile portfolios based on their market beta estimated from daily returns in the past one year. We then calculate the value-weighted portfolio returns over the next month and Carhart four-factor alphas for each portfolio.