Are cash-flow betas really bad?

ABSTRACT

This study evaluates the relative importance of cash-flow news and discount-rate news based on the log-linear model for pan-Chinese stock markets (i.e., China, Hong Kong, and Taiwan). Although they belong to the same cultural region, they have different capital market regulations and practices. In this context, we find that the discount-rate beta is bad in Hong Kong and Taiwan, while the cash-flow beta is bad in China. These findings are consistent with each market's ownership structure, dividend policy, and tax system. However, as in the U.S., risk premiums are significantly higher in down markets than in up markets.

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1. Introduction

For the almost three decades since Campbell and Shiller (1988a, 1988b), many studies have investigated their log-linear model to explain which news is more important and which news risk is priced. Campbell (1991) uses a vector autoregressive (VAR) model to separate unexpected stock returns into two components: cash-flow news and discount-rate news. Campbell and Vuolteenaho (2004) decompose the beta of a stock with market portfolio into two components: the cash-flow and discount-rate betas. They anticipate that a rational investor who holds a market portfolio will demand a greater reward for bearing the risk of cash-flow news than for bearing the risk of discount-rate news. The extant literature has indicated many findings regarding the U.S., which is the largest and most developed capital market in the world.

Many U.S. firms tend to smooth dividends over time, and are reluctant to cut dividends quickly, even when internal funds are insufficient for favorable investment opportunities. The content of dividend changes and smoothing in the U.S. equity market has been well documented.[1] On the other hand, firms in the U.S. have much more diversified ownership via unparalleled capital markets than European and Asian firms, and thus they do not overly depend on bank loans.[2] Furthermore, they are not concerned with unnecessary interest rate fluctuations. Cash-flow news may be more important than discount-rate news in these arm's-length financing decision environments. However, dividend and bank-loan policies vary from market to market. Previous log-linear model findings are U.S.-specific, and not necessarily generalizable to other countries, and few studies, to our knowledge, have emphasized this issue. We investigate whether similar phenomena exist in other economies with significantly different government regulations, equity ownership structures, and tax

[1] See Berk, DeMarzo, and Harford (2015, pp.549-550) for details.

[2] See La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998, LLSV) and La Porta, Lopez-de-Silanes, and Shleifer (1999, LLS).

systems. The pan-Chinese stock markets (i.e., China, Hong Kong, and Taiwan) provide an appropriate test bed for this study's purpose as they have different degrees of capital market developments and regulations within the same cultural region.

China had low dividends in the 1990s as the largest developing capital market, and shares of the same stocks had different rights and benefits due to the "split share structure." [See Firth, Lin, and Zou (2010) for details.] The China Securities Regulatory Commission (CSRC) announced a stock market reform program on April 29, 2005, to resolve the unfairness for the different shareholders, which involved transforming non-tradable shares into tradable shares for existing companies. This reform enabled shares of the same stock to have the same rights and benefits. Gradual market-based financing, together with an increase in private ownership, began to propel information asymmetry between management and shareholders, and investors were increasingly sensitive to dividend signals. Furthermore, Chinese firms increased their average dividend yield to 1.7% according to the CSRC's regulations, which promote cash dividends. However, a larger portion of state-owned shares desensitizes investors to interest rate fluctuations.

Meanwhile, Hong Kong's equity ownership structure differs significantly from that of the U.S., which is the most developed stock market. [See OECD (2015), LLSV (1998), and LLS (1999).] As Hong Kong has an individual or family-controlled equity ownership structure, less asymmetric information exists between management and major shareholders, which implies that dividends have little signaling effect to investors. Moreover, Hong Kong does not impose any tax on either dividends or capital gains. According to John and Williams (1985), it is less advantageous to signal insiders' private information in the absence of differential taxation between dividends and capital gains.[3] Meanwhile, equity investors tend to be sensitive to interest rate fluctuations, as Hong Kong has a bank-centric financing system.

[3] John and Williams' (1985) signaling model makes a crucial assumption that dividends are a costly signal that is not worthwhile for firms with bad future prospects to imitate. This model is based on the existence of the dissipative cost that allows signaling to occur, such as a dividend tax. Consequently, Hong Kong is not likely to have a dividend signaling effect.

As a developing market, Taiwan, like Hong Kong, also has many family-controlled firms that mitigate the information asymmetry between management and shareholders. Gugler and Yurtoglu (2003) find that family-controlled firms pursue a significantly different dividend policy than the U.S., which indicates no dividend smoothing. Chu (1997) finds that the association between stock returns and cash dividends is very weak in Taiwan, unlike the results from studies in the U.S. Hence, investors must not be sensitive to cash-flow news. Rather, investors are likely to be sensitive to discount-rate news due to high bank-centric financing.

Table 1 summarizes these pan-Chinese countries' capital market environments with respect to these differences. Then, which news should be important in this context? It can be answered by the ownership structure, dividend policy, and tax system described above and summarized in Table 1.

Insert <Table 1> here!

We believe that institutional characteristics may be closely related to the relative importance of news. This study attempts to demonstrate the log-linear model's applicability in pan-Chinese stock markets with characteristics that differ from those in the U.S. The empirical findings are summarized as follows: First, unexpected excess market returns can be successfully decomposed into cash-flow news and discount-rate news when the first-order VAR models include a stock price-related variable such as the price-to-book value ratio, and appropriate state variables. Second, small firms are sensitive to cash-flow news in China while large firms are in Taiwan. Large firms in all pan-Chinese stock markets, in contrast, are more sensitive to discount-rate news than small firms are. Third, while the cash-flow beta is bad in China, the discount-rate beta is bad in Hong Kong and Taiwan. This finding answers the fundamental question of this study: Cash-flow betas are not always bad. Fourth, when the excess market return equation produces relatively small residuals, both Campbell's (1991) and Chen and Zhao's (2009) decompositions lead to the same conclusions. Unfortunately, the excess market return equation's residuals are somewhat larger in Taiwan. Chen and Zhao's

(2009) decomposition is an appropriate methodology for decomposing stock returns in this case. Finally, the risk premium for the pan-Chinese stock markets is significantly higher in a down market than in an up market, consistent with evidence from Botshekan, Kraeussl, and Lucas (BKL, 2012).

This study contributes to the extant literature in the following ways: First, we investigate the pan-Chinese stock markets with equity ownerships, dividend policies, and tax systems that differ from those in the U.S. Second, we attempt to find appropriate state variables to successfully decompose cash-flow news and discount-rate news. Third, we compare Campbell's (1991) news decomposition method with that of Chen and Zhao (2009).

This study is structured as follows: Section 2 reviews current literature on the log-linear model. Data and methodologies are explained in Section 3. Section 4 illustrates empirical evidence, and the final section concludes the paper.

2. Literature review

Campbell and Shiller (1988a, 1988b) develop a log-linear model of stock returns and decompose unexpected stock returns into two parts: cash-flow news and discount-rate news. Campbell (1991) and Campbell and Ammer (1993) estimate cash-flow news and discount-rate news based on the log-linear model by employing VARs. Furthermore, Campbell and Mei (1993) break assets' betas with common factors into components attributable to news about cash flows, real interest rates, and excess returns. Hetch and Vuoltenaho (2006) use cash-flow news as a proxy to anticipate market returns. Campbell, Polk, and Vuolteenaho (2010) decompose the market beta of stocks into four kinds of betas, and find that accounting measures of firm-level risks have predictive power for firms' betas with market-wide cash flows; this predictive power arises from the behavior of firms' cash flows. Cenedese and Mallucci (2016) study the relation between international mutual fund flows and the different return components of aggregate equity and bond markets based on the log-linear model.

In an accounting sense, Callen and Segal (2004) decompose firm-level stock returns into accrual earnings news, cash-flow news and expected return news based on Campbell and Ammer (1993) and Vuolteenaho (2002). They find that accrual earnings news is a more important factor than cash flow earnings news in driving current stock returns. Furthermore, Callen, Hope, and Segal (2005) decompose stock returns into expected return news, domestic earnings news, and foreign earnings news and document that domestic earnings' relative importance is a decreasing function of investor sophistication. Khan (2008) uses cash-flow news and discount-rate news to propose a risk-based explanation for the accrual anomaly.

Regarding asset pricing, Campbell and Vuolteenaho (2004) estimate cash-flow and discount-rate betas and find that the cash-flow beta is bad because only it is priced, not the discount-rate beta. Based on Campbell, Polk, and Vuolteenaho (2010), Koubouros, Malliaropulos, and Panopouou (2010) also decompose the overall market beta of stocks into four parts and test whether the four sources of risk command different risk prices. In terms of asymmetric preferences for losses versus gains, BKL (2012) construct a return decomposition to distinguish cash-flow and discount-rate betas in up and down markets and find that downside cash-flow and discount-rate betas carry the largest premiums.

However, Chen and Zhao (2009) argue that Campbell's (1991) approach is seriously limited as discount-rate news cannot be accurately measured when the excess market return equation's R^2 is very low. In this case, the cash-flow news, as the residual, inherits the large misspecification error of the discount-rate news. Chen and Zhao (2009) propose a potential solution to estimate cash-flow news and discount-rate news directly or separately, not by backing out the cash-flow news as the residual. Chen, Da, and Zhao (2013) use direct cash-flow forecasts to demonstrate that stock returns have a significant cash-flow news component, and its importance increases with the investment horizon. However, Engsted, Pedersen, and Tanggaard (2012) note that Chen and Zhao's (2009) criticism builds on invalid VAR models and erroneous interpretations. They assert that it is crucial for the asset price to be included as a state variable in the first-order VAR, such as through a dividend-price ratio.

The extant literature has focused only on the U.S. market, while other countries have completely different financial regulations and ownership structures.[4] Regardless of the empirical methodology, all the studies stress the importance of cash-flow news in asset pricing. However, no study guarantees that cash-flow news is similarly important in countries other than the U.S. This study is motivated by the belief that the importance of any news depends on each market's financial regulations, ownership structure, dividend policy, and tax system. We demonstrate the validity of our belief by studying pan-Chinese stock markets (China, Hong Kong, and Taiwan).[5]

Moreover, previous studies raise the following three empirical issues: The first issue involves how to choose state variables. The second is whether pricing tests are valid when market status is neglected. Finally, at what point does Chen and Zhao's (2009) direct decomposition produce different estimation results than Campbell's (1991)? This study attempts to resolve these issues. We estimate cash-flow news and discount-rate news using the final state variables chosen from a large number of state variable sets. We test whether two news betas are priced by dividing the market status into up (positive excess market return over the risk-free rate) and down (negative excess market return). We conduct pricing tests for each market status using Fama-MacBeth's (1973) regressions. Furthermore, we estimate the two types of news by estimating two different VARs and, indirectly, by backing out residuals as cash-flow news to compare Campbell's (1991) estimation results with those of Chen and Zhao (2009).

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[4] According to the OECD Corporate Factbook 2015, listed companies' ownership is generally characterized by dispersed holdings in both the U.S. and the U.K. They are rarely under the control of a major shareholder, but rather, are subject to managerial control. Asymmetric information exists in this ownership structure between management and shareholders. Miller and Rock (1985) demonstrate that dividends in an asymmetric information environment signal firm insiders' private information regarding the firm's future prospects, which affect its equity market value. Hence, these firms' shareholders are likely to be sensitive to cash dividends. On the other hand, both the U.S. and the U.K. have capital market-based financing systems, and not bank-dependent systems. Listed firms finance their business projects by stocks and long-term bonds, and their debt ratios are relatively low. Consequently, their stock prices can be less sensitive to interest rate news than those in other countries.

[5] Wang, Miao, and Li (2013) investigate the correlations between Chinese and Hong Kong stock markets based on cash-flow and discount-rate news.

3. Data and methodology

3.1 Data

This study uses the Shanghai and Shenzhen Stock Exchanges' A-shares from July 1997 to June 2015 for China, all stocks listed on the Hong Kong Stock Exchange from July 1990 to June 2015, and all stocks listed on the Taiwan Stock Exchange from July 1993 to June 2015.[6] Chinese data are obtained from the China Stock Market and Accounting Research (CSMAR) database and Hong Kong and Taiwanese data are from DataStream. There are 2,819, 1,516, and 893 total stocks for China, Hong Kong, and Taiwan, respectively. Among these, we discard firms without at least 24 observations, as well as financial firms. Finally, 2,410, 1,283, and 791 firms are obtained for China, Hong Kong, and Taiwan, respectively. If some stocks have negative book-to-market (B/M) ratios, those observations are omitted in forming test portfolios.

The same data sources provide market returns including cash dividends and the risk-free rate for each market. We use the weighted-average returns of all A-shares listed on the Shanghai and Shenzhen Stock Exchanges calculated by the CSMAR for China and DataStream's total return index for Hong Kong and Taiwan. All the stock characteristic and macroeconomic variables are extracted from DataStream.

3.2 Measuring cash-flow and discount-rate betas

According to Campbell and Shiller (1988a) and Campbell (1991), the log-linear model decomposes unexpected stock returns into cash-flow news and discount-rate news.

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[6] The number of stocks available in the earlier period is too limited to conduct any meaningful tests for China (before 1997) and Taiwan (before 1993). Very few stocks were traded on the Shanghai and Shenzhen Exchanges before the sample period; eight stocks were listed on the Shanghai in 1990 and six were listed on the Shenzhen in 1991. In the next empirical section, sample periods will decrease due to the prior beta estimation periods. Because the test period for China (July 2000 through June 2015) includes the period before the split-share reform (July 2000 through April 2005), we expect the effect of cash-flow news to weaken.

$$r_{t+1} - E_t r_{t+1} = (E_{t+1} - E_t)\sum_{j=0}^{\infty}\rho^j \Delta d_{t+1+j} - (E_{t+1} - E_t)\sum_{j=1}^{\infty}\rho^j r_{t+1+j} = N_{CF,t+1} - N_{DR,t+1} \quad (1)$$

where r_{t+1} is a log stock return (i.e., the excess market return over the risk-free rate), d_{t+1} is the log cash dividend, Δ denotes a one period change, E_t denotes a rational expectation at time t, and ρ is a discount coefficient. N_{CF} indicates cash-flow news (i.e., news about future cash flows), and N_{DR} indicates discount-rate news (i.e., news about future discount rates). Campbell (1991) and Campbell and Vuolteenaho (2004) assume that the data are generated by the following first-order VAR model.

$$Z_{t+1} = \alpha + \Gamma Z_t + u_{t+1} \quad (2)$$

where Z_{t+1} is a m-by-1 state vector with r_{t+1} as its first element, α and Γ are the m-by-1 vector and m-by-m matrix of parameters, respectively, and u_{t+1} is an i.i.d. m-by-1 vector of shocks. Campbell (1991) estimates cash-flow news and discount-rate news using the following formula.

$$N_{DR,t+1} = e1'\lambda u_{t+1} \quad (3)$$

$$N_{CF,t+1} = (e1' + e1'\lambda)u_{t+1} \quad (4)$$

where λ is defined as $\lambda = \rho\Gamma(I - \rho\Gamma)^{-1}$.

As a first step to show that each news is priced, we form 25 size and B/M-based test portfolios according to Fama and French (1992).[7] Cash-flow and discount-rate betas can be estimated for each portfolio using the following regression model:

$$R_{p,t} - R_{f,t} = \alpha + \beta_{CF,p} n_{CF,t} + \beta_{DR,p}(-n_{DR,t}) + \varepsilon_{p,t} \quad (5)$$

where $R_{p,t}$ is each portfolio's monthly return, $R_{f,t}$ is the monthly risk-free rate,

[7] We also form 25 beta-based portfolios to test the robustness of our results. The estimation results do not qualitatively change.

$n_{CF,t} = N_{CF,t} \times \frac{Var(N_{CF} - N_{DR})}{Var(N_{CF})}$, and $n_{DR,t} = N_{DR,t} \times \frac{Var(N_{CF} - N_{DR})}{Var(N_{DR})}$. As in Equation (5), Campbell and Vuolteenaho (2004) adjust the scale of cash-flow news and discount-rate news to equate the market beta to the sum of cash-flow and discount-rate betas.

Alternatively, Chen and Zhao (2009) criticize Campbell's (1991) methodology that decomposes cash-flow news and discount-rate news. They claim that cash-flow news and discount-rate news may not be appropriately extracted because of the difficulty in choosing state variables for the VAR and the low R^2 from the excess market return equation. Chen and Zhao (2009) resolve these problems by suggesting the following revised log-linear model:

$$r_{t+1} - E_t r_{t+1} = N_{CF,t+1} - N_{DR,t+1} + \text{residual} \quad (6)$$

Residual is the part left unexplained by the log-linear model. Discount-rate news is estimated by Equation (3), but cash-flow news can be estimated by the following independent equation, and not by backing out the cash-flow news as the residual:

$$N_{CF,t+1} = e1'\lambda_1 w_{t+1} \quad (7)$$

We must estimate a new VAR with the same state variables for this equation, except for the first variable.[8] We replace the excess market return in Equation (2) with the difference of logged dividends between time t and t+1. λ_1 is defined as $(I - \rho\Gamma)^{-1}$ and w_{t+1} is a residual vector of the new VAR system. This methodology's advantage is that estimated cash-flow news is not affected by improperly measured discount-rate news.

3.3 Market status and asset pricing test

Campbell and Vuolteenaho (2004) run a cross-sectional regression to estimate two risk premiums by using full-sample betas as independent variables. They ignore the

[8] Chen and Zhao (2009) use different sets of state variables for the two VAR systems, which may cause non-robust estimation results. Campbell, Polk, and Vuolteenaho (2010) indicate that the two VAR systems should use the same state variables except for the first variable. Chen, Da, and Zhao (2013) correct Chen and Zhao's (2009) error by employing the same state variables for the two VAR systems.

possibility of time-varying betas for the sample periods of 1929-1963 and 1964-2001. However, we employ Fama and MacBeth's (1973) methodology, which uses rolling betas, to allow for the time-varying betas. As a first step to test the log-linear model, we form 25 test portfolios based on size and B/M ratios. We estimate cash-flow and discount-rate betas by using 36 months of prior data, then use these betas to estimate monthly risk premiums from July to the next year's June by the following cross-sectional regressions:

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + \hat{\gamma}_{M,t}\beta_{M,p,t} + \varepsilon_{p,t} \tag{8}$$

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + \hat{\gamma}_{CF,t}\beta_{CF,p,t} + \hat{\gamma}_{DR,t}\beta_{DR,p,t} + \varepsilon_{p,t} \tag{9}$$

where $R_{p,t} - R_{f,t}$ is the portfolio's monthly excess return over the risk-free rate. $\beta_{M,p,t}$, $\beta_{CF,p,t}$, and $\beta_{DR,p,t}$ are the portfolio's market, cash-flow, and discount-rate betas, respectively.

Meanwhile, many studies find an insignificant relationship between beta and returns (Reinganum, 1981; Lakonishok and Shapiro, 1986; Fama and French, 1992). Pettengill, Sundaram, and Mathur (PSM, 1995) argue that the Sharpe-Lintner-Black CAPM's validity cannot be directly examined because its tests use realized returns instead of expected returns. Empirically, this means that the relationship between the return to high and low beta portfolios is conditional on the relationship between realized and risk-free returns. Specifically, in the presence of negative excess market returns, an inverse relationship should exist between beta and portfolio returns. PSM (1995) test the CAPM conditioned on the market status, namely, the sign of the market excess return over the risk-free rate. Alternatively, and according to Ang, Chen, and Xing (2006), BKL (2012) test the log-linear model similarly to PSM (1995) and find that downside cash-flow risk is priced consistently across different samples, periods, and return-decomposition methods. While BKL's (2012) methodology may have the advantage of different betas according to market status, the betas' stability is not guaranteed when the numbers in up and down markets differ in the prior 60-month beta estimation period. Hence, we employ PSM's (1995) approach to test the log-linear model for China, Hong Kong, and Taiwan. This study's regressions for pricing tests are as follows:

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + [\delta\hat{\gamma}^{Up}_{M,t} + (1-\delta)\hat{\gamma}^{Down}_{M,t}]\beta_{M,p,t} + \varepsilon_{p,t} \quad (10)$$

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + [\delta\hat{\gamma}^{Up}_{CF,t} + (1-\delta)\hat{\gamma}^{Down}_{CF,t}]\beta_{CF,p,t} + [\delta\hat{\gamma}^{Up}_{DR,t} + (1-\delta)\hat{\gamma}^{Down}_{DR,t}]\beta_{DR,p,t} + \varepsilon_{p,t} \quad (11)$$

where δ is a dummy variable that is noted as 1 (i.e., an up market) if the market return is greater than the risk-free rate, and 0 (i.e., a down market) otherwise. $\hat{\gamma}^{Up}$ is the risk premium in an up market, and $\hat{\gamma}^{Down}$ is the risk premium in a down market.

4. Empirical evidence

4.1 Selection of state variables and estimation of VARs

The selection of state variables is crucial in estimating a log-linear model as this may significantly affect the estimation results. Campbell (1991) uses stock returns, dividend-price ratios, and the relative bill rate to emphasize that stock returns' variance decomposition heavily depends on the presence of a dividend-price ratio in the VAR model. Campbell and Vuolteenaho (2004) use excess market return, term spread, log PER, and value spread. Most studies employ the same state variables as in Campbell (1991) and Campbell and Vuolteenaho (2004). [See also Campbell and Mei (1993), Hecht and Vuolteenaho (2006), Khan (2008), Campbell, Polk, and Vuolteenaho (2010), and Koubouros, Malliaropulos, and Panopouou (2010).]

Chen and Zhao (2009) criticize Campbell's (1991) approach by asserting that cash-flow news may not be well-estimated because of the low explanatory power (R^2) of the excess market return equation. Another substantial problem in estimated cash-flow news involves the backed-out residual from the excess market return equation. Hence, the results of variance decompositions and asset pricing tests may depend on the selection of state variables. To resolve these problems, Chen and Zhao (2009) suggest an alternative method, which separately estimates the discount-rate news and cash-flow news.

Engsted, Pedersen, and Tanggaard (2012) refute Chen and Zhao (2009) in two respects. First, unexpected market return can be successfully decomposed when a stock price variable, such as the dividend-price ratio (or dividend yield), is included in the VAR model because the log-linear return approximation depends on the logged stock price. Second, Chen and Zhao's (2009) method will produce similar results to Campbell's (1991) if the same state variables other than the log dividend yield for the first-order VARs are used to estimate both discount-rate news and cash-flow news. Although Engsted, Pedersen, and Tanggaard (2012) suggest some important aspects in estimating news, they do not provide a detailed and comprehensive investigation as to how to select additional state variables.

We use two news decomposition criteria based on Chen and Zhao (2009) and Engsted, Pedersen, and Tanggaard (2012). First, the correlation between discount-rate news and cash-flow news should be sufficiently low to guarantee the independence of each. Second, the explanatory power (adjusted R^2) of the VAR's excess market return equation should be sufficiently high to ensure that cash-flow news can be appropriately backed out from the excess market return equation. Previous studies propose two types of state variables: stock-characteristic and macroeconomic (Fama, 1990; Campbell, 1991; Campbell and Mei, 1993; Patelis, 1997; Campbell and Vuolteenaho, 2004; Hetch and Vuolteenaho, 2006; Welch and Goyal, 2008; Chen and Zhao, 2009; Ohlson, 1990, 1995; Ball, Sadka, and Sadka, 2009; Spierdijk and Umar, 2014; Du and Hu, 2015; Fernald, Spiegel, and Swanson, 2014). We use the statistical relationship of the lagged variable with excess market return to choose nine candidate stock characteristic and macroeconomic variables for state variables: the log PER, log dividend yield, log payout ratio, log B/M ratio, value spread, stock variance, inflation, industrial production growth rate, and term spread. As we plan to employ 4- or 5-variate VARs to extract news, we estimate 210 (${}_9C_3+{}_9C_4$) VAR cases to compute the correlation between cash-flow news and discount-rate news and the excess market return equation's explanatory power.[9] We select the 6 state variable sets with the lowest correlation coefficients among 210 cases for each stock market. As Engsted, Pedersen, and Tanggaard

[9] When we depend on Akaike Information Criteria and Schwarz Bayesian Criterion, the first order is optimal for most VAR models.

(2012) indicate, the correlation coefficient increases if the price-related variable is not included in the VAR system. We then choose the final set of state variables among the six sets that maximizes the adjusted R^2.

Table 2 displays the selected VAR state variables for each stock market. The final VAR system has only four variables including the excess market return for all countries. Each stock market's state variables differ to some extent; while only stock-characteristic variables are selected for Hong Kong and Taiwan, both stock-characteristic and macroeconomic variables are chosen for China. The lower section of Table 2 reveals that discount-rate news has a much larger standard deviation than cash-flow news for Hong Kong and Taiwan, which is consistent with Campbell and Vuolteenaho (2004). This indicates that discount-rate news is the dominant component of the excess market return for Hong Kong and Taiwan. In contrast, the two news types have almost the same standard deviation sizes in China. This difference between Hong Kong (or Taiwan) and China may influence pricing tests for cash-flow and discount-rate risks.

Meanwhile, the excess market return equation's explanatory power (adj. R^2) is greater for China and Hong Kong than for the U.S. (R^2 of 2.57%) in Campbell and Vuolteenaho (2004). Consequently, the correlation coefficient between cash-flow news and discount-rate news is relatively small and statistically insignificant. The low correlation implies that the excess market return can be well-decomposed for both China and Hong Kong, but this is not the case for Taiwan. A relatively low adjusted R^2 (1.31%) for the excess market return equation heightens the correlation coefficient (-0.2355) in an absolute sense, and makes this statistically significant. This indicates that Taiwan's excess market return may not be well decomposed. We must apply the direct decomposition of cash-flow news in this case to the pricing tests, as Chen and Zhao (2009) suggest.

Insert <Table 2> here!

Table 3 displays the descriptive statistics and correlation coefficients for the selected state variables during the sample periods of July 1997-June 2015, July 1990-June 2015, and

July 1993-June 2015 for China, Hong Kong, and Taiwan, respectively. Correlation coefficients among the selected state variables are generally and statistically significant, which supports the validity of interrelationships among the state variables.

Insert <Table 3> here!

4.2 Patterns of cash-flow and discount-rate betas

We use Equations (3) and (4) to compute both discount-rate news and cash-flow news. We obtain cash-flow and discount-rate betas by regressing excess portfolio returns on the two types of monthly scale-adjusted news. Cash-flow and discount-rate betas are estimated for the 25 size-B/M portfolios. Although we do not report estimated betas because of space limitations, the discount-rate betas are much larger than cash-flow betas for both Hong Kong and Taiwan, but not for China.[10] This indicates that stock returns are more sensitive to discount-rate news than to cash-flow news for Hong Kong and Taiwan, but not for China. This finding parallels each market's ownership structure, dividend policy, and tax system, as explained in the introduction. Specifically, family-controlled ownership structure and bank-centric financing compel investors to be sensitive to discount-rate news in Hong Kong and Taiwan, while gradual market-based financing and a semi-mandatory cash dividend policy prompt investors to be sensitive to cash-flow news in China.

Table 4 shows the differences in news betas, which are statistically evaluated for portfolio groups. Our overall inferences will rely on the results of the portfolio group that includes all firms (All). Panel A presents the differences in betas between the smallest and largest size quintile portfolios (smallest minus largest: SML) in each B/M portfolio group. The differences in betas for all firms are noted in the first column (All). B1 (B5) is a portfolio of stocks with the lowest (highest) B/M ratios. China (Taiwan) has positive (negative) differences in cash-flow betas, but Hong Kong has no significant differences, which indicates

[10] The pairs of average cash flow and discount-rate betas are (0.4682, 0.3177), (0.0940, 0.8907), and (0.2283, 0.6882), for China, Hong Kong, and Taiwan, respectively.

that small (large) firms are more sensitive to cash-flow news than large (small) firms in China (Taiwan). However, all countries have negative differences regarding discount-rate betas, which implies that large firms are more sensitive to discount-rate news than small firms in all pan-Chinese stock markets.

Insert <Table 4> here!

Panel B presents the differences in betas between the highest and lowest B/M quintile portfolios in each size portfolio group. No particular pattern is found in the difference between the highest and lowest B/M quintile portfolios in cash-flow and discount-rate betas, except for the marginally significant difference in discount-rate beta for China. We understand that the B/M ratio does not play a sufficiently important role to differentiate news betas.

4.3 Pricing unconditional cash-flow and discount-rate betas

We test the cash-flow and discount-rate betas' premiums in this subsection by using Equations (8) and (9). Table 5 reports the results of unconditional tests for the sample periods of July 2000-June 2015 (China), July 1993-June 2015 (Hong Kong), and July 1996-June 2015 (Taiwan). The table has four columns; the first represents market risk premiums, and the fourth, the adjusted R^2s for the cross-sectional regressions. The second and third columns represent the cash-flow and discount-rate betas' risk premiums, respectively. If the unconditional risk premium is priced, it should be positive and significant.

Panel A presents the test results, as estimated by Campbell and Vuolteenaho's (2004) single cross-sectional regression. While China has a positive and marginally significant market risk premium, Hong Kong and Taiwan's are negative, which does not support the priced market risk premium or CAPM.[11] The risk premium of cash-flow news is significantly positive for China and Hong Kong in the log-linear model, but not for Taiwan;

[11] Campbell and Vuolteenaho (2004) also find a negative market risk premium in their modern sample.

in contrast, the discount-rate beta is not priced for all countries. These results are unlikely to be consistent with the priced market, cash-flow, and discount-rate risks (or betas). Furthermore, as Campbell and Vuolteenaho (2004) ignore the possibility of time-varying betas for the sample period, a more comprehensive conclusion should be derived from the test results estimated using Fama and MacBeth's (1973) rolling regressions.

Fama and MacBeth's (1973) estimation results are presented in Panel B, and in this case, we fail to find any significantly positive risk premiums for all countries. This indicates no priced risk or beta for the log-linear model and CAPM. Then, why are negative risk premiums even estimated? This phenomenon is driven by the financial and economic crises. Large negative risk premiums are estimated during the Asian financial crisis (1997-1998), the collapse of the information technology bubbles (2000-2002), and the global financial crisis (2008). Consequently, the average of cross-sectional risk premiums could be negative.

Insert <Table 5> here!

These findings indicate that unconditional tests of the log-linear model do not provide any implications for asset pricing. As in many studies, we also fail to find a significantly positive relationship between beta and returns when we use realized instead of expected returns. This suggests that asset pricing tests should be conditioned based on the market status (up or down).

4.4 Pricing conditional cash-flow and discount-rate betas

As Table 2 demonstrates, a high correlation coefficient (-0.2355) exists between cash-flow news and discount-rate news in Taiwan. This is a natural consequence of the excess market return equation's low adjusted R^2 (1.31%). This implies that a return decomposition may be unsuccessful for Taiwan; thus, Chen and Zhao (2009) suggest a direct decomposition of cash-flow news. We apply both Campbell's (1991) and Chen and Zhao's (2009) methods to our pricing tests to reach a reliable and comprehensive conclusion. We then estimate cross-sectional regressions based on Fama and MacBeth (1973) for both up and down markets. For the beta to be priced, it should be significantly positive (negative) in an up market (a down market).

Table 6 illustrates the conditional relationship between beta and returns using Fama and MacBeth's (1973) regressions. We first review the CAPM's estimation results. Panel A presents conditional market risk premiums for up and down markets; while Hong Kong has an insignificant market risk premium in up markets, those for China and Taiwan are positive and significant, which implies that market risk is priced. Market risk premiums are negative and more strongly significant for all countries in down markets than in up markets, which indicates that the market beta is negatively compensated indubitably when the excess market return is negative. As Kahneman and Tversky's (1979) monumental study indicates, a typical investor's disutility of a loss is higher than the positive utility of a similarly sized gain. Strongly negative and larger market risk premiums may represent the disutility of a loss in down markets.[12] This pattern in market risk premiums leads to the conclusion that the CAPM holds more in a down market than in an up market. Nonetheless, the market beta is significantly well priced if we separate market status into up and down markets when we use realized returns to test the CAPM.

Panel B presents conditional risk premiums of cash-flow and discount-rate betas by Campbell's (1991) decomposition. Cash-flow beta is priced in both up and down markets, but not discount-rate beta for China. For Hong Kong, cash-flow beta is not priced at all and discount-rate beta is priced only in a down market. These pricing results can be explained by the two countries' ownership structures, dividend policies, and tax systems, but the Taiwan's pricing result is somewhat perplexing when we consider its capital market environments, as investors must be more sensitive to discount-rate news than cash-flow news. If this is the case, the discount-rate beta should be dominantly strongly priced for Taiwan. As expected, the discount-rate beta is priced in both up and down markets while the cash-flow beta is only priced in down markets. However, the cash-flow premium is much larger than the discount-

[12] The average market risk premium in down markets is 2.34 times larger than in up markets.

rate premium in a down market, which may imply that the cash-flow risk is stronger than the discount-rate risk. This perplexing result may originate from an incorrect decomposition of the news series. Therefore, we employ Chen and Zhao's (2009) direct decomposition of cash-flow news to remedy this probable error.

Insert <Table 6> here!

Panel C presents the conditional risk premiums of cash-flow and discount-rate betas using Chen and Zhao's (2009) direct decomposition. If the estimation results approximate those of Campbell (1991) in Panel B, we can obtain the same conclusion. Otherwise, we must rely on the results from Chen and Zhao's (2009) decomposition because of its relatively low correlation coefficient between cash-flow news and discount-rate news.[13] As expected from the news correlations, Taiwan's results significantly differ from those in Panel B, while China and Hong Kong have similar results. Taiwan's discount-rate betas are priced in both up and down markets, but the cash-flow betas are not priced at all, consistent with Taiwan's capital market environments.

These findings indicate three important conclusions. First, the discount-rate beta is bad in both Hong Kong and Taiwan, while the cash-flow beta is bad in China. This can be explained by each stock market's ownership structure, dividend policy, and tax system. Second, risk premiums are higher in a down market than in an up market; BKL (2012) find similar results in the U.S. Third, when a relatively large correlation coefficient exists between cash-flow news and discount-rate news in Campbell's (1991) decomposition, Chen and Zhao's (2009) method produces somewhat reliable results.[14]

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[13] When we employ Chen and Zhao's (2009) decomposition, the correlation coefficients are -0.1449, 0.0941, and -0.0797 for China, Hong Kong, and Taiwan, respectively. The adjusted R^2s of dividend growth equations are 7.12%, 2.21%, and 4.56% for China, Hong Kong, and Taiwan, respectively.

[14] We prove our findings' robustness by re-estimating the conditional relationship between beta and returns for the 25 beta portfolios. We also re-calculate cash-flow news and discount-rate news by using the second-best state variables, and re-estimate the conditional relationship between beta and returns for the 25 size-B/M portfolios. The estimation results are similar to those in Table 6.

5. Conclusions

This study evaluates the relative importance of cash-flow news and discount-rate news based on the log-linear model for pan-Chinese stock markets, including China, Hong Kong, and Taiwan. While these countries belong to the same cultural region, their capital market environments differ significantly from each other. Consequently, cash-flow news and discount-rate news must play different roles among them. When we conduct pricing tests for cash-flow and discount-rate betas, we divide the market status into either up or down.

The empirical findings are summarized as follows: First, unexpected market return can be successfully decomposed into cash-flow news and discount-rate news when the first-order VAR models include a stock price-related variable, such as the price-to-book value ratio, and appropriate state variables. Second, small firms are sensitive to cash-flow news in China while large firms are in Taiwan. Large firms, in contrast, are more sensitive to discount-rate news than small firms in all pan-Chinese stock markets. Third, the discount-rate beta is bad in Hong Kong and Taiwan, while the cash-flow beta is bad in China. This finding answers the fundamental question of this study: Cash-flow betas are not always bad. Fourth, when the excess market return equation produces relatively small residuals, both Campbell's (1991) and Chen and Zhao's (2009) decompositions lead to the same conclusions. However, the excess market return equation has somewhat larger residuals in Taiwan. Chen and Zhao's (2009) decomposition is appropriate to decompose stock returns in this case. Finally, the risk premium is significantly higher for the pan-Chinese stock markets in a down market than in an up market. This phenomenon can be explained by the prospect theory developed by Kahnman and Tversky (1979), which suggests that the disutility of a loss is higher than the positive utility of a similarly sized gain.

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Table 1. Summary of capital market environments

	China	Hong Kong	Taiwan
Ownership structure	Significantly state owned but gradually toward market-based financing	Family owned, hence, concentrated / bank-centric financing	Family owned, hence, concentrated / bank-centric financing
Dividend policy	Cash dividend-oriented policy	Less dividend smoothing	Dual (i.e., cash or stock) dividend policy
Tax system	No capital gain tax but dividend income tax	No capital gain tax and no dividend income tax	No capital gain tax and no double taxation
Implied importance of			
Cash-flow news	Important	Less important	Less important
Discount-rate news	Less important	Important	Important

Table 2. Selected VAR state variables for each country

This table shows selected VAR state variables for China, Hong Kong, and Taiwan. The sample periods are July 1997-June 2015, July 1990-June 2015, and July 1993-June 2015 for China, Hong Kong, and Taiwan, respectively. ER, log PER, log Div, log Pay, log B/M, VS, Var, Inf, I_Growth, and T_Spread represent excess market return, log price earnings ratio, log dividend yield, log payout ratio, log book to market ratio, value spread, stock variance, inflation, industrial production growth rate, and term spread, respectively. Std(N_{CF}) and Std(N_{DR}) are standard deviations of cash-flow news and discount-rate news, respectively. Corr($N_{CF,}$ N_{DR}) is a correlation coefficient of cash-flow news and discount-rates news. Adj. R^2 is the adjusted R^2 for the excess market return equation in VARs.

Variables/Regions	China	Hong Kong	Taiwan
ER	0	0	0
Stock characteristic variables			
log PER	0	0	·
log Div	·	·	0
log Pay	·	0	·
log B/M	·	0	0
VS	·	·	·
Var	·	·	0
Macroeconomic variables			
Inf	0	·	·
I_Growth	0	·	·
T_Spread	·	·	·
Std(N_{CF})	.0559	.0218	.0392
Std(N_{DR})	.0566	.0687	.0586
Corr($N_{CF,}$ N_{DR})	-.0725	.0874	-.2355***[a]
Adj. R^2	3.45%	5.50%	1.31%

a. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 3. Descriptive statistics

This table shows the basic statistics and correlation coefficients for the selected state variables during the sample periods of July 1997-June 2015, July 1990-June 2015, and July 1993-June 2015 for China, Hong Kong, and Taiwan, respectively. ER, Log PER, log Div, log Pay, log B/M, Var, and I_Growth represent market excess return, log price-earnings ratio, log dividend yield, log payout ratio, log book-to-market ratio, stock variance, and industrial production growth rate, respectively.

		Basic statistics			Correlation coefficients			
		Mean	Median	Stdev.	ER	log PER	Inf	I_Growth
China	ER	.0087	.0109	.0845	1.0000	-	-	-
	log PER	3.0371	2.9704	.4935	.0764	1.0000	-	-
	Inf	.0001	.0000	.0062	.1435*[a]	.1968***	1.0000	-
	I_Growth	-.0006	-.0009	.0284	-.0505	.0609	-.3037***	1.0000
		Mean	Median	Stdev.	ER	log PER	log Pay	log B/M
Hong Kong	ER	.01079	.0151	.0727	1.0000	-	-	-
	log PER	2.6295	2.6246	.2352	.2288***	1.0000	-	-
	log Pay	.3534	.3556	.0498	.1401**	.4479***	1.0000	-
	log B/M	.5071	.5108	.0844	-.1052*	-.6963***	.1225**	1.0000
		Mean	Median	Stdev.	ER	log Div	log B/M	Var
Taiwan	ER	.0062	.0068	.0788	1.0000	-	-	-
	log Div	.0251	.0248	.0141	-.0808	1.0000	-	-
	log B/M	.3858	.4157	.0883	-.1426**	.7169***	1.0000	-
	Var	.0137	.0123	.0060	-.1079*	-.1220**	-.1518**	1.0000

a. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 4. The differences in news betas

This table shows the differences in news betas between the smallest (highest B/M) and largest (lowest B/M) quintile portfolios. Cash-flow and discount-rate betas are estimated for the 25 size-B/M portfolios. The differences in betas are evaluated statistically for a portfolio group including all firms. Panel A presents the differences in betas between the smallest and largest quintile portfolios in each B/M portfolio group. B1 (B5) is a portfolio of stocks with the lowest (highest) B/M ratios. Panel B presents the differences in betas between the highest and lowest B/M quintile portfolios in each size portfolio group. S1 (S5) is a portfolio of stocks with the smallest (largest) firm size.

Panel A. The differences in betas between the smallest and largest quintile portfolios (smallest minus largest) in each B/M portfolio group

		All	B1 (growth)	B2	B3	B4	B5 (value)
Cash-flow etas	China	.1417	.1983	.1353	.1346	.1148	.1257
		(3.08)***	(3.58)***[a]	(2.71)***	(2.71)***	(2.53)**	(2.64)***
	Hong Kong	.0180	.0362	.0243	.0534	-.0223	-.0015
		(.59)	(1.02)	(.72)	(.99)	(-.66)	(-.04)
	Taiwan	-.0689	-.0532	-.1002	-.1199	-.0642	-.0069
		(-1.77)*	(-1.33)	(-2.47)**	(-3.04)***	(-1.32)	(-.12)
Discount-rate betas	China	-.1178	-.0648	-.0879	-.1485	-.1375	-.1501
		(-2.54)***	(-1.16)	(-1.75)*	(-2.97)***	(-3.02)***	(-3.13)***
	Hong Kong	-.1802	-.0889	-.1046	-.2060	-.1529	-.3484
		(-1.78)*	(-.76)	(-.94)	(-1.17)	(-1.36)	(-3.15)***
	Taiwan	-.1486	-.1402	-.2119	-.2073	-.1262	-.0573
		(-2.32)**	(-2.13)**	(-3.18)***	(-3.20)***	(-1.58)	(-.59)

Panel B. The differences in betas between the highest and lowest B/M quintile portfolios (highest minus lowest) in each size portfolio group

		All	S1 (small)	S2	S3	S4	S5 (large)
Cash-flow betas	China	.0013	-.0271	-.0056	.0009	-.0069	.0455
		(.03)	(-.43)	(-.11)	(.02)	(-.16)	(1.21)
	Hong Kong	.0280	.0131	-.0083	.0146	.0698	.0508
		(1.09)	(.29)	(-.23)	(.45)	(2.81)***	(2.78)***
	Taiwan	.0103	.0301	.0518	-.0060	-.0080	-.0162
		(.25)	(.48)	(1.00)	(-.13)	(-.18)	(-.49)
Discount-rate betas	China	.0847	.0515	.0319	.0699	.1332	.1369
		(1.90)*	(.82)	(.60)	(1.43)	(3.08)***	(3.61)***
	Hong Kong	.0833	.0209	-.1207	.1488	.0870	.2805
		(.99)	(.14)	(-1.04)	(1.41)	(1.06)	(4.66)***
	Taiwan	.0754	.1477	.1406	.0133	.0108	.0647
		(1.12)	(1.43)	(1.65)*	(.18)	(.15)	(1.21)

a. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 5. The relationship between beta and stock returns

This table shows the results of unconditional asset pricing tests. The sample periods are July 2000-June 2015 (180 months), July 1993-June 2015 (264 months), and July 1996-June 2015 (228 months) for China, Hong Kong and Taiwan, respectively. Panel A presents the results of single cross-sectional tests employed by Campbell and Vuolteenaho (2004). The test models are as follows:

$$\overline{R_p - R_f} = \hat{\gamma}_0 + \hat{\gamma}_M \beta_{M,p} + \varepsilon_p$$

$$\overline{R_p - R_f} = \hat{\gamma}_0 + \hat{\gamma}_{CF} \beta_{CF,p} + \hat{\gamma}_{DR} \beta_{DR,p} + \varepsilon_p$$

Panel B is the results of rolling cross-sectional tests employed by Fama and MacBeth (1973). The test models are as follows:

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + \hat{\gamma}_{M,t} \beta_{M,p,t} + \varepsilon_{p,t}$$

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + \hat{\gamma}_{CF,t} \beta_{CF,p,t} + \hat{\gamma}_{DR,t} \beta_{DR,p,t} + \varepsilon_{p,t}$$

The beta of each size-B/M portfolio in month t is estimated by using the past 36 months' returns.

Panel A. Campbell and Vuolteenaho's (2004) single cross-sectional regression				
	$\hat{\gamma}_M$	$\hat{\gamma}_{CF}$	$\hat{\gamma}_{DR}$	Adj. R^2
China	.0446			10.10%
	(1.92)*a			
		.0925	.0051	78.65%
		(7.35)***	(.41)	
Hong Kong	-.0335			3.14%
	(-1.33)			
		.2465	-.0553	19.46%
		(2.06)**	(-2.24)**	
Taiwan	-.0127			7.76%
	(-1.74)*			
		-.0338	-.0036	5.28%
		(-.99)	(-.22)	

Panel B. Fama and MacBeth's (1973) rolling regressions				
	$\overline{\hat{\gamma}_M}$	$\overline{\hat{\gamma}_{CF}}$	$\overline{\hat{\gamma}_{DR}}$	$\overline{\text{Adj. } R^2}$
China	.0049			17.44%
	(.35)			
		-.0072	-.0041	33.21%
		(-.33)	(-.18)	
Hong Kong	-.0232			4.19%
	(-3.36)***			
		.0113	-.0241	6.24%
		(.44)	(-3.08)***	
Taiwan	-.0025			7.87%
	(-.42)			
		-.0120	.0043	14.51%
		(-.66)	(.52)	

a. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Table 6. The conditional relationship between beta and returns

This table shows the conditional relationships between the beta and returns for the 25 size-B/M portfolios using Fama and MacBeth's (1973) regressions. The regression models are as follows:

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + [\delta\hat{\gamma}^{Up}_{M,t} + (1-\delta)\hat{\gamma}^{Down}_{Mt}]\beta_{M,p,t} + \varepsilon_{p,t}$$

$$R_{p,t} - R_{f,t} = \hat{\gamma}_{0,t} + [\delta\hat{\gamma}^{Up}_{CF,t} + (1-\delta)\hat{\gamma}^{Down}_{CF,t}]\beta_{CF,p,t} + [\delta\hat{\gamma}^{Up}_{DR,t} + (1-\delta)\hat{\gamma}^{Down}_{DR,t}]\beta_{DR,p,t} + \varepsilon_{p,t}$$

δ=1 if market excess return is positive, and δ=0, otherwise. According to Pettengill at al. (1995), the above regressions are estimated each month. Monthly premiums are averaged for up and down markets. The sample periods are July 2000-June 2015 (180 months), July 1993-June 2015 (264 months), and July 1996-June 2015 (228 months) for China, Hong Kong and Taiwan, respectively. Panel A presents the conditional market risk premiums for up and down markets. Panel B presents the conditional risk premiums of cash-flow and discount-rate betas using Campbell's (1991) decomposition. Panel C presents conditional risk premiums for cash-flow and discount-rate betas using Chen and Zhao's (2009) direct decomposition.

	Up markets				Down markets			
	$\overline{\hat{\gamma}^{Up}_{M}}$	$\overline{\hat{\gamma}^{Up}_{CF}}$	$\overline{\hat{\gamma}^{Up}_{DR}}$	$\overline{Adj.R^2}$	$\overline{\hat{\gamma}^{Down}_{M}}$	$\overline{\hat{\gamma}^{Down}_{CF}}$	$\overline{\hat{\gamma}^{Down}_{DR}}$	$\overline{Adj.R^2}$
Panel A. Conditional market risk premiums in up and down markets								
China	.0410			14.31%	-.0443			21.71%
	(2.25)**a				(-2.27)**			
Hong Kong	-.0057			3.39%	-.0505			5.44%
	(-.67)				(-4.52)***			
Taiwan	.0173			7.59%	-.0279			8.23%
	(2.08)**				(-3.39)***			
Panel B. Conditional risk premiums: Campbell (1991)								
China		.0564	.0010	30.34%		-.0936	-.0110	37.11%
		(1.91)*	(.03)			(-3.37)***	(-.32)	
Hong Kong		.0267	-.0075	5.51%		-.0129	-.0501	7.40%
		(.81)	(-.82)			(-.32)	(-3.67)***	
Taiwan		.0426	.0231	14.97%		-.0819	-.0198	13.93%
		(1.63)	(1.94)*			(-3.56)***	(-1.85)*	
Panel C. Conditional risk premiums: Chen and Zhao (2009)								
China		-.0148	.0281	29.17%		-.0366	-.0085	31.94%
		(-.73)	(.99)			(-2.11)**	(-.27)	
Hong Kong		-.0058	-.0052	6.34%		-.0565	-.0479	8.35%
		(-.17)	(-.57)			(-1.13)	(-3.68)***	
Taiwan		-.0286	.0307	13.64%		.0152	-.0323	14.04%
		(-1.38)	(2.57)***			(.93)	(-3.21)***	

a. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.