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

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Abstract
The Shanghai-Hong Kong Stock Connect program creates a large demand shock for connected stocks listed on the Shanghai Stock Exchange. Compared with unconnected stocks with similar firm characteristics, connected stocks in Shanghai experience value appreciation of 1.8% (US$23 billion) over the seven-day announcement window and significant increases in turnover and volatility after the announcement. Moreover, the value appreciation and increases in turnover and volatility are all significantly larger for stocks with higher speculative beta. Our findings support the theoretical prediction of Hong, Scheinkman, and Xiong (2006) that the demand elasticity of price increases with speculative trading.

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

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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 other words, the demand curve for a stock should be (nearly) horizontal (Scholes (1972)). However, extensive studies have found that demand curves are downward sloping due to, for example, the limited risk-sharing capacity of investors and slow-moving capital.[1] More importantly, 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). They argue that when stock prices contain speculative bubbles due to heterogeneous beliefs and short-sale constraints, the slope of the demand curve steepens. The bubble component of price is more sensitive to a demand (supply) shock because the strike price of the resale option decreases (increases) with stock demand (supply). A larger demand (supply) means that a smaller (larger) divergence of opinion is needed in the future for investors to resell their shares, leading to a more (less) valuable resale option today.

Hong and Sraer (2016) further show that when investors disagree about the common factor of the market, a stock's speculative bubble increases with its market beta, which is referred to as the "speculative beta" effect. Taken together, recent progress in bubble theory predicts that the price sensitivity to demand shocks is larger for stocks with higher speculative market beta. We aim to empirically test this theoretical prediction using the event of the Shanghai-Hong Kong Stock Connect program.

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[1] 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. For example, 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), and Hegde and McDermott (2003) show that stocks added to (deleted from) the S&P 500 index experience price appreciation (depreciation). Similar results are also documented for Russell indices (Onayev and Zdorovtsov (2008)), the Toronto Stock Exchange 300 index (Kaul, Mehrotra, and Morck (2000)), the Nikkei 225 index (Greenwood (2005)), and MSCI country indices (Chakrabarti et al. (2005)). Petajisto (2009) proposes a theory of financial intermediary that can produce both the right sign and magnitude of the slope of the demand curve. Another line of research has examined institutional trades and shown that unusually large demand can move asset prices (e.g., Goetzmann and Massa (2003); Coval and Stafford (2007)).

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 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 causal effect of demand shocks on stock prices and its interaction with speculative trading. First, the program introduces a large and unexpected demand shock for the 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 (e.g., Sarno and Taylor, 1999; Allen, Qian, and Qian, 2005; Hwang, Zhang, and Zhu, 2006; Mei, Scheinkman, and Xiong, 2009; Xiong and Yu, 2011).[2] For example, share turnover, which is commonly associated with intensive speculative trading,[3] is much higher in the Chinese stock market than in other developed markets such as Hong Kong and the U.S. stock markets, as depicted in Figure 1.

We show 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. We also find strong evidence on the speculative nature of market beta in China based on all listed stocks from 2006 to 2015. Specifically, high-beta stocks are associated with substantially high turnover. Moreover, high-beta stocks earn significantly low expected returns. Our results

[2] Many characteristics 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 prospect of stocks. Second, arbitrage activities are severely limited in the market. For instance, short sale has only become allowed recently for a short list of stocks and at a very high cost. Equity derivatives markets are much more underdeveloped. Only three equity index futures are available, and stock options have yet to be introduced. Equity issuance and repurchases, common practices that firms use to arbitrage misvaluation of their own stocks, are also severely restricted by the government. Third, the supply of shares available for trade is limited. The total market cap to GDP ratio for China is 78%, only one half of that for the U.S. (148%). Moreover, on average, more than half of the shares are not freely tradable. Currency control also prohibits most Chinese individual investors from investing abroad.

[3] A common feature of 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.

appear to support the multiplier effect of speculation on the demand elasticity of price as predicted by Hong, Scheinkman, and Xiong (2006).

We further show that connected stocks also experience significant increases in turnover and volatility, and the increases are larger for high-beta stocks than for low-beta stocks. These results provide additional support for the theoretical prediction of Hong, Scheinkman, and Xiong (2006), which states that speculative overpricing due to heterogeneous beliefs and short-sale constraints is usually associated with high turnover and return volatility. Moreover, the multiplier effect of speculation (measured by speculative market beta) also manifests itself in turnover and return volatility.

Our results indicate that during market liberalization, demand shocks play an important role in determining stock revaluation. Furthermore, the interaction between demand shocks and speculative trading has a substantial effect on stock price, turnover, and volatility. We provide additional evidence that the speculative beta effect is stronger in stocks with a higher degree of limits to arbitrage measured by idiosyncratic volatility, suggesting that the beta effect is closely related to speculative trading rather than to risk-based explanation.

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 the demand size of Hong Kong investors is larger.[4] 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. Moreover, changes in connected stocks' expected and realized cash flows do not correlate with their Shanghai market betas. Third, stocks can experience revaluations due to the risk-sharing effect after market

[4] Hong Kong investors may demand more of high-beta stocks due to either investment constraints imposed by the government or speculation on the rise of the aggregate Chinese stock market.

liberalization. We follow Chari and Henry (2004) in constructing the measure of the difference in covariance (DIFCOV) to proxy for the risk-sharing effect. In multivariate regressions, we find that the demand effect dominates the risk-sharing effect during the announcement of the program. Fourth, investors may demand more of lottery-like stocks. We show that the lottery feature has no explanatory power for the beta effect either. Finally, 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.

We contribute to several strands of the literature. First, an extensive literature studies speculative bubbles generated by heterogeneous beliefs and short-sale constraints (e.g., Miller (1977); Harrison and Kreps (1978); Morris (1996); Chen, Hong, and Stein (2002); Scheinkman and Xiong (2003)). However, very few of these studies investigate the interaction between speculative trading and demand or supply shocks. One exception is the theoretical work of Hong, Scheinkman, and Xiong (2006), who show that speculative bubbles decrease with asset float and as a result flatten the slope of the demand curve. Mei, Scheinkman, and Xiong (2009) empirically identify the negative relationship between speculative overpricing and asset float using the dual-listed A and B shares traded in Chinese stock markets. We contribute to this stream of the literature by directly testing the multiplier effect of speculative overpricing on the slope of the demand curve based on the demand shock introduced by an important event of market liberalization in a highly speculative market.

Second, the "high beta, low return" puzzle has recently attracted much attention. Asset pricing theories with borrowing constraints, such as Black (1972) and Frazzini and Pedersen (2014), can generate a flatter security market line relative to the capital asset pricing model (CAPM). Hong and Sraer (2016) propose that high-beta stocks are more sensitive to speculative overpricing than low-beta stocks if investors have heterogeneous beliefs about the common shock of the market and if short-sales are constrained, which can potentially generate a negative beta-return relationship. We provide supporting evidence for the speculative beta effect by showing that higher-beta stocks appreciate significantly more when the value of the resale option increases due to a positive demand shock.

Finally, we also contribute to the understanding of stock revaluation during market liberalization. Previous studies have shown that market liberalization leads to decreases in the cost of capital and thus increases in stock valuation.[5] Most of these studies examine stock revaluation from the perspective of risk sharing between domestic and foreign investors. While the risk-sharing effect can be important for stock revaluation in the long run, our results show that stock prices can experience large appreciation in the short run due to the demand effect and its interaction with speculative bubbles in stock prices.

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 concludes.

2. Institutional Background

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 Province, China and the Bank of China first proposed the idea of the program in 2007. However, regulators later postponed the program for nearly seven years. On April 10, 2014, Chinese Premier Li Keqiang brought out 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 Hong Kong Securities and Futures Commission (HKSFC) jointly released guidelines for the pilot program. However, due to the uncertainty surrounding the final approval of the government, details about the implementation, and the exact execution date of the program, the future of the program remains largely unclear to the market by then.

[5] For example, see studies by Bekaert and Harvey (2000), Errunza and Miller (2000), Henry (2000), Huang and Yang (2000), and Chari and Henry (2004).

The program and the initial lists of eligible stocks were finally approved seven months later and officially announced on November 10, 2014 (which is 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 an eligible list of stocks listed on the other market through the exchange and clearing houses in their home markets.[6] 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.

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 has stopped issuing new shares since 2001 and is thinly traded. Another alternative channel is participating in China's Qualified Foreign Institutional Investor (QFII) program. However, the program has a limited quota and is accessible only to selected and government-approved foreign institutions.[7] 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 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 included on the

[6] 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.

[7] The QFII started in 2002 and gradually grew to a size of US$66 billion by November 2014. The RMB-QFII started in 2011 and had a size of 298 billion *yuan* by November 2014.

exchange's "risk alert board."[8] 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 541 and 268 eligible stocks in the Shanghai and Hong Kong exchanges, respectively, accounting for 58% and 69% of the total market cap of each market, respectively.[9]

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. Short selling is not allowed in the program.

3. Hypothesis Development

The Shanghai-Hong Kong Stock Connect program has several unique features and provides a clean setting to test the prediction 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. The selection criteria into the connect program are all based on publicly available information, such as the constituent stocks of the Shanghai Stock Exchange 180 and 380 Indices, and thus do not reveal new information about connected stocks' fundamentals. Second, since only a limited number of stocks are included in the connect program, unconnected stocks with similar characteristics can be used as the control

[8] 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."

[9] For the detailed list of eligible stocks, please refer to the following list: http://www.hkex.com.hk/eng/market/sec_tradinfra /chinaconnect/Eligiblestock.htm.

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.[10]

The Shanghai-Hong Kong Stock Connect program allows Hong Kong investors to enter the Shanghai stock market. The inflow of Hong Kong investors' capital will lead 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 in the presence of speculative trading due to heterogeneous beliefs and short-sale constraints, the price sensitivity to demand shocks becomes larger. 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 a smaller divergence of opinion is needed in the future for investors to resell their shares, leading to a more valuable resale option today.[11]

Furthermore, Hong and Sraer (2016) postulate and empirically verify that high-beta securities are more sensitive to aggregate disagreement and experience greater divergence of opinion than

[10] Liu, Shu, and Wei (2016) 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 a priced political risk.

[11] This result also holds in a static setting without dynamic trading motives. For example, suppose 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 will consume 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.

low-beta assets. Therefore, assets with higher market beta are subject to a higher degree of speculative overpricing. 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 (e.g., Scheinkman and Xiong (2003); Hong, Scheinkman, and Xiong (2006); Mei, Scheinkman, and Xiong (2009)) have suggested that speculative trading due to heterogeneous beliefs and short-sale constraints is not only reflected in high stock prices, but also associated with high turnover and return volatility. We formalize these arguments in the following hypothesis.

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

4. Empirical Results

4.1 Data and summary statistics

We start with 541 stocks listed in 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. Among the 541 connected stocks, only 496 have valid return data to calculate cumulative abnormal returns surrounding the event date of November 10, 2014 and valid data of main firm characteristics (including return, trading volume, and firm size in October 2014, Shanghai market beta and volatility estimated from daily returns in the previous 12 months, and book-to-market equity ratio, return-on-assets, and leverage at the end of 2013). We match the 496 connected stocks with all of the unconnected A-share stocks using a propensity-score matching procedure. 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.[12] 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. This procedure yields a final sample of 420 treatment (connected) firms with valid control (unconnected) firms.

Table 1 summarizes the characteristics of our sample of connected stocks. These stocks are generally large and mature. On average, a sample stock has a market capitalization of 18.68 billion *yuan* (the natural logarithm of market capitalization in thousand *yuan* is 16.00), a book-to-market ratio of 0.625, an ROA of 0.047, and a leverage of 0.195. 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 1.222 and a $BETA_{HK}$ of 0.489 on average. The average total volatility (TVOL) and idiosyncratic volatility with respect to the Shanghai market ($IVOL_{SH}$) are 0.354 and 0.305, respectively. Our sample stocks are liquid stocks, with an average daily turnover ratio (TURNOVER) of 1.6% and an Amihud (2002) illiquidity measure (AMIHUD) of 0.029×10^{-8} (i.e., a trade size of 1 million *yuan* moves the price by 0.029%). Connected stocks on average experience a raw return of 2.3% in October 2014 ($RET_{\{-1,0\}}$), the month before the program announcement.

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 significant differences in most of the firm characteristics, such as SIZE, BM, ROA, $BETA_{SH}$, TVOL, LEV, $IVOL_{SH}$, $BETA_{HK}$, 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

[12] Mainland China has two stock exchanges: the Shanghai Stock Exchange and the Shenzhen Stock Exchange. The stock price movements in the two markets are highly correlated. Hence, our results remain unchanged when beta is estimated with an index constructed using stocks listed in both exchanges.

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. We examine the abnormal returns of connected stocks versus those of propensity-score-matched unconnected stocks. Because 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. In order to address the endogeneity and selection problem, we use the matched sample throughout the analysis. Later on in the regression analysis, we control for additional firm characteristics.

In the univariate analysis, we calculate the cumulative abnormal returns (CARs) for the connected and PS-matched unconnected stocks during three-day, five-day, and seven-day event windows. We report the average CAR 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 1.19% higher cumulative market-adjusted abnormal return (CAR_{MktAdj}) than the matched unconnected stocks in the three-day period with a *t*-statistic of 4.04. The difference in CARs based on the market model (CAR_{MKT}) is 1.18% with a *t*-statistic of 4.16. 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 0.77% (*t*-stat = 2.84), 0.71% (*t*-stat = 2.64), and 0.96% (*t*-stat = 3.48), respectively, which are slightly smaller in magnitude but remain significant at the 1% level.[13] 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

[13] Following Daniel, Grinblatt, Titman, and Wermers (1997), we form the 125 size, book-to-market, and momentum sorted benchmark characteristics portfolios, and place each stock into these portfolios at the end of June 2014. We calculate the daily value-weighted portfolio return as the benchmark return. We subtract each stock's corresponding benchmark return from the stock's daily return to obtain the DGTW abnormal return.

larger and becomes more significant. For instance, the difference in CAR_{MKT} reaches 1.61% and 1.78% with *t*-statistics of 4.59 and 4.20 for windows (-2,+2) and (-3,+3), respectively.

Our matched sample contains 33 AH dual-listed companies (i.e., A-shares in Shanghai and H-shares in Hong Kong). The demand effect of the connect program on these AH dual-listed companies may be ambiguous since they are partly owned and 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. The results remain similar and are reported in the Internet Appendix, Table A1.

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 connected stocks experience significantly higher abnormal 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 fast. No signs of return reversal at the end of the (-15,+20) window are observed, suggesting that the demand effect is not temporary for connected stocks.

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* represents the cumulative market-adjusted abnormal return (CAR_{MktAdj}, in %), the CAR based on the market model (CAR_{MKT}, in %), the Fama-French three-factor model (CAR_{FF3}, in %), the Carhart four-factor model ($CAR_{Carhart}$, in %), and the cumulative DGTW benchmark-adjusted abnormal return (CAR_{DGTW}, in %) during the announcement window (-3,3), respectively. *CONNECT* is a dummy variable that equals one for connected stocks and zero for unconnected stocks. $\mathbf{z}$ is a vector of control variables that includes $BETA_{SH}$, 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 in 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. All Chinese firms have their fiscal year end in December and are required to file financial reports by the end of April. Hence, the 2013 financial data are all publicly available before the announcement of the connect program.

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 1.756, 1.777, 1.192, 1.154, and 1.526 for CAR_{MktAdj}, CAR_{MKT}, CAR_{FF3}, $CAR_{Carhart}$, and CAR_{DGTW}, respectively, and are all significantly positive at the 1% level.

Next, we control for various firm characteristics in the regression. The coefficients on the CONNECT dummy remain statistically significant at the 1% level, which are 1.735, 1.759, 1.180, 1.155 and 1.623 for CAR_{MktAdj}, CAR_{MKT}, CAR_{FF3}, $CAR_{Carhart}$, and CAR_{DGTW}, respectively. These results suggest that after controlling for various firm characteristics, connected stocks still experience significantly higher CARs than do PS-matched unconnected stocks during the announcement of the program. The differences in CARs range from 1.2% to 1.8% for different models.

In sum, we document in both univariate and regression analyses that 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$23 billion in the 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.[14]

4.2.2 The speculative nature of market beta in China

[14] Our main results are based on the PS-matched sample with the caliper set to 0.2 in order to better control for firm heterogeneity. In the Internet Appendix (Tables A2 and A3), we show that our main results continue to hold if we use the PS-matched sample with the caliper set to 1.0 and the full sample without matching.

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 find 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 ten years. In Figure 3, we plot the average turnover rate for the ten 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 firm 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 alpha with respect to the Carhart four-factor model. It is evident that high-beta portfolios earn low expected returns. The high-minus-low beta hedge portfolio earns a monthly abnormal return of nearly -1.4%, which is significant at the 1% level.

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.

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 suggested by Hong, Scheinkman, and Xiong (2006). 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 defined in the same way as in regression model (1). The key variable of interest is the coefficient on the interaction term (a_2), which Hypothesis 2 predicts is positive.

We report the results in Table 5. Consistent with Hypothesis 2, we find a positive and statistically significant coefficient on the interaction term, suggesting that the positive announcement effect on stock prices is more pronounced for stocks with high $BETA_{SH}$ than for those with low $BETA_{SH}$. The coefficient on the interaction term ranges from 2.28 to 3.36 across different regression specifications, which indicates that a one-unit increase in a connected stock's Shanghai beta leads to an approximate 2.28-3.36% increase in its CAR during the seven-day announcement window. The magnitude is economically large and statistically significant at the 5% level for all specifications. Overall, the evidence supports the prediction in Hong, Scheinkman, and Xiong (2006) and Hong and Sraer (2016) that the demand elasticity of price is higher for stocks with more speculative overpricing.

One potential area of doubt in 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, then the high-beta stocks naturally experience high announcement returns due to their high sensitivity to market 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 market return by matching connected stocks with unconnected stocks with similar market beta and other firm characteristics and 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 Shanghai stock market during the seven-day event window (-3,3) is -0.34% (0.12%), which obviously cannot explain the high announcement returns of high-beta stocks.

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 (e.g., Scheinkman and Xiong (2003)). In particular, Hong, Scheinkman, and Xiong (2006) predict that in addition to price appreciation, a positive demand shock will also lead 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:

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

$$\Delta TURNOVER_i = a_0 + a_1 \times CONNECT_i + a_2 \times CONNECT_i \times BETA_{SH,i} + a_3 \times BETA_{SH,i} + \boldsymbol{b} \times \boldsymbol{z_i} + e_i, \quad (4)$$

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 minus one). All other variables are defined in the same way as in regression model (1).

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 0.158 with a *t*-

statistic of 3.59, which implies that connected stocks experience a 15.8% increase in turnover compared with matched unconnected stocks on average. After controlling for various firm characteristics, the result in column 2 shows that the coefficient on the CONNECT dummy (i.e., 0.157) is quantitatively similar and remain significant at the 1% level.

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 $BETA_{SH}$ as in regression model (4). 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 change in turnover is significantly higher for high $BETA_{SH}$ stocks than for low $BETA_{SH}$ stocks. The coefficient is 0.230 with a *t*-statistic of 2.99 without control variables, suggesting that a one-unit increase in a stock's Shanghai beta leads to a 23.0% increase in a connected stock's average daily turnover (compared with unconnected stocks) over the (0,10) window after the announcement of the connect program. The coefficient increases slightly to 0.294 after controlling for various firm characteristics and remains significant at the 1% level.

4.3.2 Changes in volatility

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

$$\Delta VOLATILITY_i = a_0 + a_1 \times CONNECT_i + \boldsymbol{b} \times \boldsymbol{z_i} + e_i, \quad (5)$$

$$\Delta VOLATILITY_i = a_0 + a_1 \times CONNECT_i + a_2 \times CONNECT_i \times BETA_{SH,i} + a_3 \times BETA_{SH,i} + \boldsymbol{b} \times \boldsymbol{z_i} + e_i, \quad (6)$$

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 minus one). Daily volatility is calculated as the standard deviation of the 5-minute intraday log change in price.

We report the regression results in Table 7. The first two columns report the results of regression model (5). The coefficient on the CONNECT dummy is 0.068 (*t*-stat = 2.18) for the specification without controls and 0.062 (t-stat = 2.63) after controlling for various firm characteristics, suggesting that connected stocks on average experience a nearly 6% higher increase in volatility than their unconnected counterparts. The next two columns present the results for regression model (6). The coefficients on the interaction term are 0.104 (t-stat = 3.89) and 0.138 (t-stat = 2.29) in the two specifications, meaning that connected stocks with a one-unit increase in $BETA_{SH}$ experience 10.4% and 13.8% higher increases in volatility than their matched unconnected stocks.

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 with their PS-matched unconnected stocks. More importantly, high $BETA_{SH}$ stocks experience significantly larger increases in turnover and volatility than low $BETA_{SH}$ stocks, which confirms 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 Limits to arbitrage

Market beta can be positively related to speculative trading and 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 firm 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. In order to distinguish a speculation-based explanation from a risk-based explanation for the beta effect, we investigate how limits to arbitrage moderate the beta effect. If the beta effect is due to speculative trading, it should become stronger when limits to arbitrage are more severe. The risk-based explanation does not have such a prediction.

An extensive body of research suggests that idiosyncratic risk closely measures the degree of limits to arbitrage.[15] We classify connected stocks and their PS-matched unconnected stocks into a high (low) idiosyncratic risk subsample if their idiosyncratic volatility with respect to the Shanghai market return is above (below) the sample median. We report the regression results of model (2) in high and low idiosyncratic risk subsamples in Table 8. It is evident that the interaction between the CONNECT dummy and $BETA_{SH}$ is only significantly positive when idiosyncratic risk is high, but becomes insignificant when idiosyncratic risk is low. The fact that the beta effect is more prevalent in stocks with a higher degree of limits-to-arbitrage suggests that the beta effect is closely associated with speculative trading rather than the change in firm systematic risk.

5. Alternative Hypothesis and Robustness Tests

5.1 Demand effect or 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, then 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, since the criteria for inclusion in the connect program are all 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

[15] See, for example, Treynor and Black (1973), Shleifer and Vishny (1997), Pontiff (2006), Lam and Wei (2011), and Stambaugh, Yu, and Yuan (2015), among others.

ownership and foreign investment through the connect program may spur the growth of those connected firms. 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. The results are reported in Table 9. 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 (in %) for 2014, 2015, and 2016. The change in forecasted EPS (ΔForecast EPS) 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 9 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), operating profits divided by assets (ΔOPOA), and sales scaled by assets (ΔSOA) 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 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.

5.2 Does beta proxy for the size of demand shock?

Given the fixed supply curve over a relevant 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 about the market anticipation of a firm's 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, such as 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 would 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 will overweigh stocks with high market beta in order 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 Shanghai stocks.

Second, investors may demand more of high beta stocks simply because they speculate that the Chinese stock market will rise in the 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 potentially 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 13% (30%) of the aggregate quota is used at the end of first (third) 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 relationship between Hong Kong investor holdings of Shanghai connect stocks and these stocks' Shanghai market beta after the commencement of the connect program. We collect aggregate quarterly stock holdings of Hong Kong investors under the connect program from firm quarterly financial reports.[16] We then regress a connected stock's Hong Kong investor holdings 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 present the regression results for all connected stocks (including AH stocks). Column 1 reports the results with Shanghai market beta as the only independent variable. Column 2 controls for additional firm characteristics. Column 3 further includes time and industry fixed effects. All the results under different specifications suggest that a connected stock's Shanghai market beta is insignificantly and negatively related to Hong Kong investor holdings. The results remain similar when AH stocks are excluded from the sample as shown in columns 4-6. In sum, the evidence from the actual holding data after the commencement of the connect program clearly indicates that a high beta is not associated with high demand of Hong Kong investors, confirming that the beta effect does not relate to the size of the demand shock, but rather connects to the slope of the demand curve.

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

[16] We obtain Hong Kong investors' holdings of Shanghai stocks under the connect program from "The Ten Largest Shareholder Info." section in firms' quarterly financial reports. Investors' holdings under the connect program are aggregated and reported as one number. Since firms disclose only the holdings of their ten largest shareholders so the data is missing for stocks that Hong Kong investors in aggregate hold very little. Nearly half of the firms have non-missing holding data in at least one quarter. To deal with missing observations, we conduct two versions of regressions. One is restricted to the sample with no missing holding data, and the other uses a full sample but replaces missing holdings with zero.

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.[17] 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.

We follow Chari and Henry (2004) and 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:

$$CAR_i = a_0 + a_1 \times CONNECT_i + a_2 \times CONNECT_i \times BETA_{SH,i} + a_3 \times BETA_{SH,i} + a_4 \times CONNECT_i \times DIFCOV_i + a_5 \times DIFCOV_i + \boldsymbol{b} \times \boldsymbol{z_i} + e_i. \quad (7)$$

We consider two versions of DIFCOV. The first measure of the difference in covariance ($DIFCOV_{HK}$) 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 ($DIFCOV_{MSCI}$) is the difference between a stock's return covariance with the Shanghai market and its return covariance with the MSCI global market index. $DIFCOV_{HK}$ is appropriate for Hong Kong investors who mainly invest in the Hong Kong stock market, whereas $DIFCOV_{MSCI}$ is most suitable for Hong Kong investors who invest globally.[18] The risk-sharing hypothesis predicts that the regression coefficient on $CONNECT_i \times DIFCOV_i$ (a_4) is positive.

[17] Under complete liberalization, domestic stocks are revaluated based on their covariance with the new integrated market. Under market segmentation, for example, when foreign (local) investors are only allowed to invest in a limited number of connected local (foreign) stocks, the domestic connected stocks are revaluated based on their covariance with the post-liberalization portfolio held by foreign investors, and the domestic unconnected stocks are revaluated based on their covariance with the post-liberalization portfolio held by domestic investors.

[18] The DIFCOV is estimated from daily stock returns and index returns from November 2013 to October 2014.

We report the results in Table 11. The first two columns report the results from the first measure ($DIFCOV_{HK}$). The coefficient on the interaction term between CONNECT and $DIVCOV_{HK}$ is positive when it is included in the regression alone. However, the coefficient becomes insignificant after we control for the interaction between CONNECT and $BETA_{SH}$. Similar results are observed for $DIVCOV_{MSCI}$. The coefficient on the interaction between CONNECT and $DIVCOV_{MSCI}$ is positive without controlling for the beta effect, but becomes insignificant after we control for the interaction between CONNECT and $BETA_{SH}$. Most importantly, across the regressions with either measure of DIFCOV, the coefficient on the interaction between CONNECT and $BETA_{SH}$ remains positive and significant.

It is worth mentioning that the risk-sharing explanation does not have any direct prediction on the changes in the turnover or volatility of connected stocks. Nevertheless, in order to rule out the possibility that the beta effect on the change in turnover and volatility is due to the change in covariance, we also include an interaction term between CONNECT and the two DIFCOVs in the regression of the change in turnover or volatility. In unreported results, we find that none of the interaction terms is significant, confirming that changes in covariance cannot explain the beta effect on stock turnover and return volatility.

Overall, the results in Table 11 suggest that the speculative beta effect on stock prices is very robust even after we control for the risk-sharing effect. While risk sharing may affect the cost of capital in the long run, a substantial proportion of the stock market appreciation in response to the program announcement is driven by the demand effect and its interaction with the speculative bubble component in the Shanghai stock prices.

5.4 Does market beta proxy for lottery characteristics?

Bali, Brown, Murray, and Tang (2016) show that market beta may also proxy for a stock's lottery characteristics. A high beta stock resembles a lottery, which may attract more investor attention and demand during the connect program announcement and thus lead to large price appreciation. To rule out this alternative, we construct the measure MAX, following Bali, Brown, Murray, and Tang (2016), as the average of the five highest daily returns (in %) in

October 2014, the month prior to the announcement of the connect program. To test the lottery hypothesis, we include the interaction between CONNECT and MAX in regression model (2):

$$CAR_i = a_0 + a_1 \times CONNECT_i + a_2 \times BETA_{SH,i} + a_3 \times BETA_{SH,i} + a_4 \times CONNECT_i \times MAX_i + a_5 \times MAX_i + \boldsymbol{b} \times \boldsymbol{z_i} + e_i. \quad (8)$$

We report the results in Table 12. The coefficient on the interaction term between CONNECT and MAX is insignificant irrespective of whether we control for the interaction between CONNECT and $BETA_{SH}$. The coefficient on the interaction between CONNECT and $BETA_{SH}$ remains statistically significant at the 1% level and similar in magnitude to those of the earlier regressions. The results suggest that lottery demand cannot explain the $BETA_{SH}$ effect on stock revaluation during the program announcement.

5.5 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 might be driven by differences in unobserved stock characteristics between these two groups of stocks. In this case, such differences might be persistent and do not depend on the specific event time *per se*.

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

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 is significant, which suggests that the connected stocks and matched unconnected stocks have indistinguishable returns and changes in turnover and 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, confirming that the speculative beta effect only magnifies itself during the event of the connect program, which introduces the anticipation of a large demand shock to the connected stocks. This placebo test assures us that the relationship we document is not driven by persistent heterogeneities between connected and unconnected stocks.

5.6 Additional robustness tests

In order to rule out the possibility that the speculative beta effect is not due to the interaction between the CONNECT dummy and other firm characteristics, we add a number of additional interaction terms into regression models (2), (4), and (6), including the interactions between CONNECT and SIZE, BM, ROA, LEV, $IVOL_{SH}$, AMIHUD, TURNOVER, $RET_{\{-1,0\}}$, and a stock's beta with respect to the Hong Kong stock market ($BETA_{HK}$). We report the results for return, change in turnover, and change in volatility in Panels A to C of Table 14, respectively. It is evident that the interaction effect between CONNECT and $BETA_{SH}$ remains strong and significant after we add the interaction terms between CONNECT and any other firm characteristics.

5.7 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 a relatively open market 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. The results are reported in the Internet Appendix, Table A4. There are two major results. 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, since the Hong Kong stock market is more developed with more sophisticated investors and less market frictions, speculative trading is less prevalent and therefore the speculative beta effect is much weaker.

6. 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 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. More importantly, the cumulative abnormal returns of connected stocks during the program announcement significantly increase with the Shanghai market beta.

The Chinese stock market has long been recognized as a "casino" with substantial speculative trading activities. Due to heterogeneous beliefs about the aggregate market and short-sale constraints, stocks with high market beta are more prone to speculation 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. The interaction between the demand shock and the speculative beta effect in our results confirm the theoretical prediction by Hong, Scheinkman, and Xiong (2006) that the demand curve is steeper for stocks with a high degree of speculative trading.

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. Finally, we present evidence that the beta effect is stronger for stocks with high limits to arbitrage, as measured by idiosyncratic volatility. 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 in the long run. We point out that in the short term, the demand effect and its interaction with stock market speculation could have a substantial effect on asset prices. One potential interesting direction for future work is to test the theoretical prediction on the interaction between demand shocks and speculative trading 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

SIZE	Natural logarithm of the market capitalization as of October, 2014 (in thousand yuan).
BM	Book-to-market equity ratio in the most recent fiscal year end, defined as the book value of equity divided by the market value of equity
ROA	Return-on-Assets in the most recent fiscal year end, defined as net income divided by total assets.
LEV	Leverage in the most recent fiscal year end, 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 on a daily frequency over the past 12 months.
TVOL	Total volatility, defined as (annualized) standard deviation of daily stock returns in the past 12 months.
$IVOL_{SH}$	Idiosyncratic volatility, defined as (annualized) standard deviation of the daily return residual from a Shanghai market 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 on a daily frequency over the past 12 months.
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 calculated from daily return and trading volume in 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 market coefficients 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. The model estimation is similarly conducted as that for CAR_{MKT} above.
$CAR_{Carhart}$	Cumulative abnormal return based on the Carhart four-factor model. The model estimation is similarly conducted as that for CAR_{MKT} above.

CAR_{DGTW}	Cumulative benchmark-adjusted abnormal return following Daniel, Grinblatt, Titman, and Wermers (1997).
ΔTURNOVER	Average daily turnover in the specified window after the connection divided by average daily turnover in the most recent month, then minus one.
ΔVOLATILITY	Average daily volatility in the specified window after the connection divided by average daily volatility in the most recent month, 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.
$DIFCOV_{MSCI}$	Difference between a stock's covariance with the Shanghai market and its covariance with the MSCI Global index.
MAX	Average of the five highest daily returns (in %) in October, 2014.
ΔForecast EPS_2014	The change in analyst forecasted earnings per share (EPS) divided by the stock price at the end of October 2014 (in %) for year 2014. The change in analyst forecasted EPS is 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	The change in ROA from fiscal 2014 to fiscal 2015. ROA is defined as net income divided by total assets.
ΔOPOA	The change in OPOA from fiscal 2014 to fiscal 2015. OPOA is defined as operating profit divided by total assets.
ΔSOA	The change in SOA from fiscal 2014 to fiscal 2015. SOA is defined as sales divided by total assets.

Table 1. Summary statistics

This table reports the mean, standard deviation, minimum, 25th percentile, median, 75th percentile, and maximum of a set of firm characteristics, including the natural logarithm of market capitalization in thousand yuan (SIZE) as of October 2014, book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), beta with respect to the Shanghai stock market index ($BETA_{SH}$), total return volatility (TVOL), idiosyncratic volatility with respect to a Shanghai market model ($IVOL_{SH}$), beta with respect to the Hong Kong market index ($BETA_{HK}$), average daily turnover in the past one year (TURNOVER), Amihud illiquidity measure in the past one year (AMIHUD), past one-month return ($RET_{\{-1,0\}}$). Accounting variables are all measured at the most recent fiscal year end. Beta and volatility are constructed using daily return data from the 12-month prior to announcement of Shanghai-Hong Kong Stock Connect program, namely, from November 2013 to October 2014. The sample includes all Shanghai-listed firms that are in the connect program and have a valid propensity-score-matched firm. All variables are winsorized at the 1% and 99% levels.

Variables	N	MEAN	STD.	MIN	P25	P50	P75	MAX
SIZE	420	15.996	0.776	14.377	15.469	15.886	16.394	18.502
BM	420	0.625	0.407	0.089	0.341	0.523	0.791	2.163
ROA	420	0.047	0.038	-0.042	0.022	0.039	0.067	0.204
LEV	420	0.195	0.149	0.000	0.054	0.192	0.304	0.576
$BETA_{SH}$	420	1.222	0.262	0.549	1.069	1.205	1.392	1.795
TVOL	420	0.354	0.078	0.200	0.297	0.345	0.407	0.549
$IVOL_{SH}$	420	0.305	0.081	0.154	0.246	0.296	0.362	0.510
$BETA_{HK}$	420	0.489	0.194	0.004	0.369	0.477	0.596	1.050
TURNOVER	420	0.016	0.010	0.002	0.009	0.014	0.021	0.051
$AMIHUD \times 10^8$	420	0.029	0.022	0.003	0.014	0.023	0.039	0.121
$RET_{\{-1,0\}}$	420	0.023	0.081	-0.109	-0.029	0.007	0.061	0.322

Table 2. Firm characteristics for connected stocks and propensity-score-matched unconnected stocks

This table presents the main firm characteristics for connected (treatment) firms and their propensity-score-matched unconnected (control) firms. We start with all Shanghai-listed firms that are in the connect program as treatment firms and all unconnected A-share stocks as 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 ($BETA_{SH}$) at the end of October 2014. We then match each treatment firm to the control firms using the nearest neighbor matching technique (without replacement and caliper is set at 0.20). Our final sample include 420 connected firms and their corresponding propensity-score-matched unconnected firms, which also have valid return data within the seven-day window (-3,3) of the announcement event on November 10, 2014.

Variables	Connected	Unconnected	Difference	t-statistics
SIZE	15.996	15.926	0.070	1.33
BM	0.625	0.609	0.016	0.58
ROA	0.047	0.047	0.000	0.11
LEV	0.195	0.195	0.000	0.02
$BETA_{SH}$	1.222	1.223	-0.001	-0.07
TVOL	0.354	0.353	0.000	0.08
$IVOL_{SH}$	0.305	0.304	0.000	0.05
$BETA_{HK}$	0.489	0.477	0.012	0.93
TURNOVER	0.016	0.015	0.002	1.43
$AMIHUD \times 10^8$	0.029	0.036	-0.006	-1.80
$RET_{\{-1,0\}}$	0.023	0.021	0.003	0.48

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

This table reports the average cumulative market-adjusted abnormal return (CAR_{MktAdj}, in %), cumulative abnormal return based on the market model (CAR_{MKT}, in %), the Fama-French three-factor model (CAR_{FF3}, in %), and the Carhart four-factor model ($CAR_{Carhart}$, in %), and cumulative DGTW benchmark-adjusted abnormal return (CAR_{DGTW}, in %) 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 cumulative abnormal returns for the event windows (-1,1), (-2,2), and (-3,3), respectively. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	Matched sample (N=420)		
	Connected	Unconnected	Difference
Panel A. Event Window (-1,1)			
CAR_{MktAdj}(-1,1)	1.696	0.508	1.188
	(7.58)	(2.65)	(4.04)
CAR_{MKT}(-1,1)	1.519	0.338	1.181
	(6.94)	(1.87)	(4.16)
CAR_{FF3}(-1,1)	0.282	-0.491	0.773
	(1.33)	(-2.89)	(2.84)
$CAR_{Carhart}$(-1,1)	0.297	-0.411	0.708
	(1.41)	(-2.47)	(2.64)
CAR_{DGTW}(-1,1)	0.587	-0.373	0.960
	(2.82)	(-2.06)	(3.48)
Panel B. Event Window (-2,2)			
CAR_{MktAdj}(-2,2)	1.774	0.187	1.587
	(6.75)	(0.84)	(4.61)
CAR_{MKT}(-2,2)	1.897	0.289	1.608
	(7.11)	(1.28)	(4.59)
CAR_{FF3}(-2,2)	0.511	-0.671	1.182
	(2.05)	(-3.15)	(3.61)
$CAR_{Carhart}$(-2,2)	0.517	-0.613	1.129
	(2.09)	(-2.91)	(3.47)
CAR_{DGTW}(-2,2)	0.842	-0.529	1.371
	(3.39)	(-2.58)	(4.26)
Panel C. Event Window (-3,3)			
CAR_{MktAdj}(-3,3)	2.388	0.631	1.756
	(7.91)	(2.19)	(4.21)
CAR_{MKT}(-3,3)	2.453	0.676	1.777
	(7.95)	(2.34)	(4.20)
CAR_{FF3}(-3,3)	0.805	-0.387	1.192
	(2.78)	(-1.45)	(3.02)
$CAR_{Carhart}$(-3,3)	0.816	-0.338	1.154
	(2.83)	(-1.27)	(2.95)
CAR_{DGTW}(-3,3)	1.232	-0.294	1.526
	(4.30)	(-1.09)	(3.88)

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

This table reports the regression analysis for cumulative abnormal returns of connected stocks and propensity-score-matched unconnected stocks:

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

where CAR represents the cumulative market-adjusted abnormal return (CAR_{MktAdj}, in %), the cumulative abnormal return based on the market model (CAR_{MKT}, in %), the Fama-French three-factor model (CAR_{FF3}, in %), and the Carhart four-factor model ($CAR_{Carhart}$, in %), and the cumulative DGTW benchmark-adjusted abnormal return (CAR_{DGTW}, in %) 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 $\mathbf{z}$ 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	1.756	1.735	1.777	1.759	1.192	1.180	1.154	1.155	1.526	1.623
	(4.21)	(4.34)	(4.20)	(4.41)	(3.02)	(3.05)	(2.95)	(3.01)	(3.88)	(4.12)
$BETA_{SH}$		2.684		5.368		2.767		2.704		2.087
		(2.90)		(5.80)		(3.19)		(3.13)		(2.29)
SIZE		1.551		1.215		0.733		0.715		0.676
		(3.82)		(3.03)		(1.91)		(1.88)		(1.62)
BM		-0.187		-0.668		-2.429		-2.360		-0.904
		(-0.33)		(-1.19)		(-4.41)		(-4.33)		(-1.64)
ROA		-8.587		-8.060		-5.641		-6.222		-5.939
		(-1.62)		(-1.53)		(-1.12)		(-1.23)		(-1.15)
LEV		1.171		1.064		-0.194		0.094		1.064
		(0.80)		(0.73)		(-0.14)		(0.07)		(0.73)
$IVOL_{SH}$		-19.273		-21.897		-13.081		-14.389		-10.617
		(-5.15)		(-5.91)		(-3.57)		(-3.99)		(-2.88)
AMIHUD		5.443		-4.293		-7.004		-4.744		20.456
		(0.46)		(-0.36)		(-0.59)		(-0.41)		(1.66)
TURNOVER		-24.880		-43.484		-20.288		-19.502		2.344
		(-0.80)		(-1.40)		(-0.70)		(-0.68)		(0.07)
$RET_{\{-1,0\}}$		1.039		0.758		-1.132		-0.916		2.454
		(0.38)		(0.28)		(-0.43)		(-0.35)		(0.87)
CONSTANT	0.631	-21.045	0.676	-17.216	-0.387	-9.112	-0.338	-8.461	-0.294	-10.579
	(2.19)	(-3.19)	(2.34)	(-2.63)	(-1.45)	(-1.44)	(-1.27)	(-1.35)	(-1.09)	(-1.55)
Adj. R^2	0.020	0.114	0.019	0.136	0.010	0.058	0.009	0.057	0.017	0.031
Obs.	840	840	840	840	840	840	840	840	840	840

Table 5. Announcement cumulative abnormal returns, connection, and the speculative beta effect

This table reports the regression analysis for cumulative abnormal returns of connected stocks and propensity-score-matched unconnected stocks:

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

where CAR represents the cumulative market-adjusted abnormal return (CAR_{MktAdj}, in %), the cumulative abnormal return based on the market model (CAR_{MKT}, in %), the Fama-French three-factor model (CAR_{FF3}, in %), and the Carhart four-factor model ($CAR_{Carhart}$, in %), and the cumulative DGTW benchmark-adjusted abnormal return (CAR_{DGTW}, in %) 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	-1.265	-1.921	-1.574	-2.354	-1.652	-2.418	-1.712	-2.431	-1.127	-1.170
	(-1.95)	(-1.75)	(-2.40)	(-2.14)	(-2.21)	(-2.91)	(-2.40)	(-3.11)	(-1.15)	(-0.85)
CONNECT×$BETA_{SH}$	2.472	2.986	2.743	3.360	2.328	2.939	2.346	2.930	2.171	2.281
	(4.58)	(3.73)	(5.16)	(4.02)	(3.72)	(4.29)	(3.95)	(4.60)	(2.81)	(2.12)
$BETA_{SH}$	-1.070	1.126	1.265	3.616	0.521	1.234	0.291	1.176	-0.262	0.898
	(-0.54)	(0.82)	(0.65)	(2.69)	(0.29)	(0.98)	(0.17)	(0.98)	(-0.17)	(0.72)
SIZE		1.559		1.224		0.741		0.723		0.682
		(2.01)		(1.78)		(1.30)		(1.31)		(0.71)
BM		-0.224		-0.709		-2.465		-2.396		-0.931
		(-0.28)		(-0.96)		(-3.60)		(-3.67)		(-1.20)
ROA		-9.014		-8.540		-6.060		-6.641		-6.265
		(-0.78)		(-0.81)		(-0.58)		(-0.66)		(-0.50)
LEV		1.093		0.976		-0.271		0.017		1.005
		(0.37)		(0.35)		(-0.09)		(0.01)		(0.29)
$IVOL_{SH}$		-19.447		-22.092		-13.252		-14.559		-10.750
		(-2.57)		(-2.83)		(-1.84)		(-2.07)		(-1.61)
AMIHUD		4.731		-5.095		-7.705		-5.443		19.912
		(0.26)		(-0.29)		(-0.46)		(-0.32)		(1.20)
TURNOVER		-24.764		-43.353		-20.173		-19.388		2.432
		(-0.39)		(-0.72)		(-0.39)		(-0.37)		(0.04)
$RET_{\{-1,0\}}$		1.047		0.766		-1.125		-0.909		2.460
		(0.30)		(0.25)		(-0.72)		(-0.60)		(0.52)
CONSTANT	1.940	-19.140	-0.872	-15.072	-1.024	-7.237	-0.694	-6.592	0.026	-9.123
	(1.07)	(-1.71)	(-0.48)	(-1.53)	(-0.54)	(-0.87)	(-0.39)	(-0.82)	(0.02)	(-0.64)
Adj. R^2	0.020	0.116	0.033	0.140	0.016	0.061	0.014	0.060	0.018	0.033
Obs.	840	840	840	840	840	840	840	840	840	840

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:

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

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

where standardized change in turnover (ΔTURNOVER(0,10)) is defined as the average daily turnover of firm i in the window (0,10) after the connection divided by average daily turnover in the most recent month, then minus one. CONNECT is a dummy variable, which 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 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(0,10)			
CONNECT	0.158	0.157	-0.123	-0.203
	(3.59)	(4.45)	(-1.11)	(-1.27)
CONNECT×$BETA_{SH}$			0.230	0.294
			(2.99)	(2.02)
$BETA_{SH}$		0.258	-0.070	0.105
		(1.75)	(-0.80)	(1.63)
SIZE		0.158		0.159
		(2.61)		(2.61)
BM		0.071		0.067
		(1.17)		(1.17)
ROA		-1.495		-1.537
		(-1.98)		(-2.01)
LEV		-0.145		-0.152
		(-0.80)		(-0.82)
$IVOL_{SH}$		-1.625		-1.642
		(-3.13)		(-3.15)
AMIHUD		-0.476		-0.546
		(-0.41)		(-0.47)
TURNOVER		-5.140		-5.129
		(-1.22)		(-1.19)
$RET_{\{-1,0\}}$		-1.476		-1.475
		(-9.03)		(-8.97)
CONSTANT	0.038	-2.120	0.123	-1.933
	(0.88)	(-2.42)	(1.80)	(-2.35)
Adj. R^2	0.014	0.139	0.015	0.141
Obs.	840	840	840	840

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:

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

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

where standardized change in volatility (ΔVOLATILITY(0,10)) is defined as the average daily volatility of firm i in the window (0,10) after the connection divided by average daily volatility in the most recent month, then minus one. Daily volatility is calculated as standard deviation of intraday 5-min returns. CONNECT is a dummy variable, which 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 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(0,10)			
CONNECT	0.068	0.062	-0.059	-0.106
	(2.18)	(2.63)	(-1.08)	(-1.57)
CONNECT×$BETA_{SH}$			0.104	0.138
			(3.89)	(2.29)
$BETA_{SH}$		0.203	0.082	0.131
		(2.13)	(1.08)	(2.13)
SIZE		0.081		0.082
		(1.62)		(1.62)
BM		0.025		0.023
		(0.55)		(0.52)
ROA		-0.728		-0.747
		(-1.15)		(-1.17)
LEV		-0.067		-0.071
		(-0.40)		(-0.42)
$IVOL_{SH}$		-0.816		-0.824
		(-1.88)		(-1.89)
AMIHUD		-0.304		-0.337
		(-0.33)		(-0.37)
TURNOVER		0.046		0.051
		(0.02)		(0.02)
$RET_{\{-1,0\}}$		-0.642		-0.641
		(-4.53)		(-4.55)
CONSTANT	0.045	-1.196	-0.055	-1.109
	(1.56)	(-1.67)	(-0.80)	(-1.62)
Adj. R^2	0.008	0.095	0.018	0.096
Obs.	840	840	840	840

Table 8. Limits to arbitrage: connection, speculative beta, and idiosyncratic risk

This table reports the regression analysis of the cumulative abnormal return during the program announcement ($CAR_{MKT}(-3,3)$) on the connect dummy and its interactions with Shanghai market beta in high and low idiosyncratic risk 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 CONNECT is a dummy variable, which equals one if the firm is in the connect program and zero otherwise. $BETA_{SH}$ is beta with respect to the Shanghai market index. $IVOL_{SH}$ is idiosyncratic volatility with respect to a Shanghai market model. Control variables **z** include market capitalization (SIZE), book-to-market equity ratio (BM), return-on-assets (ROA), leverage (LEV), 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) sample median. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

	Low $IVOL_{SH}$		High $IVOL_{SH}$	
CONNECT	1.723	0.279	-4.044	-2.276
	(0.59)	(0.15)	(-1.33)	(-0.90)
CONNECT×$BETA_{SH}$	-0.455	0.618	4.961	3.923
	(-0.17)	(0.61)	(2.62)	(2.47)
$BETA_{SH}$	6.086	6.297	1.348	2.302
	(1.57)	(2.17)	(1.08)	(1.67)
SIZE		1.895		0.199
		(2.42)		(0.25)
BM		-0.684		-1.195
		(-0.82)		(-1.05)
ROA		-5.404		-14.681
		(-0.54)		(-1.09)
LEV		3.562		-3.017
		(1.67)		(-0.98)
$IVOL_{SH}$		-25.516		-11.246
		(-4.33)		(-0.96)
AMIHUD		8.499		-24.144
		(0.76)		(-0.75)
TURNOVER		11.879		-101.813
		(0.23)		(-1.16)
$RET_{\{-1,0\}}$		-3.850		5.467
		(-1.20)		(0.98)
CONSTANT	-5.170	-29.399	-2.788	1.380
	(-1.31)	(-2.24)	(-1.40)	(0.12)
Adj. R^2	0.059	0.151	0.061	0.096
Obs.	420	420	420	420

Table 9. Alternative explanation: Demand effect or information effect?

This table reports the regression of the change in analyst forecasted earnings 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 (ΔForecast EPS) 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), operating profits divided by total assets (ΔOPOA), and sales divided by total assets (ΔSOA) from fiscal 2014 to fiscal 2015, respectively (in %). Control variables include 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), 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. Regression of expected cash flow

	(1)	(2)	(3)	(4)	(5)	(6)
	ΔForecast EPS_2014	ΔForecast EPS_2015	ΔForecast EPS_2016	ΔForecast EPS_2014	ΔForecast EPS_2015	ΔForecast EPS_2016
CONNECT	0.068	0.240	0.173	0.409	-0.193	-0.158
	(0.50)	(1.55)	(0.83)	(0.71)	(-0.26)	(-0.17)
CONNECT×$BETA_{SH}$				-0.279	0.353	0.269
				(-0.60)	(0.58)	(0.36)
$BETA_{SH}$	-0.0918	-0.0433	-0.186	0.0623	-0.227	-0.328
	(-0.33)	(-0.12)	(-0.44)	(0.19)	(-0.50)	(-0.54)
SIZE	0.186	0.0559	0.135	0.181	0.0602	0.138
	(1.51)	(0.31)	(0.66)	(1.49)	(0.34)	(0.69)
BM	-0.100	-0.0295	-0.151	-0.0926	-0.0380	-0.158
	(-0.52)	(-0.09)	(-0.34)	(-0.49)	(-0.11)	(-0.35)
ROA	1.030	-1.438	-3.680	1.090	-1.503	-3.738
	(0.76)	(-0.82)	(-1.62)	(0.81)	(-0.85)	(-1.64)
LEV	-0.871	-0.749	-1.500	-0.871	-0.749	-1.500
	(-1.61)	(-1.11)	(-1.60)	(-1.61)	(-1.10)	(-1.59)
$IVOL_{SH}$	-1.581	-0.771	-3.305	-1.564	-0.800	-3.328
	(-1.91)	(-0.58)	(-1.90)	(-1.89)	(-0.61)	(-1.93)
AMIHUD	9.999	3.316	8.551	10.01	3.237	8.473
	(2.17)	(0.66)	(1.34)	(2.16)	(0.64)	(1.33)
TURNOVER	14.22	10.99	33.43	13.87	11.16	33.61
	(1.60)	(0.90)	(2.14)	(1.59)	(0.92)	(2.17)
$RET_{\{-1,0\}}$	1.196	3.073	3.024	1.206	3.072	3.021
	(1.31)	(3.02)	(2.51)	(1.33)	(3.02)	(2.50)
CONSTANT	-3.166	-1.257	-1.664	-3.286	-1.083	-1.519
	(-1.52)	(-0.44)	(-0.51)	(-1.51)	(-0.37)	(-0.45)
Adj. R^2	0.007	0.009	0.011	0.005	0.008	0.010
Obs.	484	589	563	484	589	563

Panel B. Regression of realized cash flow

	(1)	(2)	(3)	(4)	(5)	(6)
	ΔROA	ΔOPOA	ΔSOA	ΔROA	ΔOPOA	SOA
CONNECT	0.0130	0.0242	0.750	1.340	1.578	6.474
	(0.04)	(0.06)	(0.35)	(0.53)	(0.51)	(0.38)
CONNECT×$BETA_{SH}$				-1.085	-1.271	-4.683
				(-0.57)	(-0.54)	(-0.36)
$BETA_{SH}$	1.569	2.103	11.78	2.142	2.774	14.25
	(1.25)	(1.34)	(1.35)	(1.76)	(2.01)	(1.21)
SIZE	0.298	0.442	1.887	0.294	0.436	1.868
	(0.97)	(1.19)	(0.93)	(0.94)	(1.16)	(0.92)
BM	0.180	0.347	1.381	0.196	0.365	1.449
	(0.41)	(0.69)	(0.34)	(0.44)	(0.72)	(0.35)
ROA	-6.169	-9.330	-0.568	-6.045	-9.185	-0.0354
	(-0.92)	(-1.21)	(-0.01)	(-0.91)	(-1.21)	(-0.00)
LEV	-0.615	-0.574	-9.140	-0.588	-0.542	-9.021
	(-0.38)	(-0.29)	(-0.89)	(-0.37)	(-0.28)	(-0.89)
$IVOL_{SH}$	-2.805	-2.505	-14.85	-2.716	-2.401	-14.47
	(-0.97)	(-0.75)	(-0.93)	(-0.93)	(-0.71)	(-0.91)
AMIHUD	-1.228	-1.711	9.583	-0.938	-1.370	10.84
	(-0.11)	(-0.14)	(0.17)	(-0.09)	(-0.11)	(0.19)
TURNOVER	21.68	34.22	133.5	21.79	34.34	134.0
	(0.88)	(1.22)	(0.98)	(0.88)	(1.23)	(0.99)
$RET_{\{-1,0\}}$	-0.853	-0.0470	-21.12	-0.867	-0.0642	-21.18
	(-0.45)	(-0.02)	(-1.35)	(-0.45)	(-0.03)	(-1.35)
CONSTANT	-6.954	-10.31	-49.64	-7.641	-11.11	-52.60
	(-1.09)	(-1.31)	(-1.11)	(-1.27)	(-1.53)	(-1.12)
Adj. R^2	0.004	0.015	0.008	0.004	0.015	0.007
Obs.	711	711	711	711	711	711

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

This table reports regression of Hong Kong investor 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) also control for time fixed effect (T) and industry fixed effects (I). The sample includes Hong Kong investor holdings of Shanghai connected stocks through the connect program at the four quarter ends after the announcement of the program, namely, December 2014, March 2015, June 2015 and Septemp2015. Results for all connected stocks (With AH) and the subsample excluding AH dual-listed stocks (Ex. AH) are both reported. Corresponding *t*-statistics associated with robust standard errors clustered at the firm level are reported in parentheses.

	With AH			Ex. AH		
	(1)	(2)	(3)	(4)	(5)	(6)
$BETA_{SH}$	-0.651	-0.570	-0.536	-1.307	-0.680	-0.616
	(-1.37)	(-1.44)	(-1.23)	(-2.26)	(-1.33)	(-1.11)
SIZE		-0.148	-0.168		0.031	0.037
		(-0.91)	(-0.92)		(0.12)	(0.12)
BM		-0.481	-0.493		-0.644	-0.640
		(-3.33)	(-2.67)		(-2.67)	(-2.40)
ROA		11.565	10.378		8.528	7.663
		(4.13)	(3.51)		(3.84)	(3.27)
LEV		-0.774	-0.766		-1.202	-1.199
		(-1.27)	(-1.04)		(-1.50)	(-1.41)
$IVOL_{SH}$		1.075	1.052		0.673	0.591
		(0.40)	(0.37)		(0.23)	(0.20)
AMIHUD		-18.045	-20.230		-18.591	-19.256
		(-1.98)	(-1.91)		(-1.24)	(-1.14)
TURNOVER		-22.953	-26.060		-20.550	-20.521
		(-1.59)	(-1.84)		(-1.17)	(-1.19)
CONSTANT	1.947	4.527	4.553	2.911	2.209	1.823
	(2.99)	(1.26)	(1.11)	(3.63)	(0.42)	(0.29)
Fixed Effects	No	No	T, I	No	No	T, I
Adj.R2	0.014	0.262	0.272	0.046	0.266	0.275
Obs.	412	412	412	327	327	327

Table 11. Alternative explanation: Risk sharing

This table reports regression analysis of the cumulative abnormal return during the program announcement (CAR_{MKT} (-3,3)) on the connect dummy and its interaction with stock market beta, $DIVCOV_{HK}$ and $DIVCOV_{MSCI}$.

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

where CONNECT is a dummy variable, which 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 covariance with the Shanghai market and its 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 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_{MKT} (-3,3)			
CONNECT	-1.517	-2.266	-1.545	-2.289
	(-1.83)	(-2.72)	(-1.90)	(-1.95)
CONNECT×$DIFCOV_{HK}$	5.050	1.775		
	(4.33)	(1.05)		
$DIFCOV_{HK}$	0.343	-7.166		
	(0.20)	(-2.14)		
CONNECT×$DIFCOV_{MSCI}$			3.413	-1.777
			(4.61)	(-0.47)
$DIFCOV_{MSCI}$			4.358	2.236
			(3.10)	(1.38)
CONNECT×$BETA_{SH}$		2.330		4.701
		(1.93)		(2.25)
$BETA_{SH}$		6.988		1.915
		(2.90)		(0.95)
SIZE	1.237	0.851	1.236	1.229
	(1.67)	(1.91)	(1.72)	(1.78)
BM	-0.493	-0.847	-0.839	-0.739
	(-0.59)	(-1.22)	(-1.04)	(-1.04)
ROA	-13.148	-7.289	-9.020	-8.543
	(-1.03)	(-0.82)	(-0.82)	(-0.81)
LEV	-0.193	0.951	0.864	0.983
	(-0.06)	(0.37)	(0.30)	(0.35)
$IVOL_{SH}$	-21.437	-18.656	-22.370	-22.247
	(-2.90)	(-2.67)	(-2.81)	(-2.85)
AMIHUD	-10.971	-11.461	-5.576	-5.102
	(-0.59)	(-0.76)	(-0.32)	(-0.29)
TURNOVER	-12.989	-60.461	-40.838	-43.230
	(-0.20)	(-1.16)	(-0.68)	(-0.72)
$RET_{\{-1,0\}}$	0.676	0.425	0.498	0.748
	(0.17)	(0.19)	(0.16)	(0.24)
CONSTANT	-11.190	-9.193	-14.831	-15.156
	(-1.15)	(-1.48)	(-1.47)	(-1.53)
Adj. R^2	0.104	0.149	0.136	0.138
Obs.	840	840	840	840

Table 12. Alternative explanation: Lottery demand

This table reports regression analysis of the cumulative abnormal return during the program announcement (CAR_{MKT} (-3,3)) on the connect dummy and its interaction with $BETA_{SH}$ and MAX.

$$CAR_i = a_0 + a_1 CONNECT_i + a_2 CONNECT_i * BETA_{SH,i} + a_3 BETA_{SH,i} + a_4 CONNECT_i * MAX_i + a_5 MAX_i + \boldsymbol{bz_i} + \varepsilon_i,$$

where MAX is constructed as the average of the five highest daily returns (in %) in October, 2014, the month prior to the announcement of connect program. 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 ($BETA_{SH}$), 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_{MKT} (-3,3)	
CONNECT	1.597	-2.090
	(2.00)	(-1.85)
CONNECT*MAX	0.016	-0.057
	(0.06)	(-0.22)
MAX	-0.538	-0.680
	(-1.43)	(-1.66)
CONNECT×$BETA_{SH}$		3.274
		(3.37)
$BETA_{SH}$		3.886
		(3.21)
SIZE	0.996	1.220
	(1.35)	(1.82)
BM	-0.337	-0.538
	(-0.35)	(-0.66)
ROA	-13.750	-9.040
	(-1.19)	(-0.92)
LEV	-0.482	1.012
	(-0.16)	(0.37)
IVOL_SH	-16.567	-19.047
	(-1.94)	(-2.56)
AMIHUD	-12.375	-1.521
	(-0.55)	(-0.08)
TURNOVER	-8.469	-41.294
	(-0.13)	(-0.69)
$RET_{\{-1,0\}}$	7.780	10.376
	(3.09)	(3.46)
CONSTANT	-7.295	-14.809
	(-0.74)	(-1.56)
Adj. R^2	0.099	0.144
Obs.	840	840

Table 13. Placebo tests

This table reports the placebo tests for the cumulative abnormal return, change in turnover, and change in volatility analysis. We choose two pseudo trading dates, October 10 and September 10, 2014, which are one and two months before the program announcement date, and repeat the analysis above in Tables 4 ~ 7. Panels A, B, and C report the regression analysis for cumulative abnormal return ($CAR_{MKT}(-3,3)$), change of turnover ($\Delta TURNOVER(0,10)$), and change of volatility ($\Delta VOLATILITY(0,10)$), 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 ($BETA_{SH}$), 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	-0.437	-1.839	0.421	0.614
	(-1.05)	(-1.89)	(1.22)	(0.31)
CONNECT×$BETA_{SH}$		1.127		-0.161
		(1.51)		(-0.11)
$BETA_{SH}$	-2.370	-2.921	-2.710	-2.625
	(-2.67)	(-3.73)	(-3.61)	(-4.49)
SIZE	0.035	0.041	-1.654	-1.656
	(0.08)	(0.13)	(-4.40)	(-4.02)
BM	0.387	0.367	0.724	0.728
	(0.61)	(0.45)	(1.51)	(1.44)
ROA	-12.643	-12.753	-3.982	-3.942
	(-2.17)	(-1.47)	(-0.86)	(-0.75)
LEV	-2.775	-2.807	2.127	2.133
	(-1.85)	(-0.95)	(1.76)	(2.71)
$IVOL_{SH}$	-11.789	-11.929	-14.312	-14.290
	(-3.58)	(-4.25)	(-5.15)	(-10.32)
AMIHUD	-1.139	-0.940	1.854	1.789
	(-0.07)	(-0.13)	(0.15)	(0.14)
TURNOVER	-1.418	-1.888	-7.844	-7.897
	(-0.04)	(-0.06)	(-0.27)	(-0.30)
$RET_{\{-1,0\}}$	2.017	2.052	2.988	2.993
	(0.77)	(2.32)	(1.05)	(1.32)
CONSTANT	7.148	7.809	32.522	32.451
	(0.88)	(1.44)	(4.99)	(3.90)
Adj. R^2	0.048	0.048	0.188	0.187
Obs.	812	812	818	818

Panel B. Changes in turnover (Dependent variable = ΔTURNOVER(0,10))

	10/10/2014		09/10/2014	
CONNECT	-0.105	0.258	0.189	0.306
	(-0.24)	(0.10)	(1.17)	(1.25)
CONNECT×$BETA_{SH}$		-0.291		-0.098
		(-0.16)		(-0.39)
$BETA_{SH}$	-0.776	-0.634	0.152	0.203
	(-1.01)	(-0.37)	(0.94)	(3.08)
SIZE	1.287	1.286	-0.121	-0.122
	(0.93)	(1.54)	(-1.67)	(-3.58)
BM	0.414	0.419	0.569	0.572
	(0.41)	(0.34)	(1.69)	(3.47)
ROA	8.280	8.308	1.495	1.519
	(1.18)	(2.42)	(1.31)	(3.51)
LEV	1.908	1.916	-0.590	-0.587
	(1.49)	(2.46)	(-1.08)	(-1.19)
$IVOL_{SH}$	-0.896	-0.860	0.423	0.436
	(-0.31)	(-0.33)	(0.37)	(0.83)
AMIHUD	42.543	42.491	2.952	2.913
	(0.80)	(1.25)	(1.14)	(3.70)
TURNOVER	68.139	68.260	-12.357	-12.389
	(1.09)	(2.76)	(-1.35)	(-1.57)
$RET_{\{-1,0\}}$	4.868	4.858	0.213	0.216
	(0.88)	(1.50)	(0.13)	(0.25)
CONSTANT	-22.852	-23.023	1.685	1.642
	(-0.88)	(-1.41)	(1.03)	(3.10)
Adj. R^2	0.004	0.003	0.013	0.012
Obs.	812	812	818	818

Panel C. Changes in volatility (Dependent variable = ΔVOLATILITY(0,10))

	October 10, 2014		September 10, 2014	
CONNECT	-0.015	-0.008	0.024	0.126
	(-0.67)	(-0.30)	(1.02)	(1.17)
CONNECT×$BETA_{SH}$		-0.006		-0.086
		(-0.33)		(-1.13)
$BETA_{SH}$	-0.055	-0.052	0.048	0.093
	(-1.27)	(-1.34)	(1.01)	(1.60)
SIZE	-0.073	-0.073	-0.119	-0.120
	(-3.90)	(-6.89)	(-5.32)	(-7.23)
BM	-0.065	-0.065	0.058	0.060
	(-2.16)	(-2.98)	(1.94)	(2.64)
ROA	-0.286	-0.285	0.000	0.021
	(-0.97)	(-1.07)	(0.00)	(0.06)
LEV	-0.129	-0.128	-0.115	-0.112
	(-1.69)	(-1.49)	(-1.32)	(-1.15)
$IVOL_{SH}$	-0.498	-0.497	-0.310	-0.298
	(-2.88)	(-6.94)	(-1.67)	(-4.06)
AMIHUD	-2.298	-2.299	0.174	0.140
	(-4.11)	(-5.15)	(0.25)	(0.32)
TURNOVER	-3.668	-3.666	0.141	0.114
	(-2.58)	(-3.46)	(0.08)	(0.08)
$RET_{\{-1,0\}}$	-0.400	-0.400	-0.614	-0.612
	(-4.05)	(-8.31)	(-4.44)	(-19.24)
CONSTANT	1.737	1.734	2.046	2.009
	(5.35)	(7.05)	(5.32)	(6.88)
Adj. R^2	0.063	0.062	0.101	0.101
Obs.	812	812	818	818

Table 14. The speculative beta effect: Additional robustness checks

This table reports the robustness checks for the interactive effect between connection and market beta on the announcement cumulative abnormal returns, change in turnover, and change in volatility after the announcement in the regression analysis. The dependent variable is the cumulative abnormal return based on the market model (CAR_{MKT}, in %) during the announcement window (-3,3) for panel A, change in turnover during the event window (0,10) for panel B, and change in volatility during event window (0,10) for panel C. 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 ($BETA_{SH}$), idiosyncratic volatility with respect to a Shanghai market model ($IVOL_{SH}$), Amihud illiquidity measure (AMIHUD), turnover (TURNOVER), past one-month return ($RET_{\{-1,0\}}$), and beta with respect to the Hong Kong market index ($BETA_{HK}$). The sample include connected stocked and their propensity-score-matched unconnected stocks. Corresponding *t*-statistics based on robust standard errors clustered at the industry level are reported in parentheses.

Panel A. Cumulative abnormal returns

	$CAR_{MKT}(-3,3)$								
CONNECT	-8.745	-1.455	-2.663	-1.856	-4.017	-1.019	-2.148	-1.984	-2.211
	(-1.85)	(-1.72)	(-2.34)	(-1.80)	(-3.43)	(-1.23)	(-2.43)	(-2.35)	(-2.65)
CONNECT×$BETA_{SH}$	3.200	2.978	3.237	3.036	2.224	2.822	3.598	3.065	4.034
	(4.97)	(4.70)	(4.41)	(4.12)	(3.71)	(5.17)	(5.24)	(4.33)	(5.65)
CONNECT×SIZE	0.410								
	(0.77)								
CONNECT×BM		-0.773							
		(-0.84)							
CONNECT×ROA			8.736						
			(1.04)						
CONNECT×LEV				-0.747					
				(-0.30)					
CONNECT×$IVOL_{SH}$					9.904				
					(1.75)				
CONNECT×AMIHUD						-22.331			
						(-1.39)			
CONNECT×TURNOVER							-35.030		
							(-0.76)		
CONNECT× $RET_{\{-1,0\}}$								-2.410	
								(-0.47)	
CONNECT×$BETA_{HK}$									-2.096
									(-0.76)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.149	0.149	0.150	0.149	0.153	0.151	0.149	0.149	0.150
Obs.	840	840	840	840	840	840	840	840	840

Panel B. Changes in turnover

	ΔTURNOVER(0,10)								
CONNECT	0.190	-0.667	-0.366	-0.461	-0.617	-0.378	-0.498	-0.431	-0.562
	(0.11)	(-2.55)	(-0.77)	(-1.24)	(-0.94)	(-0.79)	(-1.28)	(-1.03)	(-1.33)
CONNECT×$BETA_{SH}$	0.558	0.600	0.536	0.558	0.516	0.537	0.554	0.545	1.003
	(1.82)	(2.26)	(1.73)	(1.99)	(2.16)	(1.79)	(1.96)	(1.86)	(2.55)
CONNECT×SIZE	-0.042								
	(-0.34)								
CONNECT×BM		0.206							
		(0.82)							
CONNECT×ROA			-2.004						
			(-1.08)						
CONNECT×LEV				-0.132					
				(-0.23)					
CONNECT×$IVOL_{SH}$					0.596				
					(0.46)				
CONNECT×AMIHUD						-2.581			
						(-0.76)			
CONNECT×TURNOVER							1.037		
							(0.07)		
CONNECT× $RET_{\{-1,0\}}$								-1.789	
								(-1.34)	
CONNECT×$BETA_{HK}$									-0.973
									(-1.35)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.120	0.121	0.121	0.120	0.121	0.121	0.120	0.123	0.123
Obs.	840	840	840	840	840	840	840	840	840

Panel C. Changes in volatility

	ΔVOLATILITY(0,10)								
CONNECT	-0.208	-0.032	-0.020	-0.037	-0.053	-0.009	-0.029	-0.029	-0.029
	(-2.19)	(-1.86)	(-0.80)	(-1.77)	(-1.36)	(-0.26)	(-1.50)	(-1.50)	(-1.48)
CONNECT×$BETA_{SH}$	0.040	0.038	0.036	0.040	0.025	0.033	0.051	0.038	0.054
	(3.29)	(2.99)	(2.36)	(2.75)	(1.64)	(2.34)	(3.72)	(2.96)	(3.20)
CONNECT×SIZE	0.011								
	(0.97)								
CONNECT×BM		0.006							
		(0.30)							
CONNECT×ROA			-0.102						
			(-0.61)						
CONNECT×LEV				0.035					
				(0.66)					
CONNECT×$IVOL_{SH}$					0.135				
					(1.23)				
CONNECT×AMIHUD						-0.375			
						(-1.13)			
CONNECT×TURNOVER							-0.940		
							(-0.89)		
CONNECT× $RET_{\{-1,0\}}$								0.054	
								(0.46)	
CONNECT×$BETA_{HK}$									-0.038
									(-0.63)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.088	0.087	0.088	0.088	0.089	0.089	0.088	0.088	0.088
Obs.	840	840	840	840	840	840	840	840	840

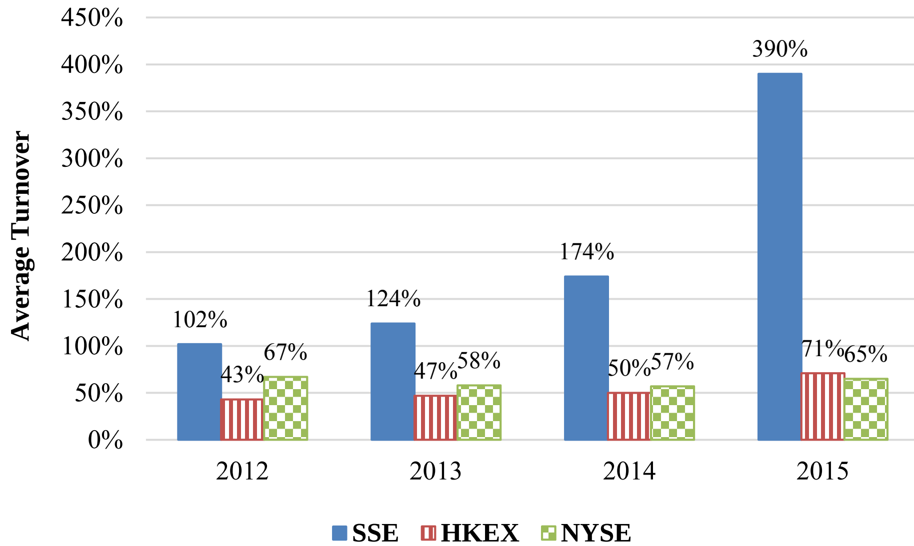

Figure 1. Average turnover across exchanges. This figure plots the average share turnover for stock listed in the three stock exchange, including Shanghai Stock Exchange (SSE), Hong Kong Stock Exchange (HKEX) and New York Stock Exchange (NYSE) during 2012-2015. The numbers reported are retrieved from annual factbook of the respective stock exchange.

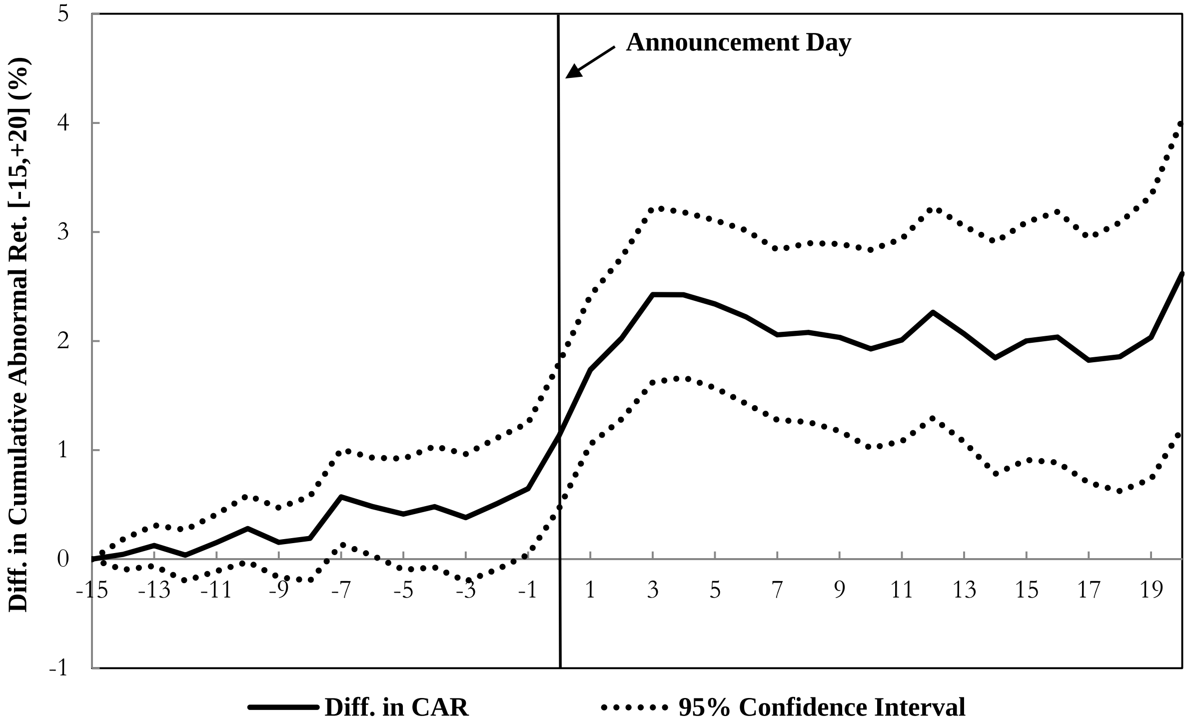

Figure 2. Difference of cumulative abnormal returns between connected and propensity-score-matched unconnected stocks around the announcement of Shanghai-Hong Kong Stock Connect program. This figure plots the difference of cumulative abnormal returns based on the market model (CAR_{MKT}, %) between connected and matched unconnected stocks in the (-15,20) window around the announcement of Shanghai-Hong Kong Stock Connect program. The 95% confidence intervals are also plotted. A vertical bar is placed for the announcement day (day 0).

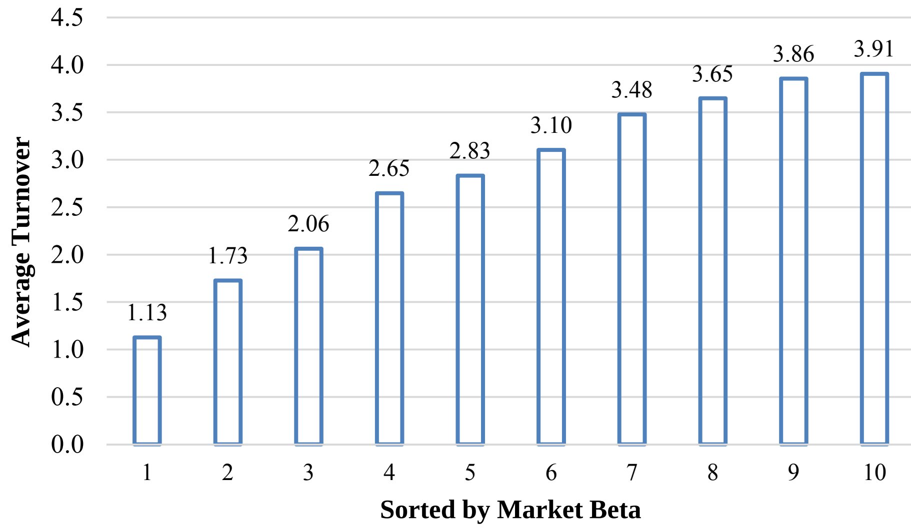

Figure 3. Average turnover in the ten portfolios of Chinese A-share stocks ranked by market beta. This figure plots the average annual turnover in the ten portfolios of Chinese A-share stocks ranked by market beta over 2006-2015. We first sort stocks into decile portfolios by their market beta estimated 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.

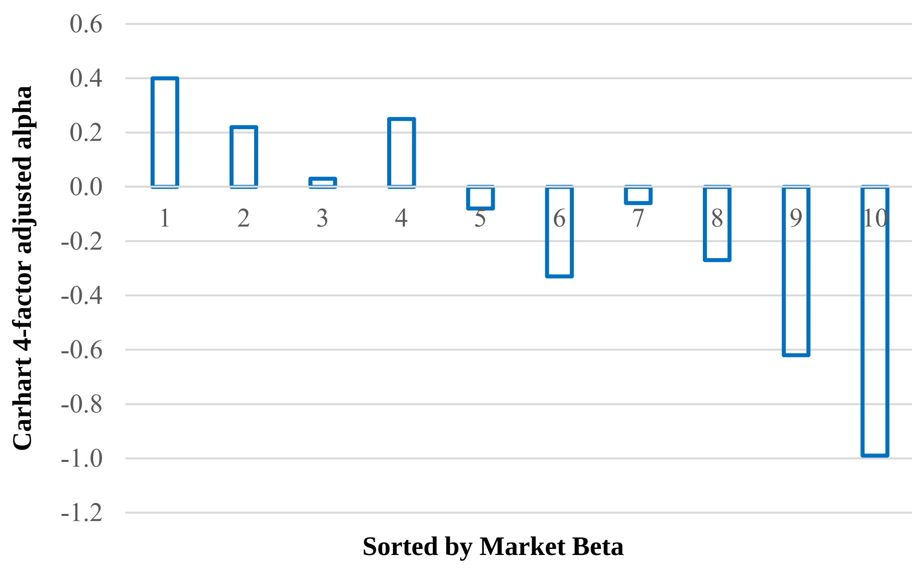

Figure 4. Carhart four-factor adjusted alpha of decile portfolios of Chinese A-share stocks ranked by market beta. This figure plots the Carhart four-factor adjusted alpha of the ten portfolios of Chinese A-share stocks ranked by market beta over 2006-2015. We first sort stocks into decile portfolios based on their market beta estimated from past one year daily return. We then calculate the value-weighted portfolio returns over the next month and Carhart four-factor adjusted alpha for each portfolio.