How did the Shenzhen connect affect the H-A premiums?

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Abstract

China's globalization opportunities opening its markets to more mature reliable investments gradually opened new channels for investors and financial institutions out of Mainland China to access its markets. The collaboration of the Shanghai and Hong Kong Stock exchange in 2014 not only opened Mainland China's financial markets to new investors but also paved the way for the Shenzhen-Hong Kong connect on the 5th December 2016. This study will examine the pricing dynamics and the effects of the Shenzhen-Hong Kong connect between dual-listed stocks in Shenzhen and Hong-Kong. Through the use of linear regressions, the study provides empirical data of the effects between A-H shares premium of cross-listed stocks. It was concluded based on results that after the Shenzhen connect the A-H premium narrowed and the trading activities in the Hong Kong market affected that A-H premium more significantly than trading volumes in the Shenzhen market.

I. Introduction

The Shanghai-Hong Kong Stock Connect was introduced in 2014, a joint partnership between Shanghai and Hong Kong Stock Exchange enabling international investors into the Chinese Market. By analyzing the Hang Seng A-H Premiums between cross-listed shares and the effects of the Connect: it can be concluded that the Shanghai connect increased the premium between those cross-listed firm's shares. This, however, had not created an arbitrage effect in both markets between A-H shares: investors could not take advantage of the premium between companies with A-H shares since the shares are not convertible.

On December 5th, 2016, the Shenzhen-Hong Kong connect was launched similarly to the one in Shanghai. Both Connects are structured with capital control: foreign and domestic investors are not allowed to transfer their wealth internationally as capital gains from the Connect will return to their origin. This study will examine the effects the Shenzhen Connect across the A-shares and H-shares premium and which stock exchange has the most significant effect in the A-H premiums. To examine this effect, the use of multi-linear regressions and simple comparisons will determine which variables are more significant to the effects of the stock premiums.

II. Data

The data from this study was obtained from the WIND terminal's historical data and the analysis was done with STATA. For simplicity purposes, the A shares will be converted into HKD at best daily exchange rate and A-H premiums will be examined as A-shares price at time t / H-shares prices at time t. This investigation period is from December 5th, 2015 to December 5th, 2016 and from December 5th, 2016 to December 5th 2017; the investigation will compare the premiums before and after the Connect. To

understand the impact of the Connect on dual-listed shares, the study will examine all listed share companies in Shenzhen.

Exhibit 1: Dual listed companies investigated:

COMPANIES :	CODE HONG KONG	CODE SHENZHEN
ANGANG STEEL	00347.HK	000898.SZ
SHANDONG MOLONG	00568.HK	002490.SZ
SHANDONG XINHUA	00719.HK	000756.SZ
ZTE	00763.HK	000063.SZ
DONGJIANG ENV	00895.HK	002672.SZ
HISENSE HA	00921.HK	000921.SZ
ZHEJIANG SHIBAO	01057.HK	002703.SZ
ZOOMLION	01157.HK	000157.SZ
BYD COMPANY	01211.HK	002594.SZ
LIVZON PHARMA	01513.HK	000513.SZ
ZHUANGYUAN PA	01533.HK	002910.SZ
GF SEC	01776.HK	000776.SZ
CHENMING PAPER	01812.HK	000488.SZ
CGN POWER	01816.HK	003816.SZ
CIMC	02039.HK	000039.SZ
CHINA VANKE	02202.HK	000002.SZ
GOLDWIND	02208.HK	002202.SZ
WEICHAI POWER	02338.HK	000338.SZ
BQD	03866.HK	002948.SZ
BANKOFZHENGZHOU	06196.HK	002936.SZ
SWHY	06806.HK	000166.SZ

III.Methods

A simple comparison analysis was done between A and H shares premiums before and after the connect was launched. This analysis was conducted in Excel, where the premiums between all the dual-listed companies were analyzed at a 1-month, 6-months, and 1-year period.

To understand the significant factors in the effect on the A-H share's premiums, multi-linear regressions were analyzed with the following formula and variables:

Regression Formula:

$$\ln\left(\frac{Stock\ Price_{A,t}}{Stock\ Price_{H,t}}\right) = \ln(Stock\ Price_{A,t}) - \ln(Stock\ Price_{H,t})$$

$$\ln\left(\frac{Ashare_t}{Hshare_t}\right) = \alpha + \beta_{Connect} * C + \beta_{Vol\ H,t} \ln(Vol_{H,t}) + \beta_{Vol\ A,t} \ln(Vol_{A,t}) + \beta_{EX,t} \ln(EX_t) + e_t$$

Variables:

$\boldsymbol{Ashare_t}$	A-shares price at day t
$\boldsymbol{Hshare_t}$	H-shares price at day t
$\boldsymbol{C}$	A dummy variable representing the connect with the value of 1
$\boldsymbol{Vol_{H,t}}$	Total H-shares trading volume at day t
$\boldsymbol{Vol_{A,t}}$	Total A-shares trading volume at day t
$\boldsymbol{EX_t}$	Exchange rate of HKD/RMB at day t

The logarithmic difference was applied into the regression equation as multi-linear regressions can only be accomplished with normally distributed data. The dummy variable C represents the Shenzhen-Hong Kong Connect therefore is value is 1 after December 5th, 2019. Due to the Connect being traded in RMB for A-share and HKD for H-shares, the variable EX_t was added to the regression as it influences on the effect of the premiums.

The $\beta_{Connect}$ will indicate the significance and effect of the Connect in the effects of the A-H premiums, while the $\beta_{Vol\ A,t}$ and $\beta_{Vol\ H,t}$ will indicate the significance of trading activities to the premiums in both Hong Kong and Shenzhen.

IV.Reasoning & Hypothesis

To examine if the Connects effect on the A-H premiums, a closer examination of both the numerical value and direction of the variables $\beta_{Connect}$, $\beta_{Vol\ A,t}$ and $\beta_{Vol\ H,t}$ are needed.

The $\beta_{Vol\ A,t}$ and $\beta_{Vol\ H,t}$ will determine which market has a more dominant impact on the effect of the A-H premiums. From an expected hypothesis point of view, the absolute

value of $\beta_{Vol\,A,t}$ and $\beta_{Vol\,H,t}$ should yield a $\beta_{Vol\,A,t} < \beta_{Vol\,H,t}$, since the Connect allows for foreign investors to invest in China through Hong Kong; therefore, the larger volume traded in Hong Kong should have a more significant impact of the premium. Furthermore, due to Hong Kong investors being less speculative than mainland investors an expected reduction of asymmetric information in the Shenzhen Market is predicted; therefore, the Shenzhen Connect is expected to narrow the A-H premium causing the $\beta_{Connect}$ to be a negative number driving the A and H shares price closer.

V. Results and Analysis

The simple comparison of the average A-H premiums of before and after the Connect will provide with the general direction the Shenzhen Connect effects. The regressions will examine which variable had a significant impact on the premiums. The results listed are averages of all dual-listed firms Shenzhen with A-shares and H-shares.

Exhibit 2: Average A-H Premium Before and After the Connect:

Time	After Connect (2014-2015)	Before Connect (2015-2016)
1-Month	1.4207241	1.4157
6-Months	1.40636217	1.4053
1-year	1.35490962	1.4182

Due to A-shares having a higher price than H-shares the average of all the Shenzhen dual-listed A-H premium is greater than 1. Based on the data results, the premium appears to have initially increased with the addition of the connect; however, after 6 months and 1-year, the A-H premium decreases exponentially.

Linear Regressions

The results shown in the table below represents the effect of each variable in the A-H premium.

Exhibit 3: Multivariable-Regressions Results For Cross-Listed Firm in Shenzhen-Hong Kong

Source	SS	df	MS	Number of obs	=	706
				F(4, 701)	=	130.00
Model	.966256847	4	.241564212	Prob > F	=	0.0000
Residual	1.30256624	701	.001858154	R-squared	=	0.4259
				Adj R-squared	=	0.4226
Total	2.26882309	705	.003218189	Root MSE	=	.04311

AH_Premium	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
C_Connect	-.0501119	.0431707	-1.16	0.246	-.1348713	.0346475
VOL_H	-.0178179	.004603	-3.87	0.000	-.0268551	-.0087807
VOL_A	-.0106585	.0048841	-2.18	0.029	-.0202477	-.0010694
EX	-.9810421	.0511368	-19.18	0.000	-1.081442	-.8806424
_cons	.7576916	.0767274	9.88	0.000	.6070485	.9083347

The negative $\beta_{Connect}$ indicates that the Connect had a negative sign to the premium, which means that the Connect narrowed the premium between A-shares and H shares. This effect is due to the reduction of asymmetric information between both markets where the stock price is less influenced by possible arbitrage trading: such as the manipulation of the markets. Also, by taking the absolute value of the betas connect has the highest influence on the A-H premium. Another possible explanation to the narrowing of the A-H shares premium is due to the higher incoming investments in Shenzhen Stock Exchange since most of the companies listed in Shenzhen are highly sensitive growing companies, which provides investors with higher returns.

The $\beta_{Vol\,A,t}$ and $\beta_{Vol\,H,t}$ proves that the trading volumes in Hong Kong's trading actives of dual-listed shares have narrowed the premiums, while the same hold true to the trading volumes in mainland China as both the regression results are negative numbers.

The explanation for this narrowing of the premium is due to the new investors taste in Hong Kong investing in China through the connect; therefore, the A-shares prices would incorporate foreign investors opinions besides mainland China's investors. This new perspective or tastes in Hong Kong investors can be categorized as information that Mainland Chinese investors ignore.

VI.Conclusion

Based on the nominal results and analysis, it can be safe to conclude that the Shenzhen-Hong Kong Connect has narrowed the A-H share premium in the long run. The regression analysis further examines which variable had a high significance to the narrowing of the premiums; this effect can be concluded by the new foreign investors opinions of the Chinese market influenced the price discovery of A-shares as the absolute value of the $\beta_{Vol\ H,t}$ is larger than the $\beta_{Vol\ A,t}$; thus, implying that Hong Kong has a more dominant effect on the A-H premiums that Shenzhen on the cross-listed shares in Shenzhen.