On the Pricing Of Chinese Stocks

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ABSTRACT

This study identifies the leading risk attributes to Chinese stock returns. We demonstrate that the forecasting ability of a multifactor expression that includes micro (fundamental) risk factors conditioned by time-varying macro global and local risk factors is significantly superior to the forecasting ability of simpler nested unconditional models. We conclude that micro and macro local and global risks are instrumental in describing the return-generating process of Chinese equities. Using an attribution analysis, we further show that the valuation of Chinese equities is largely conditioned by expected changes in local and global macro risks, and less by unconditional micro risk premiums.

Keywords: Chinese Stock Returns; Chinese Equities; Multifactor Model; Emerging Markets

INTRODUCTION

There is a long list of costly Chinese stocks pricing blunder by U.S. investors. PUDA Coal, a Chinese ADR, is perhaps the best example of the problem. As of March 27th 2011, PUDA had always reported strong fundamentals and the median analysts' estimate of EBITDA growth was over 100% per annum for the next five years. The stock appreciated approximately 1200% between March 1st, 2009 ($1.19 per share) and March 28th, 2011 ($12.19 per share). Puda Coal's stock collapsed on April 1st 2011, its price has been hovering below 20 cents a share since December 2011. The reason: Crony accounting practices—i.e., the CEO and his team were cooking the books.

As in many emerging markets, Chinese companies suffer from poor corporate governance, crony accounting practice, market manipulation, and insider trading problems. In addition, two thirds of the total market capitalization is currently owned by the state and is not tradable; out of the last tradable third, the majority is owned by individuals and not financial institutions. Such a unique structure in ownership hurts stock liquidity and investability, and affects the risk profiles and future cash flow opportunities of Chinese companies. In addition, Chinese investors trade speculatively with very short holding horizons and are less interested in the long term value of a firm. There are three basis for this behavior: (1) trading costs are extremely low (approximately 1% of the total transactions) resulting in a substantial average annual turnover; (2) the quality of accounting information is questionable, thus fundamental valuation information coming from the "book" is not as essential as in mature markets (Wang and Xu, 2004); and (3) China's economic, financial and political integration with the rest of the world is evolving fast, making yesterday standards irrelevant for today's values. When the majority of investors are playing for short-term gains, not only security prices and volatility may be distorted but also the benefit of long term investment is limited. For instance, the Chinese market has seen large amounts of underpriced IPOs from new companies as well as the privatization of state-owned companies since 1992, generating volatility levels not observed in any other markets.

How can analysts estimate the cost of equity in an investment environment (1) where capital markets are not growing as fast as the economy, (2) where investment behaviors are extremely speculative, and (3) where corporate accounting standards are at best ambiguous? To answer this question, we first evaluate the significance of known micro risk factors such as market, value, size, momentum and investability premiums. Second, we build a multifactor model that includes micro factors conditioned by time-varying macro factors, and compare its forecasting ability to several nested simpler unconditional models. Third, we trace the evolution of the relative importance of micro and macro risk factors on Chinese stocks' returns. Finally, we conclude on how Chinese stock

could be priced—i.e., firms fundamentals (micro risks factors), local economic, financial, and political risk factors, and/or global economic, financial, and political risk factors.

CHINESE STOCKS' TAXONOMY

China's stock market is fragmented into different markets defined by both investor and company statuses. When restructured state-owned companies issue shares to the public, only one-third of the outstanding shares are tradable by public investors. Half of the other two-thirds of the outstanding shares is owned by state-asset management entities; the other half is owned by local governmental bodies. The tradable shares are themselves divided into "A shares" (stocks traded in local currency, and available only to domestic investors), "B Shares" (stocks traded in US dollars or Hong Kong dollars and available for purchase by foreigners), and "H Shares" (shares of companies incorporated in China but traded in Hong Kong).

Table 1: Chinese Equity Market Characteristics

		1992-2011	2002-2011
Number of Stocks	Median Number of Stocks Traded in Chinese Stock Markets	1002	1615
	Median Number of Company Available in EMDB	748	630
	Median Number of Investable Company Available in EMDB	296	251
	Median Number of Non-Investable Company Available in EMDB	452	377
	Median Number of Company Delisted in the EMDB Universe	199	82
	Median Investable Weight in EMDB Universe	20.81%	25.12%
Size	Median Market Cap. in the Chinese Stock Markets (x 1,000)	$881,993	$1,403,111
	Median Market Cap. in EMDB (x 1,000)	$552,429	$842,792
	Median Company Size in EMDB (x 1,000,000)	$844	$1,601
Liquidity	Median Monthly Value Traded in the Chinese Stock Markets (x 1,000,000)	$59,885	$87,944
	Median Value Traded in EMDB Universe (x 1,000,000)	$18,233	$39,497
Market Risk and Return	Average Monthly Return for Chinese Stocks ($ U.S.)	1.00%	0.81%
	Monthly Standard Deviation of Chinese Stocks' Returns	10.11%	6.55%
	Average Monthly Return for the MSCI "FREE" WORLD Index ($ U.S.)	0.49%	0.54%
	Monthly Standard Deviation of MSCI "FREE" WORLD Index's Returns	4.58%	4.94%
Betas*	Median Local Beta (relative to IFCG China)	1.19	1.25
	Median Global Beta (relative to MSCI World)	-0.29	-0.37
Multiples	Median Price to GAAP Earnings multiple	66.84	50.87
	Median Price to Book multiple	5.01	4.25

*Local (global) betas are computed by regressing each stock dollar's returns on the IFCG China (MSCI AC World) index returns with a minimum of two years and a maximum of five years of historical monthly returns. One lag of the index return is included to allow for a delayed response due to non-synchronous trading.

In Table 1, we provide information on descriptive Chinese market and firms' statistics (the number of stocks included in EMDB, the number of deletions, investability, market and firm size, liquidity, returns and standard deviation, betas, and multiples). We retrieve our firm data from the Emerging Market Data Bank (EMDB). We select all investable (Shares B and H) and non-investable (Shares A) firms traded in china from 1992:12 until 2011:12. We use the U.S. dollar as the standard to make the average returns comparable across market segments (while A and B shares have prices reported in Remimbi, H shares are priced in Hong Kong Dollars). Stocks are included in our sample as they become available and delisted stocks are also included for the period during which they were traded. Not all firms are retained in the final sample. The deciding criterion for retention is that stock return series must have at least 2 years of data. Data imperfections such as missing values and recording errors are handled by dropping the firm for the particular month of data imperfection but retaining it as part of the sample.

Our sample consists of the 748 largest and most liquid stocks traded in china—i.e., a maximum of 452 non-investable and 296 investable companies traded from 1992 to 2011. Out these 748 companies, 199 were delisted during that period. Chinese investability weight averages 21 percent and did not change much in recent years. However, the median monthly market capitalization, $882 billion from 1992 to 2011, reaches a median $1,403 billion from 2002 to 2011. With $552 billion from 1992 to 2011 ($843 billion from 2002 to 2011), our sample consists of approximately 60 percent of the total capitalization of the Chinese stock market. In general, as the size of

the market has tripled over the last five years as compared to the first five years of the sample, its liquidity has almost quadrupled reaching $88 billion per month from 2002 to 2011.

The Chinese market shows similar patterns with other emerging markets—i.e., higher market returns from 1992 to 2011, higher risk measured by the standard deviations of returns, and negative global betas reflecting a negative correlation of returns with the world developed markets. These higher standard deviation figures are associated with a puzzling feature—i.e., multiples are extremely high as compared to what would be observed in the U.S. (the median PEs and PBs in Chinese stocks are around 67x and 5x, respectively).

Table 2: Chinese Equity Market Characteristics by Share Type and Economic Sector

Panel A: Market Descriptive by Share Class

Class	Period	Firms	Firms Del.	Avg. Ret.	Std. Dev.	Med. Size	Med. VT	Med β_m	Med β_w	Med PE	Med PB	Med. Inv.
A	92-11	275	93	1.30%	13.66%	$683.7	$56.7	1.24	-.36	87.42	7.91	0.00%
	02-11	233	52	0.18%	7.30%	$1,091.2	$70.1	1.27	-.65	76.03	7.93	0.00%
B	92-11	70	13	0.78%	13.85%	$102.7	$10.8	0.95	-.46	64.29	1.60	67.16%
	02-11	64	7	-0.04%	8.70%	$148.4	$12.1	1.29	-.64	42.32	1.77	54.82%
H	92-11	117	11	0.90%	14.55%	$1,973.8	$124.8	0.65	.68	31.67	2.31	84.41%
	02-11	116	10	2.13%	6.88%	$3,120.3	$190.6	0.69	.74	15.88	1.78	71.66%

Panel B: Market Descriptive by Economic Sector

Sector	Period	# Firms	Avg. Ret.	Std. Dev.	Med. Size	Med VT	Med βm	Med βw	Med PE	Med PB	Med Inv.
Cons. Disc.	92-11	86	0.81%	11.93%	$485.2	$47.1	1.13	-.33	63.49	3.31	15.35%
	02-11	72	0.04%	6.82%	$583.2	$52.1	1.17	-.42	63.03	2.35	16.55%
Cons. Stap.	92-11	30	1.82%	13.00%	$429.1	$36.7	1.11	-.28	89.93	4.61	15.34%
	02-11	27	0.92%	6.50%	$721.5	$50.4	1.13	-.36	77.40	3.41	14.16%
Energy	92-11	18	2.90%	15.10%	$2,398.5	$158.6	0.97	1.21	66.68	4.68	25.70%
	02-11	18	1.99%	6.14%	$6,074.0	$292.4	1.00	1.24	23.32	2.65	41.72%
Financials	92-11	63	1.48%	12.69%	$728.2	$70.8	0.01	-.32	91.43	19.90	17.51%
	02-11	58	0.76%	7.38%	$1,201.6	$100.6	-.23	-.33	81.59	24.11	21.25%
Health Care	92-11	14	1.27%	13.85%	$346.8	$45.3	1.21	-.49	48.52	4.71	0.78%
	02-11	14	-0.10%	7.66%	$492.4	$58.0	1.24	-.45	36.09	3.86	2.18%
Industrials	92-11	118	1.17%	11.94%	$377.2	$36.3	1.09	-.28	98.45	3.60	21.67%
	02-11	100	0.27%	6.03%	$618.1	$44.8	1.05	-.36	65.12	2.88	27.70%
Inf. Tech.	92-11	49	1.74%	15.85%	$470.5	$69.6	1.40	-.43	55.20	4.49	16.17%
	02-11	47	-0.50%	7.97%	$580.7	$83.2	1.35	-.44	50.76	3.40	22.80%
Materials	92-11	61	1.30%	12.76%	$590.1	$57.6	1.08	-.11	84.21	2.79	32.21%
	02-11	54	1.01%	6.88%	$875.4	$82.6	1.18	-.32	64.83	2.36	32.69%
Tel. Serv.	92-11	7	1.36%	12.83%	$42,602.3	$1,118.7	0.73	1.30	52.17	5.34	27.01%
	02-11	7	0.37%	7.86%	$29,301.2	$827.8	0.56	1.08	19.02	2.25	29.41%
Utilities	92-11	26	2.44%	14.21%	$994.4	$63.8	1.09	-.43	30.93	3.17	22.71%
	02-11	26	0.11%	5.91%	$1,332.6	$75.5	1.09	-.59	21.65	2.08	34.53%

In table 2, we narrow our description of the Chinese markets by reporting descriptive statistics by stock class (panel A) and economic sector (panel B). The H shares market has the largest firms (the median firm size is $1.973 billion from 1992 to 2011, and reaches $3.120 billion from 2002 to 2011) and the highest liquidity (the median monthly value traded is $124.8 million from 1992 to 2011, and 190.6 million from 2002 to 2011). H shares are mostly accessible to foreigner with a median investable weight of 84.41 percent from 1992 to 2011, decreasing to 71.66 percent from 2002 to 2011. H shares have less "local' systematic risk than other segment (the median local beta is 0.65 from 1992 to 2011) and have positive correlations with stocks traded in the world developed markets as evidenced with a positive global beta of 0.68 from 1992 to 2011. The B shares market, the other investable segment is the smallest ($102.7 million from 1992 to 2011, and $148 million from 2002 to 2011) and the least liquid market (monthly value traded is $11 million from 1992 to 2011, and $12 million from 2002 to 2011). About two third of the B shares are investable, which is slightly less than for H shares. Although B shares have less "local" systematic risk (the median local beta is 0.95 for the overall period), they exhibit negative correlations with the world markets as evidenced with negative "global" betas (-0.46 from 1992 to 2011). Finally, the A share market (not accessible to

foreign investors) has its median company size tripled, and its liquidity more than doubled from 1992 to 2011. The A shares market is the segment with the most "local" systematic risk (the median local beta is 1.24 from 1992 to 2011); these non-investable firms have negative correlations with stocks traded in the world developed markets (the median global beta is -0.36 from 1992 to 2011). This A share market has interesting "overpricing" features: the median PE is 76x to 87x (almost twice the PE of firms traded in the B share market, and more than 4 times the one of H shares), and its median PB is more than 4 times the one of B shares and H shares.

As shown in panel B, China's stock market leans heavily towards the industrial sector, which has the largest number of stocks across the board. Other sectors with strong manufacturing ties also have significant representation in China's stock market. For instance, the industrial, consumer discretionary, and basic materials account for nearly 60 percent of the total number of stocks traded in all three categories of shares (the same sectors only account for about a third of the stocks traded in the U.S.). By contrast, sectors representing a significant portion of the global market, such as Technology, Healthcare, and Telecommunications only account for small portion of the stocks traded in China. Telecommunication services is the largest economic group with the most value traded (the median firm size and value traded are $42.6 billion and $1.1 billion from 1992 to 2011). Information technology has the most systematic risk, measured by the local beta (the median local beta is 1.4 from 1992 to 2011) and financials has the least systematic risk (the median local beta is 0.01 from 1992 to 2011, falling to -0.23 from 2002 to 2011). While all other sectors have negative correlations with the world markets, energy and telecommunications services have the highest exposure to world markets fluctuations since their median global betas are 1.21 and 1.30, respectively. PE Multiples are extremely high toping 98x for materials and 91x for Financials; Utilities has the smallest median PE (31x). Health care is the least accessible to foreigners (the investable weight is 0.78 percent and 2.18 percent from 1992 to 2011 and 2002 to 2011). Energy, materials, and utilities are the most accessible economic groups with median investable weights ranging from 30 percent to 40 percent.

FUNDAMENTAL RISK PREMIUMS

Next, we examine the significance of traditional micro premiums observed in stock traded in developed markets. Following the methodology described in Rouwenhorst (1999), we use all stocks traded in China from 1992:12 to 2011:12. At the beginning of each month, stocks with available ranking information are sorted into three portfolios (top 30%, middle 40%, bottom 30%) based on local beta, global beta, the natural logarithm of market value measured in US dollars, and the book-to-price ratio. For each sorting and within each group, returns of these stocks are then averaged. The difference between the top and bottom local beta-sorted portfolios provides a "local beta premium", the difference between the top and bottom global beta-sorted portfolios provides a "global beta premium", the difference between the bottom and top size-sorted portfolios provides a size premium (SMB), and the difference between the top and the bottom book-to-price portfolios provides a value premium (HMLBP). Momentum portfolios are formed by sorting all stocks with available information at the beginning of each month on prior six month returns ("month -7" to "month -1"). The top and bottom 5% are eliminated, the remaining are ranked into tiers and returns are averaged within each group. The difference between the top tier (winners) and the bottom tier (losers) provides a monthly momentum premium. Finally, stocks are sorted based on the investability weight (to separate the effect of investability from other fundamental factors, stock returns are orthogonalized with a four factor CAPM model—Chinese market premium, SMB, HMLBP, MOM), and the difference between the top and bottom investable weight-sorted portfolios provides an "investable premium" (IP).

In Table 3, we report the value of each premium for the overall period and the most recent five years. As expected, the local beta premium is positive for both sample periods. it indicates that high beta stocks outperform low beta shocks. As for global betas, we have mixed results. Stock with low global betas outperformed stocks with high global betas from 1992 to 2011. However, in the last five years, stock with high global betas outperformed stocks with low global betas. Thus, it appears that Chinese stocks have become more sensitive to global factors in recent years.

The size and value premiums are negative, indicating that large growth firms outperform small value firms. These anomalous findings clearly indicate the presence of return generating dynamics in China above and beyond those found in the developed markets. Studies abound on the return generating process of stocks traded in emerging equity markets and there is a dichotomy in findings on whether the factors driving the return generating process in

emerging and developed economies are similar or different. For instance, Fama and French (1998), Rouwenhorst (1999) and Barry, Golgreyer, Lockwood and Rodriguez (2002) argue that risk premiums in emerging markets exhibit the same characteristics as those in developed markets — i.e., they display significant momentum, small stocks outperform large stocks and value stocks outperform growth stocks. On the other hand, Claessens, Dasgupta and Glen (1998), and Girard and Omran (2007) present mixed results for the relationship between fundamental attributes and returns in emerging markets. The authors find, in some instances, a positive relationship between size and returns, and a positive relationship between price-to-book value and returns. Both results are contrary to the conventional belief that small and value firms are riskier, but the researchers make cogent arguments to explain their findings—i.e., market growth resulting from an increase in number of firms rather than an increase in value, low leverage of small firms due to capital market imperfections in emerging markets, and market segmentation due to market microstructure, regulatory and tax regimes differentials.

Table 3: Sorted Portfolio Returns

	1992-2011	2002-2011
Average Low "Local" beta Portfolio Monthly Return	0.61%	0.19%
Average High "Local" beta Portfolio Monthly Return	1.89%	0.69%
Local Beta Premium (Standard Error)	**1.28%(0.0102)****	**0.50%(0.0061)****
Average Low "Global" beta Portfolio Monthly Return	1.43%	0.02%
Average High "Global" beta Portfolio Monthly Return	1.12%	0.99%
Global Beta Premium (Standard Error)	**-0.31% (0.0053)****	**0.97% (0.0071)****
Average Small Company Portfolio Monthly Return	0.62%	-0.55%
Average Large Company Portfolio Monthly Return	1.83%	1.38%
Size Premium (Standard Error)	**-1.21% (0.0057)***	**-1.93% (0.0060)****
Average Low PB Portfolio Monthly Return	0.04%	-0.11%
Average High PB Portfolio Monthly Return	2.75%	1.05%
Value Premium (Standard Error)	**-2.71% (0.0075)****	**-1.16% (0.0057)***
Average Low Momentum Portfolio Monthly Return	-3.32%	-3.46%
Average High Momentum Portfolio Monthly Return	6.70%	3.97%
Momentum Premium (Standard Error)	**10.02% (0.0031)****	**7.43% (0.0024)****
Average Low Investability Portfolio Monthly Return	0.49%	-0.30%
Average High Investability Portfolio Monthly Return	1.21%	1.18%
Investable Premium (Standard Error)	**0.72% (0.0021)****	**1.48% (0.0070)***

Local beta , global beta, size, value, momentum, and investable premia standard errors are Newey-West heteroskedasticity and autocorrelation corrected. ** and * indicate significance at the 1 and 5 percent level, respectively .

As expected, the momentum premium is significantly positive, indicating that the past winners tend to outperform past losers. The investable premium factor is significantly positive indicating that investable stocks return more than non-investable stocks. This is in line with Wang and Xu (2004) who find supporting evidence that the floating ratio, a proxy for corporate governance, is priced in the Chinese market and Girard (2010) who finds that a significant positive investable premium is priced in emerging capital markets. Furthermore, many studies find that an increase in openness – i.e., making a larger share of the market open to foreign investment – is usually associated with a small or large decrease in the cost of capital (see Bekaert and Harvey, 2000; Henry, 2000; Edison and Warnock, 2003; and Karolyi and Stulz, 2003). Finally, Bae, Chan and Ng (2004) find that highly investable stocks exhibit higher return volatility than non-investable stocks, even after controlling for country, industry, firm size, and turnover. It implies that a portfolio of investable securities bears a premium as compared to a portfolio of non-investable stocks, reflecting a compensation for segmentation, capital control, economic, financial and political risk differentials, and global opportunity costs.

LOCAL AND GLOBAL MACRO RISK

As Girard and Pondillo (2012) suggest, economic, financial and political risk factors are likely to have independent effects on the pairwise correlation between Chinese equity and world equity returns. In panel A of Table 4, we take a closer look at the monthly economic, financial, and political risk rating indices -- ICRG ratings are on a scale of 1 to 100 (a high rating means less risky and a low rating more risky). Evident in Table 4, China's overall economic, financial, and political risks are significantly lower in the most recent period. On the other hand, some macro risks such as bureaucracy quality, corruption, democratic accountability remain high.

Table 4: Risk Ratings

Panel A: ICRG country risk ratings

	China		USA		Emerging Markets		EAFE		World	
Risk Component	93-11	02-11	93-11	02-11	93-11	02-11	93-11	02-11	93-11	02-11
Economic Risk Rating	76	78	78	78	72	75	81	81	77	78
Financial Risk Rating	86	91	77	66	76	78	83	81	80	79
Political Risk Rating	67	69	83	81	66	66	83	84	75	75

Panel B: Change in ICRG Ratings Correlation

		China			
		93-01	02-11	Δr	z-stat
Economic Risk Rating	EAFE	0.04	0.22	0.18	1.10
	Emerging	0.11	-0.13	-0.24	-1.43
	United States	-0.08	0.14	0.22	1.34
Financial Risk Rating	EAFE	-0.79	-0.10	0.68	4.11**
	Emerging	-0.61	0.11	0.72	4.32**
	United States	-0.46	0.00	0.46	2.76**
Political Risk Rating	EAFE	-0.13	0.05	0.18	1.08
	Emerging	-0.33	0.01	0.34	2.04*
	United States	-0.06	-0.07	-0.01	-0.05

Z-statistic is computed as "$\Delta r/(1/(n_1-3)+1/(n_2-3))^{1/2}$", "**" and "*" indicate significance at the 99 and 95 percent level, respectively.

The lack of rule of law is evident in the rampant government corruption, financial speculation, and misallocation of investment funds. Also in many case, government "connections" instead of market forces are the major determinant of the success of Chinese firms. In addition, contracts are not easily enforced and intellectual property rights are not protected in China's business environment. Further, the inconsistent and nontransparent rules and regulations make it difficult for many foreign firms to do business in China. To some extent, the lack of the rule of law in China restricts competition and depresses the efficient allocation of goods and services in the economy.

As shown in panel B of Table 4, there is a clear trend towards positive correlations between the changes in Chinese and other market's country risk ratings—i.e., Chinese and other countries' risk ratings are increasingly changing in the same direction. For instance, China shows increasing similarities in terms of financial risk with the United States, the countries making the EAFE index, and the major emerging markets (the differences between the two sub-period correlations are statistically significant). Therefore, while local macro risks are still essential to describe the Chinese economy, there is an increasing trend towards financial and economic integration between China and the rest of the world. Consequently, the pricing of Chinese stocks is determined by time-varying fundamental risk factors conditioned with time-varying changes in local and global macro risks.

FORECASTING CHINESE STOCKS' RETURNS WITH MICRO AND MACRO INFORMATION

In this section, we test the forecasting ability of a conditional multifactor model that takes into consideration micro (fundamental) factors as well as macro local and global factors. We then compare it to three simpler nested forecasting models. We use a methodology similar to Griffin (2002) to examine alternative factor models' ability to explain time-series variation in Chinese stock returns—i.e.,

1. Unconditional CAPM: $$r_{i,t} = \alpha_i + \beta_{1,i} r_{China,t} + \varepsilon_{i.t}$$

2. Unconditional 2-factor CAPM: $$r_{i,t} = \alpha_i + \beta_{1,i} r_{China,t} + \beta_{2,i} r_{World,t} + \varepsilon_{i.t}$$

3. Unconditional 6-factor CAPM: $$r_{i,t} = \alpha_i + \beta_{1,i} r_{China,t} + \beta_{2,i} r_{World,t} + \beta_{3,i} SMB_t + \beta_{4,i} HMLBP_t + \beta_{5,i} MOM_t + \beta_{6,i} IP_t + \varepsilon_{i.t}$$

4. Conditional 6-factor CAPM: $$r_{i,t} = \alpha_i + \beta_{1,i} r_{China,t} + \beta_{2,i} r_{World,t} + \beta_{3,i} SMB_t + \beta_{4,i} HMLBP_t + \beta_{5,i} MOM_t + \beta_{6,i} IP_t + Z_{t-1}(\beta'_{1,i}\, r_{China,t} + \beta'_{2,i}\, r_{World,t} + \beta'_{3,i}\, SMB_t + \beta'_{4,i}\, HMLBP_t + \beta'_{5,i}\, MOM_t + \beta'_{6,i}\, IP_t) + \varepsilon_{i.t}$$

Where $r_{i,t}$, $r_{China,t}$, and $r_{World,t}$ are risk premia. SMB is the size premium, HMLBP is the value premium, MOM is the momentum premium, and IP is the investable premium. Z_{t-1} are instruments consisting of local and global variables. Local risk factors (lagged 1 month) are the risk factors for China's economic, financial, and political risk ratings ((1+% change in risk rating)$^{-1}$-1). Global factors (lagged 1 month) are the risk factors for GDP-weighted world political, economic and financial risk ratings in the G7 countries.

We first run regressions for individual stocks over the whole sample (1992-2011) and the later period (2002-2011). The results are reported in Table 5. F-statistics fail to reject the null hypothesis that alphas are jointly equal to zero for all models. Thus, we cannot reject any of the models' specifications. F-statistics for the R^2 suggest a significant relationship between stock return and the factors used in each model. Furthermore, R^2 ranks the conditional 6-factor model as the best for both periods. For instance, the R^2 for the conditional model is 0.765 as compared to next best model with an R^2 of 0.607 (unconditional 6-factor model)—i.e., an increase in proportion of explained variance by conditioning local and global variables of 26.03 percent. As far as the importance of global factors in explaining Chinese returns, we notice that the 2-factor model has a 5.1 percent improvement in R^2 over the 1-factor model from 1992 to 2011, and a 19.6 percent improvement from 2002 to 2011. It indicates the global factors are increasingly important in explaining Chinese stock returns. Clearly the inclusion of micro factors also enhance the goodness of fit—i.e., the unconditional 6-factor model has a 40.8 percent improvement in R^2 over the unconditional 2-factor model from 1992 to 2011, and a 59.4 percent improvement from 2002 to 2011.

Table 5: Regression of Individual Stocks Excess Returns - Models Fit, Specifications and Forecast Errors

Model	Fit	1992-2011	2002-2011	Intercept	1992-2011	2002-2011
Unconditional CAPM	R Square	0.410	0.270	Alpha	0.015	-0.005
	Std. Error	0.147	0.098	Std. Error	0.019	0.016
	F-stat	7.807**	7.492**	F-stat	0.613	0.108
	Forecast Evaluation	1995-2011	2002-2011			
	Out the sample MAE	8.06%	6.72%			
Unconditional 2-factor CAPM	R Square	0.431	0.323	Alpha	0.015	-0.004
	Std. Error	0.146	0.096	Std. Error	0.019	0.016
	F-stat	8.716**	11.295**	F-stat	0.568	0.054
	Forecast Evaluation	1995-2011	2002-2011			
	Out the sample MAE	7.89%	6.50%			
Unconditional 6-factor CAPM	R Square	0.607	0.515	Alpha	0.005	0.004
	Std. Error	0.120	0.086	Std. Error	0.055	0.084
	F-stat	25.428**	36.200**	F-stat	0.009	0.002
	Forecast Evaluation	1995-2011	2002-2011			
	Out the sample MAE	6.61%	5.44%			
Conditional 6-factor CAPM	R Square	0.788	0.765	Alpha	0.022	0.036
	Std. Error	0.110	0.081	Std. Error	0.096	0.129
	F-stat	51.267**	89.712**	F-stat	0.053	0.079
	Forecast Evaluation	1995-2011	2002-2011			
	Out the sample MAE	4.65%	3.49%			

Next, as in Griffin (2002), we examine the forecasting ability of each model by estimating a two-year rolling regressions and multiply the estimated regression betas by the average factor return over the entire data period prior to the forecast to calculate the next month's expected return estimates. Then, we evaluate the mean absolute error (MAE) for each month and each stock. Again, we run our forecast for the full period (1992-2011) and the later period (2002-2011). Our results indicate that, for both periods, the error forecast is approximately divided by 2 when the conditional 6-factor model is used rather than the unconditional one-factor model. Furthermore, the performance of the conditional model is improved by 25.9 percent during the later period as compared to the overall sample—the unconditional models show a decrease in MAE of only 17 percent between the two periods. Again, it indicates the increasing relevance of time-varying macro factors in estimating expected returns or cost of capital.

In conclusion, both the full sample and later period results show that a factor model conditioned by the change in global and local factors provides a greater explanatory power. We also notice that micro factors cannot be ignored and that global factors are getting increasingly important in explaining the return generating process of Chinese stock returns.

LOCAL, GLOBAL AND FUNDAMENTAL RISK FACTORS ATTRIBUTION ANALYSIS

Rouwenhorst (1999) shows that emerging markets were isolated from world markets from 1982 to 1995; Griffin (2002) shows that practical applications of Fama and French's three-factor model, such as cost of capital calculations and performance evaluations, are best performed on a country-specific basis, and Van der Hart, Slagter and van Dijk (2003) suggest that there is no evidence that global risk factors can account for the excess returns of emerging market stocks from 1982 to 1999. However, Girard and Pondillo (2012) show that Chinese stocks returns are increasingly correlated to the world capital markets' returns and that changes in Chinese economic, financial, and political risk ratings are also increasingly related to the changes in global economic, financial, and political ratings. Furthermore, Bekaert and Harvey (1997) demonstrate that co-movement between emerging market country returns has increased over time, and Sanders and Walter (2002) show that emerging markets are not a separate asset class and exhibit sensitivities to global factors.

We further investigate the impact of the change in local and global factors in the pricing of Chinese stock using a methodology similar to Girard and Pondillo (2012). Accordingly, we use the conditional 6-factor model tested in the previous section as an attribution tool to analyze the degree to which changes in conditioned (local and global effects) and unconditioned (fixed effects) factors can explain Chinese stock returns variations. We report the attribution of risk factors from 1992 to 2011 in Table 6.

We first observe that Chinese stocks' returns are positively correlated to their market and this positive relationship is affected by changes in local economic, financial, political, and global financial risk. In the same vein, Chinese stocks returns tend to be negatively correlated to the world market and this negative relationship is sensitive to global economic, financial and political risk changes, as well as local financial risk changes. Second, the negative coefficients associated with the size, value, and investable factors, and the positive coefficient associated with the momentum factor indicate that our sample is dominated by stocks which are smaller, growth-oriented, less investable, and have been performing quite well historically. Third, Chinese stock returns are significantly related to changes in global economic, financial and political risk, as well as to changes to local economic, financial and political risk.

Standardized coefficients provide information about the impact of each independent variable on Chinese stock returns. For instance, an increase in one standard deviation in the Chinese market return provides a 0.520 standard deviation increase in Chinese stock returns. The sum of the absolute value of the standardized coefficients is equal to 3.352, indicating that a 1 standard deviation shock in each independent variable leads to 3.352 standard deviation in stock returns. Further, we find that local (global) factors explain 35 (36.4) percent of the change in stock return—i.e., a one-standard deviation shock on local fundamentals leads to a 1.17 (35 percent x 3.352) standard deviation shock on Chinese stock return, and a one-standard deviation shock on global fundamentals leads to a 1.22 (36.4 percent x 3.352) standard deviation shock on Chinese stock return.

Local risks have similar impacts on stock returns—i.e., 13.5 percent of the stock return standard shocks are explained by changes in local political risk, 12.5 percent by changes in local economic risk, and 9.1 percent by changes in local financial risk. However, global risk influence is largely led by changes in global financial risk—i.e., changes in global financial risk constitute 24.5 percent of the changes in stock returns; changes in global economic and political risks only lead to 7.9 percent and 4.0 percent of the changes in stock returns, respectively. In sum, from 1992 to 2011, more than 71 percent of the variations in Chinese stock returns are explained by shocks in global and local economic, financial, and political risks, and a fourth of these variations are explained solely by the impact of changes in global financial risk.

Our findings have important implications on the pricing of Chinese equity, and evaluating the cost of equity of Chinese firms: A model failing to condition firms' fundamentals with local and global changes in economic, financial and political risks would miss on at least 70 percent of the sources of stock return variations and, thus, will fail to fairly value Chinese stock intrinsic prices and estimate the cost of equity.

Table 6: Stocks Excess Returns Attribution- Local, Global and Fixed Effects

	Coefficient	Standard Error	t-Statistic	Standardized Coefficient
Intercept	0.002	0.002	1.004	
Market Risk Premium (R_{China})	1.009	0.015	69.522**	0.520
RPM X Local ECON	-5.440	0.875	-6.219**	0.044
RPM X Local FIN	5.303	1.661	3.193**	0.014
RPM X Local POL	-5.739	1.062	-5.402**	0.071
RPM X Global ECON	-0.040	1.309	-0.031	0.042
RPM X Global FIN	11.467	1.766	6.492**	0.068
RPM X Global POL	2.889	1.591	1.816	0.013
World Risk Premium (R_{World})	-0.171	0.022	-7.911**	0.045
RPW X Local ECON	-1.601	1.450	-1.104	0.014
RPW X Local FIN	10.843	4.002	2.709**	0.018
RPW X Local POL	-1.220	1.758	-0.694	0.018
RPW X Global ECON	7.076	2.197	3.220**	0.016
RPW X Global FIN	-8.915	1.736	-5.135**	0.025
RPW X Global POL	-5.196	2.330	-2.230*	0.026
Size Factor (SMB)	0.476	0.026	18.129**	0.218
SMB X Local ECON	3.475	1.539	2.258*	0.031
SMB X Local FIN	-3.787	3.866	-0.979	0.033
SMB X Local POL	7.113	1.570	4.531**	0.115
SMB X Global ECON	-4.242	2.626	-1.615	0.025
SMB X Global FIN	-6.510	3.234	-2.013*	0.149
SMB X Global POL	-13.270	3.024	-4.389**	0.010
Value Factor (HMLBP)	-0.087	0.025	-3.434**	0.055
HML-BM X Local ECON	2.646	1.129	2.344*	0.065
HML-BM X Local FIN	0.170	4.372	0.039	0.035
HML-BM X Local POL	-10.648	2.034	-5.234**	0.095
HML-BM X Global ECON	11.050	3.230	3.421**	0.022
HML-BM X Global FIN	12.750	3.535	3.607**	0.304
HML-BM X Global POL	5.245	5.201	1.009	0.025
Momentum Factor (MOM)	0.061	0.021	2.869**	0.023
WML X Local ECON	-5.052	0.556	-9.090**	0.044
WML X Local FIN	-1.481	1.094	-1.354	0.003
WML X Local POL	-3.281	0.466	-7.034**	0.048
WML X Global ECON	3.386	0.974	3.476**	0.009
WML X Global FIN	3.418	0.764	4.476**	0.022
WML X Global POL	5.825	1.335	4.365**	0.050
Investability Factor (IP)	-0.051	0.017	-3.051**	0.036
INV X Local ECON	-1.882	0.800	-2.353*	0.049
INV X Local FIN	-9.541	2.701	-3.533**	0.133
INV X Local POL	4.356	1.158	3.762**	0.040
INV X Global ECON	-3.765	2.142	-1.758	0.032
INV X Global FIN	-10.526	2.194	-4.798**	0.252
INV X Global POL	0.526	3.395	0.155	0.002

Risk Attribution Summary:	**Local Risk**		**35.0%**
		Economic Risk	12.5%
Percentage impact on returns' standard deviation		Financial Risk	9.1%
		Political Risk	13.5%
	Global Risk		**36.4%**
		Economic Risk	7.9%
		Financial Risk	24.5%
		Political Risk	4.0%
	Fundamental Risk		**28.6%**

CONCLUSION

This study attempts to identify the leading risk factors affecting Chinese stocks. As a result, our research has important implications for pricing Chinese equities, and determining the cost of equity in China. We first find

that fundamental risk premiums such as size, book-to-price, momentum, and investability are priced. Furthermore, we observe that Chinese equity markets have become progressively more integrated with the rest of the world and (2) changes in global and local risks increasingly weight on Chinese stock prices. Next, we test a multifactor expression that include micro (fundamental) risk factors conditioned by time-varying macro risk factors, and conclude that this type of conditional model provides better out-of-the-sample forecasts than nested unconditional models. Finally, using an attribution analysis, we show that (1) global risk factors have become increasingly important in explaining stock returns, slightly dominating local risk factor effects, and (2) unconditioned (fixed) effects only account for one fourth of the Chinese stock returns variations. We conclude that pricing Chinese equities should focus more on incorporating expected changes in local and global macro risks, rather than identifying unconditional micro (firm specific) risks.

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