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An Empirical Study on the Impact of Stock Market Interconnection Policyon A-H Premium

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Abstract: ***This paper examines whether the implementation of the stock market interconnection policy reduces the A-H premium by combining the four hypothesis of impact mechanism on the A-H premium. This study conducts quantitative approach and use panel data of 81 companies within Chinese equity markets over the period of two stock interconnect policy (Shanghai-Hong Kong stock connect policy and Shenzhen-Hong Kong stock connect policy). The conclusion shows that the implementation of Shanghai-Hong Kong stock connect policy has significantly increased the A-H premium. The implementation of Shenzhen-Hong Kong stock connect does not have a significant impact on A-H premium.***

Keywords: stock market interconnection policy; SH-HKSC; SZ-HKSC; A-H premium

1. Introduction

The study aims to test the spread between A-shares and H-shares after the start-up of two stock market interconnection policy (i.e. SH-HKSC and SZ-HKSC) and discuss the reason and mechanism of A-H premium. On the basis of this, draw a conclusion of whether the policy should be combined to reduce the market segmentation between mainland and Hong Kong and to promote the balanced development of both A shares and H shares. The main research question of this study is: Does the market interconnection policy significantly affect the A-H premium of relative stocks?

2. Literature Review

A number of previous studies mostly focus on the A-share and B-share price differences between domestic and foreign stocks in China's stock market. Bailey discovered the phenomenon of B-share trading in discount to A-shares [1]. Fernald and Rogers argue that the price difference between the A shares and B shares is different from most emerging markets [2]. And the regression results contrary to the general theoretical model (CAPM). They explain this phenomenon by using the traditional dividend discount model. It is considered that the difference between domestic and foreign investors' expected rate of return on the stock is the main factor that causes the A-share premium to the B-share premium. To put it more in-depth, the main reason that different investors have different expected returns on the same stock is that Chinese domestic investors are forced to accept the higher prices of A shares due to the lack of diversified investment options. The conclusion of this study is consistent with that of Bailey.

Relatively speaking, only a few studies analyze the dual-listed stocks in emerging markets such as the Stock Exchange of Hong Kong (SEHK), the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE). Xu and Fung studied the price-discovery process for a number of Chinese cross-listed stocks on the NYSE and the SEHK [3]. Both of them found out the SEHK makes more contributions than the NYSE to the price-discovery process. However, Su and Chong states that the studies on price-discovery from emerging markets cross-listed on developed markets are limited because high quality data are unavailable [4]. In comparison, Su and Chong reported that the two prices were co-integrated, and the Hong Kong market played a more significant role in price discovery, while Xu and Fung found that shares listed on NYSE played a more significant role in volatility spillover. Both Xu and Fung and Su and Chong focus on H-shares, nevertheless they did not mention A-shares.

Since the SZ-HKSC has launched for a short period of time (5 Dec 2016), even fewer scholars studies on how the Connect affects A-H shares premium. Li analyses the impact of the SZ-HKSC [5]. By applying fixed effects model (FEM), Li examined the stock price dynamics of A-H shares and the result shows that SZ-HKSC have a significant impact on A-H premium from a micro perspective, and this policy slightly increase the A-H premium for the dual-listed companies because of the speculation from mainland market.

3. Data and Empirical Methodology

3.1 Data Description

Based on literature review, some scholars believe that the causations of A-H premium come from the liquidity differences, information asymmetry, different investors' risk preferences and different demand elasticities. The construction of the variables are as follows:

Table 1: Construction of the variables

Variables	Subdivision Variables	Proxy Variable
Dependent Var.	A-H Premium	A-H Premium
Control Var.	Liquidity Diff.	turnover rate
	Info.Asymmetry Diff.	market cap.
	Demand Elasticity Diff.	circuit stocks
	Risk Preference Diff.	Beta ratio
Policy Factor	SH-HKSC	policy 1
	SZ-HKSC	policy 2

3.2 Methodology

According to the above theory and analysis, the information asymmetry, investor risk preference, demand elasticity and liquidity difference are used as control variables and policy(i.e.SH-HKSC and SZ-HKSC)are introduced as dummy variables. Using panel data of the 65 dual-listed stock and 17 dual-listed stock, the investor model is constructed as follows:

$$\frac{P_{i,A,t}}{P_{i,H,t} * E_t} = \alpha + \beta_1 \frac{Trade_{i,A,t}/Vol_{i,A,t}}{Trade_{i,H,t}/Vol_{i,H,t}} + \beta_2 \frac{Mkt\ Cap_{i,A,t}}{Mkt\ Cap_{i,H,t}} + \beta_3 \frac{Vol_{i,A,t}}{Vol_{i,H,t}} + \beta_4 \frac{Beta_{i,A,t}}{Beta_{i,H,t}} + \beta_5 D_{1,t} + \varepsilon_t$$

For each period, we apply fixed effects model to this equation. Since we expect that after the Connect is launched, investors would take advantage of the opportunity of arbitrage to narrow the A-H premium of the stocks, we expect $\hat{\beta}_5$ to be negative.

4. Empirical Analysis

4.1 Descriptive Statistics of Investor Models

Table 2and 3 shows the statistical characteristics of the two investor models. We obtain the data of stock price, number of trades, current market capital, volume and raw beta of 82 companies (65 companies of period one and 17 companies of period 2) from Bloomberg. All stock prices are converted into RMB to make them compatible. The first period of observation is from January 2014 (01.2014) to December 2015 (12.2015), a total of 33,930 observations. The second period of observation is from January 2016 (01.2016) to December 2017 (12.2017), a total of 8,336 observations.

Table 2: Statistical characteristics of the First Investor Model

Variable	Mean	Std. Dev.	Min	Max
Y	1.6348	0.7842	0.3111	8.7773
X1	3.2079	2.4710	0.0021	223.9163
X2	0.7964	0.0576	0.2190	2.8250
X3	15.7417	789.1315	0.0025	83888.99
X4	1.0367	0.3663	0.4138	4.8557
Policy1	0.5651	0.4957	0	1

Table 3: Statistical characteristics of the Second Investor Model

Variable	Mean	Std. Dev.	Min	Max
Y	1.5703	0.7454	0.6531	4.1998
X1	0.9809	0.9661	0.0193	14.9084
X2	0.8321	0.1177	0.2006	0.9330
X3	18.0836	146.7154	0.0441	6129.48
X4	0.9089	0.2750	0.5361	1.8754
Policy2	0.5374	0.4986	0	1

4.2 Empirical results

First, we apply Fisher test for panel unit root in order to achieve stationarity. Second, we use Kao Test, Pedroni Test and Westerlund Test for Cointegration and we apply Hausman test to choose between fixed effects model or random effects model. Next, we consider the market fluctuations, capital size, liquidity differences and Stock Connect policy's effect on AH premium. Figure1 and 2 reports the results, respectively. Premium is significantly and positively related with market capitalization which verifies the Information Asymmetry hypothesis. It also shows that the variation in premium across firms is positively related with the ratio of A- and H-shares turnover ratio. This provides strong evidence that A–H premium is related to the different liquidity cost of A- and H-shares and is consistent with the liquidity hypothesis. Evidence are also be found in support of the differential risk hypothesis. The greater the difference in risk preference the greater the A-H premium. However, the coefficients regarding to demand elasticity difference are not significant. The second fixed effects model is not significant. After controlling the proxies for different hypotheses, we find that SH-HKSC policy can significantly widen the A–H premium which is also consistent with HSAHP index.

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. xtreg Y X1 X2 X3 DX4 Policy1,fe

Fixed-effects (within) regression               Number of obs      =     27,105
Group variable: Firm                            Number of groups   =         65

R-sq:                                           Obs per group:
     within  = 0.4706                                         min =        417
     between = 0.3269                                         avg =      417.0
     overall = 0.3016                                         max =        417

                                                F(5,27035)         =    4805.74
corr(u_i, Xb)  = 0.1380                         Prob > F           =     0.0000

------------------------------------------------------------------------------
           Y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          X1 |   .0610209   .0010909    55.94   0.000     .0588828    .0631591
          X2 |   1.102873   .0800053    13.78   0.000      .946058    1.259687
          X3 |  -2.63e-07   2.45e-06    -0.11   0.915    -5.07e-06    4.55e-06
         DX4 |   .7468838   .1626939     4.59   0.000     .4279953    1.065772
     Policy1 |   .5679468   .0046319   122.62   0.000      .558868    .5770257
       _cons |   .2399751   .0629539     3.81   0.000     .1165823    .3633679
-------------+----------------------------------------------------------------
     sigma_u |  .56004553
     sigma_e |  .35510015
         rho |  .71325312   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(64, 27035) = 951.43                 Prob > F = 0.0000
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Figure 1: The first Fixed Effects Model

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. xtreg DY X1 DX2 X3 DX4 Policy2,fe

Fixed-effects (within) regression               Number of obs      =      6,656
Group variable: Firm                            Number of groups   =         16

R-sq:                                           Obs per group:
     within  = 0.0712                                         min =        416
     between = 0.0213                                         avg =      416.0
     overall = 0.0680                                         max =        416

                                                F(5,6635)          =     101.70
corr(u_i, Xb)  = -0.2008                        Prob > F           =     0.0000

------------------------------------------------------------------------------
          DY |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          X1 |  -.0040163   .0008696    -4.62   0.000    -.005721   -.0023116
         DX2 |   2.409183   .1098944    21.92   0.000     2.193755    2.624612
          X3 |  -6.77e-07   3.92e-06    -0.17   0.863    -8.37e-06    7.01e-06
         DX4 |    -.20226   .0846157    -2.39   0.017    -.3681339   -.036386
     Policy2 |   .0008049   .0011438     0.70   0.482    -.0014373    .0030472
       _cons |   .0035265   .0011451     3.08   0.002     .0012818    .0057712
-------------+----------------------------------------------------------------
     sigma_u |  .00318148
     sigma_e |  .04605883
         rho |   .0047486   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(15, 6635) = 1.08                    Prob > F = 0.3709
```

Figure 2: The second Fixed Effects Model

According to the result of the first fixed effect model, R square within the model equals to 0.47. P value of the F statistic is 0 significantly less than 1%, indicating that the overall model is significant.

Under the 1% significance level, liquidity difference, information asymmetry difference, risk preference difference and SH-HKSC policy affect the A-H premium

significantly. The coefficient symbol amongst these variables are positive. For the positive coefficient symbol of liquidity difference, it shows that the liquidity of the A share market is relatively high. This verifies the liquidity difference hypothesis. The premium rate of A shares relative to H share is an increasing function of the liquidity of the A share market and a reducing function of the liquidity of the H-share market. The liquidity difference variable has positive effect on the premium rate of the A-H shares, which is the same as expected.

As for the overall model, the investor model verifies the applicability of the liquidity hypothesis, information asymmetry hypothesis and risk preference difference hypothesis under the SH-HKSC background. It shows that the liquidity difference, information asymmetry and risk preference difference have certain explanatory power on the factors affecting the A-H premium. However, demand elasticity difference has no impact on A-H premium after the implement of SH-HKSC. According to the result of the second fixed effect model, R square within the model equals to 0.07. P value of the F statistic is 0.38 which is not significantly less than 1%, indicating that the overall model is not significant.

5. Conclusion

In this paper, we studied the impact of SH-HKSC and SZ-HKSC on the A-H premium. Firstly, SH-HKSC have a significant impact on A-H premium and it widen the A-H premium. Secondly, SZ-HKSC does not have a significant impact on A-H premium. This may because the shares listed on the Shenzhen stock exchange are small cap companies. The fluctuations in the price of these small cap stocks have little effect on the A-H premium and the price change after SZ-HKSC is not obvious. After the opening of SH-HKSC, liquidity difference, information asymmetry difference and risk preference difference still affects the A-H premium significantly. However, demand elasticity difference does not significantly affect A-H premium as it was.

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