The influence of Institutions, Investor Protection and Corporate Block-shareholders in Asset Pricing

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Abstract

This study introduces a new asset pricing factor to capture both the effects of concentrated ownership and institutional development in a sample of stock indices in sixty five international equity markets. The evidence suggests that the new measure offers significant improvements over the size and book-to-market value three factor model of Fama and French (1993) and to a lesser extent the two factor liquidity augmented model of Liu (2006) in capturing the cross section of average stock returns. The findings emphasise the importance of institutional quality, legal origin and concentrated ownership that are the basis of property rights protection in the portfolio diversification decisions of minority investors.

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1. INTRODUCTION

The Capital Asset Pricing model (CAPM) of Sharpe (1964), Lintner (1965) and Black (1972) is based on assumptions of integrated asset markets and risk averse investors whose economic welfare is a function of a market portfolio as a proxy for the wider economy. However, more recently Fama and French (1993) found evidence that differences in firm size and accounting book-to-market value should be treated as additional state variables, while Pastor and Stambaugh (2003), Amihud (2002) and Liu (2006) suggest that liquidity is another important factor. But the impact of institutions and their role in the extent of concentrated ownership and the subsequent implications for investor protection from the agency costs of monitoring insiders (Jensen and Meckling, 1976) is currently unexplored in the asset pricing literature.

The paper builds on the dynamic stochastic general equilibrium asset pricing models recently proposed by Albuquerue and Wang (2008) and Dow et al (2005) that include measures of shareholder and investor protection. Standard asset pricing theory states that the cross-section of expected stock returns are related to return sensitivities to state variables linked to investor welfare (Pastor and Stambaugh, 2003). Assets whose lowest returns result from decreased welfare must compensate investors for any losses associated with holding the asset. However, national institutions can impact levels of transactions costs, and therefore it is important to investigate whether variation in cross sectional expected returns can be better explained by levels of investor protection rather than liquidity, size or book-to-market value. Furthermore, this difference may be especially pronounced between common law and civil code markets.

There is now considerable evidence that questions the diversified ownership model of the firm proposed by Berle and Means (1932). For example, Demsetz and Lehn (1985), Shleifer and Vishny (1986) and Morck, Shleifer and Vishny (1988) find modest levels of ownership concentration in large US corporations. Similar concentration is found in other developed countries such as Germany (Edwards and Fischer, 1994), Japan (Prowse, 1992) and Italy (Barca, 1995) and to a much greater extent in developing countries (La Porta et al, 1998) where family-centred firms are very common in East Asia (Claessens et al, 2000) and North Africa and the Middle East (Hearn, 2011). In all cases ownership concentration is greater in countries with weaker levels of institutional and legal protection of outside minority investors (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2000). In this context outside minority investors are more vulnerable to expropriation by insider groups seeking private benefits of control and thus more dependent on institutions for protection of their property rights (La Porta et al, 1999). Therefore, it is not surprising that the level of institutional development can account for differences in the alignment of interests between principals and agents.

Jensen and Meckling (1976) view the firm as a nexus of contracts, where insiders' utility is derived from both pecuniary and non-pecuniary benefits. This conflicts with the utility of outside investors who focus on returns to their investment and access to high quality information on firm management, strategy and cash flows. Furthermore, the success of legal and judicial institutions is viewed in terms of their ability to inhibit insider expropriation of minority outsider investors. Unfortunately, enhancements in the quality of the institutions, such as regulatory disclosure rules and accounting standards that protect information rights of outsider investors involves increasingly expensive technology that is a serious burden to many markets, especially in developing and emerging economies.

There is a considerable literature that emphasises the importance of legal structures and the systems from which they are derived (see LLSV (2000); La Porta et al (2002, 2008) for an overview). A limited number of European legal regimes have influenced national systems across the world, mostly based on either English common law or French, German and Scandinavian civil codes. However, while there are differences in the philosophy and organisation of these systems, other factors in their development and evolution are perhaps more important (Joireman (2001, 2005)), particularly with respect to broader legal, governmental and political institutions (North (1994); Beck et al (2003)). Explanations of the differences between legal traditions centre on the process by which laws and rules are determined. Countries following English common law have independent judiciaries with law formed through competing case argument and precedent set by council. In contrast, laws in civil code systems are created by legislatures and judges have a lesser role, acting to administrate rather than assess the rules. Consequently, LLSV (2000) argue that the "bright line rules" of civil code systems result in principles of somewhat vague fiduciary duty that are more easily avoided by informed insiders.

National institutions can also impact firm capital structure and are the basis of the model of corporate governance adopted by individual countries. Levine (2005) has found that countries that rely largely on internal rather than external funding frequently have poor levels of investor property rights protection. This is especially relevant for common valuation metrics such as book equity to market value and market capitalisation, both of which depend on market depth and breadth, which also is a function of legal regime. Evidence of a positive relationship between a strong legal framework for investor protection and high book equity to market value is reported by Claessens et al (2002), whilst legal and regulatory enforcement and the protection of property rights for minority investors play a central role in transactions costs and liquidity (La Porta et al (2008); Lesmond (2005)). Thus, national institutions are considered a determinant of liquidity, ownership and governance, all of which are important in comparisons of international markets.

This paper extends research on the relationship between stock market liquidity and legal and political institutions by Lesmond (2005) by widening the sample to include both developed and emerging markets and including a new investor protection measure to account for individual institutional governance characteristics. This provides a measure of institutional quality across a diverse set of markets that has been neglected in previous studies. The investor protection measure is further enhanced by a factor to account for ownership structure and dispersion. This is proxied by the percent of free float to market capitalization, which more fully represents the level of property rights protection. This allows stocks to be ranked according to primary market institutional quality, particularly with respect to dispersed ownership, rather than assuming dominant corporate block-shareholders. This follows La Porta et al (1999) and Boulton et al (2009) who examine the impact of investor protection on ownership dispersion and found different levels of block ownership and governance mechanisms between countries with common and civil law legal systems. In their paper, civil law legal systems were typically dominated by block shareholders and low free float capitalization.

The paper makes two major contributions to the literature. The first is the construction of a valuation measure to capture the welfare implications for outside investors from ownership concentration and institutional quality, using a sample of sixty eight international equity markets at various stages of development. Differences in institutional quality is measured using the indices developed by Kaufman et al (2009) and published by the World Bank, which have been used extensively in studies of governance. These include: democratic voice and accountability, effective government, control of corruption, political stability and absence from conflict, regulatory quality and rule of law. These factors capture a broad range of institutional characteristics and provide a richer measure of the government, political, legal and regulatory environments than currently in the literature. These are aggregated and enhanced by the ownership concentration factor and are computed for each of the sixty-five markets. The second contribution uses the investor protection measure in an augmented capital asset pricing model in the spirit of Fama and French (1993) and Liu (2006).

The results confirm those of La Porta et al (1997, 2008) and find evidence that stock dispersion across decile portfolios ranked as a function of the strength of investor protection increasingly dominate the portfolios, and that these portfolios are from common law, developed markets. Conversely, in civil code emerging countries stocks fall into those portfolios defined by weaker investor protection. We find evidence that a two-factor time series CAPM augmented with the investor protection valuation factor improves explanatory power compared with either the two-factor liquidity CAPM (Liu, 2006) or the three-factor size and book-to-market CAPM

(Fama and French, 1993). However, there are also discernable differences between markets. The expected returns to increased investor protection are positive in markets with existing high levels of institutional quality and dispersed ownership, implying further improvements will be met with positive rewards. But, the opposite is true in markets with low levels of existing protection where further increases in protection and dispersion of ownership are likely to have negative premiums. This result reflects the different governance mechanisms associated with large block-shareholder groups and minimal ownership dispersion in markets with poor protection and those with high protection and governance mechanisms based on the market that rewards increased ownership dispersion.

The paper is structured as follows. Section 2 introduces the liquidity measure used in the paper and the new investor protection measure, both of which cover a broad range of markets. Section 3 investigates the relationship between liquidity and the political, legal and institutional governance measures at firm level. Section 4 briefly reviews the CAPM methodology and presents the existing augmented CAPMs and the investor protection augmented CAPM. Section 5 reports the results of comparing the models and presents evidence that legal regimes and their associated institutions have a major impact on asset valuation. The final section concludes.

2. MARKET INSTITUTIONS AND LIQUIDITY MEASUREMENT

This section discusses the construction of measures used to capture liquidity effects and institutional quality as a proxy for investor protection. A number of liquidity constructs exist but the one used in this paper follows Liu (2006). The new institutional quality and the liquidity measures are applied to all stocks in the sample of international markets using top tier blue chip indices as these are most likely to be included in the risk diversification portfolios of international investment managers (Bekaert, 1995). These stocks are also expected to comply with the assumptions implicit in CAPM valuation.

2.1 The Liu (2006) liquidity construct

The literature has traditionally been limited in only using constructs that capture a single dimension of a multidimensional phenomenon. Typically this is a variant of the bid-ask spread in Amihud and Mendelsen (1986), the turnover measure in Datar et al. (1998), price impact measures arising from traded volume in Amihud (2002) and Pastor and Stambaugh (2003), and the zero-return proportion measure in Lesmond et al (1999) and used by Lesmond, 2005 and Lee, 2011. However, there is very little published research on measures that capture the trading speed dimension of liquidity defined as the ability to transact large quantities quickly with little price impact as noted by Liu (2006) and Pastor and Stambaugh (2003). Equally, deficiencies in the use of bid-ask spread have been highlighted in Lee (1993) where evidence suggests that many large trades occur outside the bid-ask spread while many small trades are undertaken within it, leading to potential bias. Further concerns over one-dimensional measures focus on the fact that in the presence of extreme illiquidity these are undefined, which is frequently the case in smaller regional markets (Lesmond, 2005). More recently Liu (2006) developed a measure that captures the trading speed dimension of liquidity. This is defined as the standardized turnover-adjusted number of zero trading volumes over the past twelve months. This is multi-dimensional and captures effects related to trading speed, trading quantity and trading cost, with an emphasis on the first, which is in fact a measure of the continuity of trading and the potential delay in executing an order. Thus, given the multi-dimensional aspects of liquidity there remains some ambiguous, while constructs such as Liu (2006) offer enhanced robustness and is the method of choice in this paper.

Daily price and volume data are from Datastream. The Liu (2006) measure is defined as LM_x which is the standardized turnover-adjusted number of zero daily trading volumes over the prior x months (x = 1, 6, 12) expressed

$$LM_x = \left[(\text{Number of zero daily volumes in prior x months}) + \frac{\text{1/x month turnover}}{\text{Deflator}} \right] * \frac{21x}{NoTD} \qquad (1)$$

where x month turnover is the turnover over the prior x months, calculated as the sum of the daily turnover over the prior x months. Daily turnover is the ratio of the number of shares traded on a given day to the number of shares outstanding at the end of that day. NoTD is the total number of trading days in the market over the prior x months, which in this case is 1, and Deflator is chosen such that,

$$0 < \frac{1/(x \text{ month turnover})}{Deflator} < 1 \qquad (2)$$

for all sample stocks[1]. Given the turnover adjustment (the second term in brackets in equation (1)), two stocks with the same integer number of zero daily trading volumes can be distinguished with the one with the larger turnover more liquid. Thus, the turnover adjustment acts as a tie-breaker when sorting stocks based on the number of zero daily trading volumes over the prior x months. Because the number of trading days per month can vary from 15 to 23, multiplication by the factor (21x/NoTD) standardizes the number of trading days in a month to 21, which makes the liquidity measure comparable over time. Therefore, LM1 can be interpreted as the turnover-adjusted number of zero daily trading volumes over the average month and is calculated

[1] Following Liu (2006) a deflator of 1,000 is used.

at the end of each month for each stock based on daily data. Daily data is available for all markets across the entire sample period.

2.2 Investor Protection Measure

The aggregate investor protection measure is constructed using a three stage procedure. The first uses the World Bank governance indicators of voice and accountability, political stability and non-violence, government effectiveness, regulatory quality, rule of law and control of corruption. The rule of law reflects the La Porta et al (1998, 2008) indicator and the legal enforcement of Bhattacharya and Daouk (2002). The six indicators are constructed by Kaufman et al (2009) using an unobserved components methodology and values range between -2.5 to +2.5, where higher values relate to better governance outcomes. Each indicator is recalculated and has been updated every two years since they were first introduced in 1999[2].

In the second stages these indicators are rescaled to fit a scale between 0 and 10 using equation (3) for governance indicator m for country j at time t and then summed

$$Aggregate\ \ Governance_{jt} = \sum_{m=1}^{6} \left(\frac{x_{mjt} - X_{Min\ m}}{X_{Min\ m} - X_{Max_{mi}}} \right) * 10 \qquad (3)$$

In the final stage the aggregate governance measure for each country and each year is multiplied by the mean monthly percentage of free float shares for each listed firm, where this is the share of total issued shares available but not held by existing incumbent block-shareholders.[3] This follows Jensen and Meckling (1976) where the extraction of private benefits of control is facilitated by the dominant level of control exerted over the firm by owner-founders due to high levels of ownership concentration and thus, low proportion of free float capitalization. Further, Doidge et al (2007) provide evidence of the role of institutions in protecting minority outsider investors from expropriation and their influence over insider block owners and directors. This is especially pertinent to decisions regarding the trade-off between expropriating outsiders or foregoing opportunities for private benefits of control in favour of access to improved external finance for the firm. The implication of improved institutions is superior external financial markets at a national level and easier access to cost effective finance for firms. Thus, free float capitalization can be viewed as the complement of the level of block-shareholding and is used as a measure that relates firm characteristics to the institutional quality of the primary market on which the firm is listed. Therefore, the composite index that includes market quality and ownership characteristics can be expressed

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[2] Governance indicators are available from: http://info.worldbank.org/governance/wgi/index.asp

[3] Data for the free float are from Datastream.

$$Investor\ Protection_{ijt} = (Aggregate\ Governance)_{jt} * (Free\ Float)_{ijt} \quad (4)$$

for firm i listed in country j at time t. The product of the institutional quality index and the share of free float capitalization is justified as institutional change is very slow to have an impact (Williamson, 2000). This measure also acts as a tie-breaker where it is necessary to distinguish between stocks in countries with similar levels of institutional quality.

3. DATA

The sixty five equity markets in the sample reflect a mix of developed and emerging countries, with country definitions following the Dow Jones classification. All the major markets are included although very small markets are excluded, and all are subject to data availability. The major limiting factor was the year the markets were established and some have only existed since 2000. Thus, the final sample period is January 2000 to January 2010, to allow the maximum number of markets.

3.1 Data Sources

Daily stock closing, total number of shares outstanding, traded volumes, and dividend per share in local currency are from Datastream and all value data were converted into US$. The daily return variance, market capitalization and the various liquidity measures were constructed. The five year US Treasury Bill yield rate represents the risk free rate and was adjusted to take account of monthly excess returns rather than the quoted equivalent annualised rates, again from Datastream. The conversion of the total returns series and prices into US$ and the use of US Treasury Bill yield assumes long term parity between the local currency and US$ and is justified by volatility in inflation rates in many emerging markets. The paper assumes the position of a US investor as this represents the majority of emerging market portfolio investment (Bekaert et al, 2007).

3.2 Summary statistics: liquidity and institutional quality

The descriptive statistics for the listed firms are in Table 1. The most striking aspect of the data is the difference between developed and emerging markets with the former having much less price-rigidity (lower percentage daily zero returns), and higher market capitalization. This is reflected in the data for the markets in the Developed Europe group, which have percentage daily zero returns values between 10 and 20%, with the exception of the smaller developed markets, Ireland, Iceland and Austria, all of which have values of approximately 40%. In contrast, those in the Emerging Europe group have values that are much higher, such as 56.58% (Czech Republic) and 84.50% (Latvia). Similarly, the emerging markets in Africa are characterised by extreme illiquidity (Hearn and Piesse, 2009) while those in Latin America have very high daily percentage zero returns. The recently established markets in the Middle East also have very high illiquidity with the extremes being Israel and Saudi Arabia where liquidity is considerably higher than the rest of the region. There is also variation in all six institutional quality indices across the sample with those in Western Europe and North American markets, and in particular in Scandinavia, being consistently higher. In contrast, Russia, China and several Latin American and African countries have the lowest scores for the six institutional quality indices. There is also variation in the proportion of free float capitalization although generally this is lower in French and German origin civil code countries than in either English common law or Scandinavian civil code markets. Further, French civil code markets consistently score less well relative to German civil code or English common law markets. However, Scandinavian civil code countries dominate all the investor protection and governance rankings although this may reflect the fact that the indicators do not capture every aspect of governance and thus there is a bias towards these countries as noted by Horst (2006) and La Porta et al (1997, 2008).

Table 1

3.3 Spearman rank correlations

The Spearman's Rank correlations are in Table 2. While there are generally few large correlations between variables it is notable that there are more in the English common law universe than in either of the civil code universes. The single large correlations between firm size (MV) and stock price in German civil code universe as well as between size (MV) and traded volume in Scandinavian civil code universe are as expected from Stoll (2000) where larger firms are reported as having less inventory risk and hence attract a higher price while these stocks are also likely to be more attractive to investors thus being more actively traded. While these relationships between size, price and volume are also prevalent in English common law universe two additional large and notable negative correlations exist between bid ask spread and volume as well as size. Following Stoll (2000) this is indicative that larger and more actively traded stocks have smaller spreads and thus greater liquidity.

Table 2

4. METHODS

This section begins with the construction of the all the valuation indices as this is a much wider sample of countries than has previously been studied in the asset pricing literature. Then, the new investor protection measure is included in an augmented CAPM and the results compared with previous studies that have used Liu's (2006) multi-dimensional liquidity measure and the Fama and French (1993) size and accounting book-to-market value. Doidge et al (2007) argue that improvement in the quality of institutions has a positive impact on financial market development and provides opportunities for firms to source finance externally. Consequently larger, more active financial markets provide wider access to domestic firms, stimulate the growth of SMEs and ease the process of privatisation that dominates markets in their early stage of development (Bekaert and Harvey, 1995).

4.1 Valuation Factor construction

All valuation factors are formed from zero cost portfolios for the cross section of mean stock returns for the sample of constituent stocks taken from blue chip indices of the sixty five national markets. Following Fama and French (1992, 1993) portfolios are formed in December of each year and their equally weighted returns calculated for next 12 months. The Fama and French (1993) method first sorts all stocks into five portfolios ranked on December market capitalization and these are then sorted into a further five portfolios based on individual stock book-to-market value in December of each year. Size (SMB) zero-cost portfolios valuation factors are formed from the mean of equally weighted returns on small size portfolios minus large size portfolios and the book-to-market valuation factor (HML) is formed from the mean of equally weighted returns on five high book to market value portfolios (from second sort) minus the mean of equally weighted returns across five low book to market value portfolios (again from second sort).

The liquidity valuation factor was constructed following Liu (2006) and described in section 2.1 above.[4] Stocks were sorted into decile portfolios based on their individual liquidity measure in December of each year. The resulting liquidity valuation factor is formed from the mean monthly returns on high illiquidity portfolios minus those on low illiquidity portfolios and calculated on a monthly basis with annual rebalancing in December. The investor protection valuation factor was calculated using the same technique with stocks ranked and sorted based on the size of their individual investor protection measures.

[4] The Pastor and Stambaugh (2003) methods was not used to construct a market wide liquidity measure and the innovations in market liquidity included as the liquidity factor as this creates a conflict when related to the Liu liquidity measure (Liu, 2006).

Using portfolios as test assets that are sorted on firm characteristics has become the established approach when noise reduction in the estimated loadings is important. However, portfolios can be sensitive to the characteristic used to sort stocks (Brennan, Chordia and Subrahmanyam, 1998) and thus the analysis uses individual stocks for each market, as well as portfolios, as test assets.

4.3 Estimating Models

This literature has evolved over the past twenty years since Fama and French (1993) augmented the original CAPM (Sharpe, 1964 and Lintner, 1965) to include differences in size and accounting book to market value and the three factor model generates significant improvement in explanatory power. However, Pastor and Stambaugh (2003) first proposed the importance of including a liquidity factor to account for differences in trading activity. Liu (2006) found evidence that a two factor model of the standard CAPM plus a returns-based liquidity factor better explained the cross section of stock returns than either the standard CAPM or Fama and French (1993) and attributed differences in liquidity to changes in investor welfare. Thus, this paper compares the single market factor CAPM, the three factor size and book-to-market factor augmented model of Fama and French (1993), the two-factor liquidity augmented model of Liu (2006) and the single market factor of CAPM augmented with the investor protection measure returns based factor. We use the time series regression approach of Black, Jensen and Scholes (1972) in preference to the Fama and Macbeth (1973) cross sectional regressions that follow Fama and French (1992). Time series regressions are appropriate for two reasons. Firstly, this accommodates rational pricing of assets where variables related to average returns such as size, book-to-market value, liquidity or investor protection, must proxy sensitivity to common and non-diversifiable risk factors (Fama and French, 1993). Secondly, in a well specified asset pricing model that uses excess returns, intercepts should be indistinguishable from zero (Merton, 1973). Fama and French (1993) find the estimated intercepts provide a simple return metric to use in a test of differences between combinations of common factors and their ability to capture the cross section of average stock returns.

The standard capital asset pricing model states that excess returns on a stock or portfolio of stocks are positively related to those of the market. Formally this is stated in expected returns

$$E(r_{pt}) - r_{ft} = \beta_M \left[E(r_{mt}) - r_{ft}\right] \tag{5}$$

where r_{pt} is the returns on a portfolio p of stocks at time interval t, r_{mt} is the returns on market portfolio and r_{ft} the risk free rate. This can be rearranged and estimated by OLS regression

$$r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \varepsilon_{it} \qquad (6)$$

where α_i is the constant (Jensen alpha), β_M is market coefficient and ε_{it} is an independently identically distributed disturbance term.

Following Fama and French (1993) the one factor CAPM can be further augmented with expected returns attributable to size and book-to-market effects

$$E(r_{pt}) - r_{ft} = \beta_M \left[E(r_{mt}) - r_{ft}\right] + \beta_{SMB} E(SMB) + \beta_{HML} E(HML) \qquad (7)$$

where the additional SMB and HML terms are the size and book-to-market factors. This can be rearranged and estimated by OLS regression

$$r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \varepsilon_{it} \qquad (8)$$

Liu's (2006) two-factor liquidity augmented CAPM improved the explanatory power of the three-factor Fama and French model and takes the form

$$E(r_{pt}) - r_{ft} = \beta_M \left[E(r_{mt}) - r_{ft}\right] + \beta_{LIQ} E(ILLIQ) \qquad (9)$$

where ILLIQ is the illiquidity factor. Similarly, this can be rearranged and estimated by OLS regression

$$r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{LIQ} ILLIQ_t + \varepsilon_{it} \qquad (10)$$

where all terms are defined above.

In this paper, a two-factor CAPM augmented with the new investor protection factor to account for institutional differences across international markets is proposed and can be stated

$$E(r_{pt}) - r_{ft} = \beta_M \left[E(r_{mt}) - r_{ft}\right] + \beta_{INV-PROTECT} E(INV - PROTECT) \qquad (11)$$

where INV-PROTECT represents investor protection. This can be rearranged and estimated by OLS regression

$$r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{INV-PROTECT} INV - PROTECT_t + \varepsilon_{it} \qquad (12)$$

All CAPMs are estimated on a time series basis, following Black, Jensen and Scholes (1972).

One caveat to note is that the sample includes developed and emerging markets and this does present problems of inactive trading discussed by Dimson (1979) and Dimson and Marsh (1983). Their proposed trading inactivity correction is noted but has not been used here in favour of the existing literature such as Liu (2006), Pastor and Stambaugh (2003). A further limitation to the use of standard OLS time series is addressed in the recent literature on CAPM beta instability that results from structural breaks in the underlying data generating process (see Bollerslev and Zhang (2003); Braun et al (1995); and Lettau and Ledvigson (2001)).

4.3 Time varying parameter CAPM model

Grout and Zalewska (2006) examine the effects of regulation on UK and US stocks and Brooks et al (1998) investigate Australian industry portfolios, both using Kalman filter estimation to relax assumptions on data generating processes and incorporate a stochastic time trend to accounts for structural breaks. This method is preferred to formal switching-regression models as it is not necessary to define the exact point of the switch. Thus, whether or when there is a change in the time pattern of beta is identified by the regression results. This is particularly important in the present study given that the timing of changes is known although the exact date of implementation is less clearly defined, particularly changes in formal institutions and regulatory environments. A further benefit from Kalman filter estimation is that it is less demanding on data compared with Markov-switching models, which are generally incompatible with shorter sample periods.

The Kalman filter relies on the notion of state space in estimating the conditional constant term and market beta of the multifactor CAPM. This is an observation equation and a transition or state equation, in combination, express the structure and dynamics of a time varying system. A state space model is specified where an observation at time t is a linear combination of a set of state variables, which compose the state vector at time t. Assuming the number of state variables is m and the (m x 1) vector is θ_t then the observation equation can be represented by

$$y_t = z_t\theta_t + \mu_t, \qquad \mu_t \sim N(0,\sigma_\mu^2) \tag{13}$$

where z_t is assumed to be a known (m x 1) vector, and μ_t is the observation error, which is assumed to be normally distributed with zero mean. The set of state variables is defined from the minimum set of information from past and present data and future values of time series are completely determined by the present values of the state variables. The state space model incorporates unobserved variables within, and estimates them with the observable model by imposing a time varying structure of the CAPM beta. The conditional betas are estimated using the following observation equation

$$R_{it} = \alpha_t + \beta_{it}^{Kalman} R_{Mt} + \beta_{INV-PROTECTit}^{\quad Kalman}(INV - PROTECT) + \varepsilon_t, \quad \varepsilon_t \sim N(0,\Omega) \tag{14}$$

where R_{it} and R_{Mt} are the excess returns of individual portfolio and market portfolios at time t and ε_t is disturbance term. The exact form of the related transition equation depends on the form of stochastic process the betas are assumed to follow and in this case a simple random walk process is imposed following Brooks et al (2000). The transition equation is defined

$$\alpha_{it}^{Kalman} = \alpha_{it-1}^{Kalman} + \eta_{\alpha t}, \quad \eta_{\alpha t} \sim N(0,Q) \qquad (15)$$

$$\beta_{it}^{Kalman} = \beta_{it-1}^{Kalman} + \eta_{\beta t}, \quad \eta_{\beta t} \sim N(0,Q) \qquad (16)$$

$$\beta_{INV-PROTECTit}^{Kalman} = \beta_{INV-PROTECTit-1}^{Kalman} + \eta_{st}, \quad \eta_{st} \sim N(0,Q) \qquad (17)$$

Together equations 14 and the combination of 15 to 17 constitute a Kalman filter state space model. However, a set of prior conditional values are necessary for the Kalman filter to forecast the future value and is expressed as

$$\alpha_0^{Kalman} \sim N(\alpha_0^{Kalman}, P_0) \qquad (18)$$

$$\beta_0^{Kalman} \sim N(\beta_0^{Kalman}, P_0) \qquad (19)$$

$$\beta_{INV-PROTECT0}^{Kalman} \sim N(\beta_{INV-PROTECT0}^{Kalman}, P_0) \qquad (20)$$

This technique uses the first two observations to establish the prior conditions and then estimates the entire series recursively providing conditional estimates of $\beta_{it}^{Kalman}, \beta_{INV-PROTECTit}^{Kalman}$ and α_{it}^{Kalman}. The random walk specification imposes a filter on the data where parameters evolve smoothly and are contingent on the observations surrounding time t. The exact amount of data around time t needed to estimate the coefficients, that is, the dependent variable in state equations 15 to 17 is contingent on their variance and estimated from the data. This approach is appropriate to the measurement of time evolving risk premiums for market and investor protection factors (Grout and Zalewska, 2006).

We apply these time varying parameter techniques first to equally weighted portfolios composed of stocks from markets within six distinct geographical areas, namely Asia, South Asia, Western Europe, Eastern Europe, Middle East and Africa, Australasia, North and Latin America. Next we apply the techniques to two equally weighted portfolios composed of emerging and developed (OECD) market stocks. Finally we apply the techniques across equally weighted portfolios of stocks representing the four major legal families; English common law, and French, German and Scandinavian civil law. The first three families are further subdivided into equally weighted portfolios of emerging and developed variants of each legal family. This accounts for very real differences between developed legal systems that have undergone significant evolution since their establishment and those of emerging markets, which tend to have institutions based on a colonial legacy and are often underdeveloped and reflect structural rigidities (North (1989, 1990); Levine (1995)). It is worth noting at this stage that the CAPM beta is additive suggesting that estimating betas for a portfolio is equivalent to the estimation of the model for each individual firm and then averaging the betas. Thus, it captures a more equally weighted variance attributed to the full cross section of stocks in that sample portfolio rather than only the variance of particular large stocks as in the case of value-weighted portfolios. The formation of portfolios also has an advantage over averaging individual stock returns as it automatically provides confidence intervals for the estimated time paths in model estimation (Grout and Zalewska, 2006). This is important as large firms are better capitalized and able to ensure ownership dispersion and high levels of corporate governance measures that may be lacking in their home market or a wider portfolio (Fama and Jensen, 1983).

5. RESULTS

5.1 Summary statistics on size-liquidity sorted portfolios and factors

Table 3 reports the descriptive statistics for the equally weighted decile portfolios sorted on the relative strength of the investor protection measure, ordered from high to low.[5] There is little difference in the mean, median and standard deviations across the portfolios. However, it is notable that there is a slight increase in mean excess returns, skewness, kurtosis and Jarque-Bera statistics for the three lowest ranking portfolios compared to the three highest. These slightly higher values are expected given the higher expected returns associated with high risk in less developed countries and also these stocks returns are not normally distributed (Bekaert and Harvey (1995); Lesmond (2005)). However, the greatest departures from Normality are in the D4 portfolio where returns have a Jarque-Bera statistic over 1,000 times that of other sorted portfolios and skewness and kurtosis measures are 10 times those of other portfolios. The erratic results from portfolio D4 are likely to result from large differences in the sample stocks as this group includes portfolios from markets in Ecuador, Jamaica, Philippines, Bangladesh, Latvia, Iceland and one of the two Russian exchanges in sample, the Russian Trading System (RTS).

The most striking difference in investor protection with respect to legal origin and market development is in the second panel that shows the results of the stock sorting process. There is a clear difference between developed and emerging markets across portfolios with the former overwhelmingly dominating the high investor protection portfolios (D5 to D10) and the latter dominating the weak investor protection portfolios (D5 to D1). This confirms La Porta et al (2008), North (1991) and Levine (2005) and results from changes to the original institutions that take place following independence for many ex-colonies. The strongest support for La Porta et al (1997, 2008) comes from the dispersion of stocks in accordance to their legal origin. This suggests that stocks from English common law markets overwhelmingly dominate high investor protection portfolios (D5 to D10) with over five times as many stocks in the higher than in the

[5] Descriptive statistics for equally weighted country portfolios are available on request.

lower. A similar profile can be seen for Scandinavian civil code stocks, though to a lesser extent due to a smaller sample, while the profile for French and German civil code stocks reveals a concentration of these in progressively more weakly protected portfolios (D5 to D1). On a regional basis the highest investor protected portfolios are dominated by North American, Australasian and Western European stocks while the weakly protected portfolios are largely in the emerging markets of South Asia, Asia, the Middle East and Africa, Eastern Europe and Latin America. Overall, this evidence provides substantial support for the legal origin literature of La Porta et al (2008) and Levine (2005) and that on institutional origins by North (1991).

Table 3

5.3 Comparison of CAPM models in explaining average returns

In this section, we present the results of four models using portfolios as test assets for this sample of international markets. We compare the CAPM model (Table 4, panel 1); the Fama-French three factor model (Table 4, panel 2); the Liu two factor model (Table 4, panel 3); and the Investor Protection two factor adjusted model (Table 4, panel 4). The primary criteria for discriminating between models is the size and statistical significance of the regression constant, which is the method used in Fama and French (1993) as well as the sign and significance of the investor protection coefficient and the explanatory power (R^2).

We make the following observations. The general levels of explanatory power of all augmented models (panels 2, 3 and 4) are greater than those of the simple CAPM in panel 1. However, the improvement is often slight and in the order of 4% to 5%. The greatest difference is in the size and statistical significance of the OLS regression constant terms. These are smallest in size and least statistically significant in the two-factor Investor Protection models in panel 4 than in any of the other models in panels 1 to 3. These results alone support the importance of the role of institutions and ownership concentration in explaining the cross section of stock returns rather than trading variables such as liquidity and differences in book-to-market value (Doidge et al, 2007). However it should be noted that both the Fama-French three factor model and the two factor Liu-Liquidity model have generally higher explanatory power in all models than in the two factor Investor Protection model. As such the Investor Protection model derives its strength from the reduction in size and statistical significance of the regression constant only.

An important feature of the new investor protection model is the sign on the coefficients. These are positive in portfolios characterised by high levels of investor protection and gradually become negative in portfolios characterised by weaker quality institutions. This indicates that there are considerable differences in governance institutions between the portfolios. As investor protection and ownership dispersion increases in portfolios D7 to D10 these are offset by increases in expected returns while the opposite is found is less well protected stocks. This can be explained by noting that countries with weaker institutional governance and lower dispersed ownership have powerful alternative governance mechanisms where firm value is increased by systems of concentrated ownership and governance that results from such an ownership structure. This can be seen in studies of concentrated family ownership in North Africa and Middle East (Hearn, 2011) and Taiwan (Filatotchev et al, 2005) and by state ownership in China (da Veiga et al, 2008; and Tan et al, (2008).

Finally it is worth noting that the two models using trading data, that is Liu-Liquidity (panel 3) and Fama-French size and book-t-market value (panel 2) are more responsive in handling severe distortions from Normality in stock returns such as those in portfolio D4. In this case the explanatory power of the investor protection model in panel 4 is reduced to no more than that for the CAPM in panel 1 while the comparable explanatory power for both the Fama-French three-factor and Liu-Liquidity models is in excess of 90%. These also increase dramatically in size and statistical significance for the book-to-market and liquidity factors respectively as they better capture the increases in variation of stock returns in this portfolio. However, we argue that overall the two-factor investor protection model offers more general improvements in terms of a reduction in size and statistical significance of the regression constant compared to either of the two models using trading data, or the traditional CAPM).

Table 4

5.4 Modelling market portfolios

This section discusses estimation of the models specified above at the market level, with the results by country listed in the Appendix.[6] In almost all cases the explanatory power is incrementally increased when contrasting the two factor liquidity CAPM against the Fama and French three factor size and book-to-market value model. Further the single liquidity factor is negative and statistically significant across all individual market portfolios, with the sole exception of Ecuador where an extremely large and significant beta reflects the poor fit of the model. This is intuitively expected as risk-adjusted returns would decrease as illiquidity increases. The significance of the Liu liquidity measure is strong and persistent across markets. This is in contrast to the international comparisons by Lee (2011) who uses the Lesmond-Ogden-

[6] Full results are available from the authors on request.

Trzcinka (LOT) measure as a proxy for liquidity derived from the proportion of zero returns, and finds that either local or global liquidity is priced for very few countries.

However, the explanatory power of the two factor models with the investor protection factor is only slightly smaller than for the two-factor liquidity model in every market. Equally, while the sign on the investor protection beta varies it is not statistically significance for all models with the liquidity beta. While this initial examination provides evidence of the enhanced role of liquidity in explaining the cross section of average stock returns in relation to investor protection, the strongest support for the investor protection measure comes from the insignificant regression constant in virtually every country regression. Furthermore, there is a significant sign change on the investor protection beta across the sixty five markets. In particular those markets with weak institutional business and legal environments commonly have large, negative and statistically significant betas, suggesting that risk-premiums decrease as institutions improve. However, this supports Jensen and Meckling (1976) as in these countries ownership remains concentrated so the effects of external institutional improvement are lost unless ownership is widened and expropriation by dominant insider groups is reduced. This is exemplified in China, Russia and several Latin American and Asian countries. However, in markets with higher levels of institutional development the beta coefficient is large and positive indicating positive returns to increasing shareholder protection. In this case ownership is less concentrated, with greater proportions of free float capitalization, so the effects of higher levels of institutional development and protection of outside investors act to align incentives of incumbent insiders and minority outsiders. Notable markets for which the model offers a very poor fit are Ecuador, Jamaica and Bangladesh. This is reflected in the extremely low and sometimes negative explanatory power and general lack of significance of all asset pricing variables. These markets are small and largely inactive by world standards and are likely to be significantly segmented from the world markets causing difficulties in modelling their average returns.

5.5 Time varying parameter models

The evidence from the time varying parameter profiles of market and investor protection betas in Figures 1 to 8 shows considerable differences across geographical area portfolios[7]. While the market beta profiles are generally consistently positive and above zero inferring statistical significance of beta (Grout and Zalewska, 2006) there is considerable variation in the evolution of investor protection beta profiles. Much of the lower band of the standard error for the time

[7] Time varying profiles are formed from models where convergence was achieved. Individual country time varying profiles were also estimated and available from the authors on request.

varying profiles of Asia (Figure 2) and Eastern Europe (Figure 4) are negative suggesting no statistical significance for these investor protection betas, although the profile for Asia does reveal high volatility during the period of the recent global financial crisis from mid-2007 to mid-2010. Increased exposure of stocks to the investor protection measure are also shown in the time varying profiles of Western European (Figure 6) and North American (Figure 8) portfolios over the recent financial crisis. These have the lower limits of standard errors that are positive for much of the evolution of the profile suggesting that statistical significance and the importance of the investor protection factor in valuation of these stocks. These profiles provide some indication that the recent global financial crisis has impacted developed economies more than emerging markets. However, the changes in the time evolution of the investor protection beta is also likely to mirror improvements in institutions, regulatory design and governance, which in turn are more likely in developed markets given the better capitalised markets and their ability to respond more rapidly to changing market conditions. Thus, the new investor protection measure is more liable to pick up on changes in the background institutional environment and in particular improvements in state-level institutions that both affect investor welfare and firms' ability to access cost effective finance from external sources. Consequently, it is better placed to capture these deeper institutional factors directly than the market-orientated models of liquidity or differences in market capitalization and accounting book-to-market value.

Figures 1 to 8

6. CONCLUSIONS

This paper examines the importance of block-shareholders and levels of institutional development within an asset pricing context across a sample of sixty five major international stock markets and reflecting a broad mix of developed, emerging and developing economies. A new measure is developed explicitly incorporating the effects of both block-shareholding within listed firms and six institutional development indices capturing effects of government effectiveness, regulatory quality, rule of law, control of corruption, political stability and democratic voice and accountability that impact listed firms.

The evidence suggests that inclusion of the new investor protection measure in asset pricing models offers an improvement in capturing the cross section of average stock returns over and above the size and book-to-market value factors in the Fama and French three factor model. The inclusion of this factor also offers improvements over and above a two factor liquidity model though to a lesser extent. Differences in international firm-level governance are revealed by the sign of the investor protection factor such that those that are positive indicate stronger protection of property rights and lower likelihood of expropriation of outsiders by insiders and more dispersed ownership. These signs are negative in countries characterised by high levels of state, family and corporate block-shareholding, consistent with their national governance regimes. The findings show that the dimensions of liquidity and investor protection have implications for portfolio diversification.

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Table 1 Summary Statistics

This table presents summary statistics for the sample group markets. Datastream provides the daily prices, volume, market capitalization and free float information. Zero returns (%) refers to the average daily zero returns per month for each constituent stock across the market index. Volume is the average of the daily trading volume over each month and is stated in millions. Market capitalization is measured as of 1 January for each country and is equity market value for each firm expressed in billions of US$. The US$ market capitalization is derived using the end of month exchange rate for each country and month. Legal Origin is defined as country's legal system falling within following legal families: Scandinavian, French, or German civil code or English Common law as defined in La Porta et al (2008). Average values are presented for each of the six political, governmental, regulatory and legal institutional quality indices (developed by Kaufman et al (2009)) across all markets. Indicators 1 to 6 have been rescaled on a 0-1 scale. Square parentheses indicate median values for each variable. Indicators compiled from Kaufmann et al. (2009) "Governance Matters VIII: Governance Indicators for 1996-2008". World Bank Policy Research June 2009. These are downloadable from http://www.govindicators.org.

		Local market		**US$**	**Governance measures**						
Country	**Legal Origin**	**Zero Return (%)**	**Volume (m)**	**Mkt. Cap. (b)**	Free-Float (%)	Voice & Account.	Political Stability	Effect. Gov.	Reg. Quality	Rule of Law	Control of Corrupt
Europe Developed											
Austria	German	40.87 [22.73]	3.09 [0.39]	1.33 [0.44]	47.34 [40.00]	0.930	0.913	0.897	0.910	0.962	0.885
Belgium	French	6.19 [4.55]	13.05 [3.21]	8.50 [4.52]	59.67 [53.00]	0.936	0.849	0.879	0.859	0.858	0.774
Denmark	Scandinavian	16.20 [13.64]	7.88 [2.60]	4.05 [1.25]	65.95 [70.00]	0.983	0.896	0.964	0.955	0.974	0.964
Finland	Scandinavian	11.05 [9.09]	41.93 [6.61]	7.29 [1.24]	73.43 [81.00]	0.983	0.975	0.947	0.956	0.977	0.996
France	French	4.31 [0.00]	59.18 [30.97]	24.51 [14.31]	71.66 [77.76]	0.889	0.802	0.831	0.808	0.853	0.769
Germany	German	5.05 [2.38]	2.17 [0.98]	21.80 [11.13]	78.99 [86.00]	0.935	0.879	0.879	0.891	0.924	0.885
Greece	French	13.05 [10.00]	5.81 [2.65]	1.36 [0.32]	84.46 [100.00]	0.832	0.755	0.656	0.756	0.714	0.541
Iceland	Scandinavian	49.81 [38.1]	8.80 [7.51]	0.81 [0.21]	44.04 [38.00]	0.968	0.973	0.941	0.889	0.991	0.978
Ireland	Common	38.09 [29.55]	12.23 [2.77]	1.71 [0.24]	72.53 [81.50]	0.936	0.917	0.864	0.951	0.912	0.810
Italy	French	9.80 [5.00]	2.75 [0.73]	0.26 [0.13]	49.20 [42.00]	0.836	0.771	0.655	0.770	0.687	0.552
Luxembourg	French	22.69 [18.61]	0.59 [0.08]	8.38 [0.48]	57.80 [51.02]	0.960	0.987	0.922	0.967	0.968	0.909
Netherlands	French	17.86 [9.52]	24.87 [1.10]	7.02 [0.25]	63.76 [67.00]	0.984	0.903	0.937	0.968	0.939	0.941
Norway	Scandinavian	21.63 [9.09]	71.19 [20.70]	4.35 [1.11]	61.10 [63.00]	0.977	0.945	0.942	0.863	0.982	0.913
Portugal	French	27.31 [20.00]	40.52 [1.97]	2.71 [0.21]	51.28 [45.00]	0.922	0.895	0.743	0.817	0.798	0.714
Spain	French	29.26 [10.00]	42.47 [3.23]	4.33 [0.64]	51.30 [50.00]	0.885	0.736	0.814	0.845	0.818	0.744
Sweden	Scandinavian	10.93 [9.52]	101.23 [58.59]	9.29 [3.76]	75.44 [75.56]	0.979	0.934	0.947	0.909	0.963	0.956
Switzerland	French	7.33 [4.76]	51.50 [11.85]	15.88 [5.22]	79.72 [86.50]	0.960	0.963	0.968	0.923	0.982	0.940
UK	Common	6.70 [4.55]	284.96 [117.74]	21.14 [6.53]	68.82 [64.09]	0.927	0.807	0.907	0.958	0.928	0.901
Europe Emerging											
Bulgaria	German	48.49 [36.36]	0.38 [0.05]	0.05 [0.014]	65.79 [70.00]	0.707	0.727	0.511	0.675	0.504	0.414
Cyprus	French	36.32 [34.09]	4.96 [2.39]	1.16 [0.19]	98.36 [100.00]	0.845	0.735	0.745	0.837	0.741	0.651
Czech Rep.	German	56.58 [73.81]	5.85 [0.28]	2.07 [0.11]	40.57 [33.00]	0.818	0.829	0.698	0.785	0.716	0.528
Estonia	German	27.44 [25.00]	3.17 [0.29]	0.23 [0.07]	54.94 [49.00]	0.840	0.803	0.707	0.870	0.715	0.624
Hungary	German	12.25 [9.09]	7.89 [1.64]	1.84 [0.36]	62.06 [64.00]	0.862	0.830	0.686	0.813	0.727	0.592
Latvia	German	84.50 [100.00]	1.14 [0.05]	0.03 [0.0001]	60.01 [69.00]	0.783	0.768	0.622	0.777	0.637	0.493
Lithuania	German	42.33 [38.10]	1.21 [0.15]	0.17 [0.06]	58.74 [89.00]	0.805	0.796	0.636	0.788	0.640	0.505
Poland	German	13.71 [10.00]	25.56 [7.72]	3.86 [1.09]	55.22 [53.75]	0.823	0.766	0.618	0.724	0.659	0.532
Romania	French	21.37 [13.96]	24.39 [6.08]	1.27 [0.09]	54.47 [37.00]	0.680	0.690	0.462	0.613	0.496	0.381
Russia MICEX	French	14.84 [5.00]	1,435.08 [35.70]	11.19 [2.30]	72.24 [92.00]	0.393	0.478	0.412	0.460	0.323	0.232

Russia RTS	French	22.62 [9.52]	1064.16 [18.62]	8.03 [1.25]	75.06 [100.00]	0.393	0.478	0.412	0.460	0.323	0.232
Slovenia	German	10.34 [7.14]	0.10 [0.04]	0.87 [0.50]	81.56 [100.00]	0.857	0.875	0.707	0.756	0.753	0.660
North America											
Canada	Common	6.37 [4.55]	19.74 [8.45]	5.59 [1.85]	81.82 [87.00]	0.966	0.890	0.931	0.912	0.944	0.902
US Nasdaq 100	Common	4.31 [4.55]	170.65 [76.81]	21.37 [8.42]	64.03 [51.21]	0.902	0.783	0.877	0.907	0.902	0.818
US S&P 100	Common	4.34 [4.55]	363.66 [187.83]	66.68 [43.45]	70.97 [58.93]	0.902	0.783	0.877	0.907	0.902	0.818
Australasia											
Australia	Common	10.81 [8.70]	89.36 [48.38]	6.12 [2.48]	75.12 [81.00]	0.945	0.887	0.917	0.926	0.945	0.894
New Zealand	Common	51.97 [50.00]	5.19 [0.79]	0.27 [0.05]	77.27 [92.50]	0.988	0.941	0.897	0.945	0.960	0.971
Latin America											
Argentina	French	30.59 [18.18]	12.81 [3.91]	3.18 [0.74]	78.53 [99.00]						
Brazil	French	20.01 [13.04]	20.23 [5.45]	2.05 [0.25]	72.99 [90.00]	0.664	0.622	0.487	0.610	0.461	0.435
Chile	French	22.24 [13.64]	302.56 [11.65]	2.45 [1.31]	40.47 [38.72]	0.806	0.790	0.769	0.884	0.816	0.756
Colombia	French	82.75 [95.12]	3.78 [0.29]	0.16 [0.09]	59.15 [77.50]	0.466	0.252	0.458	0.591	0.364	0.346
Jamaica	Common	53.50 [47.62]	4.00 [1.02]	0.39 [0.33]	100.00 [100.00]	0.730	0.586	0.504	0.623	0.421	0.345
Mexico	French	27.41 [14.29]	31.15 [5.87]	1.00 [0.44]	86.30 [100.00]	0.603	0.580	0.540	0.657	0.429	0.360
Peru	French	20.98 [19.75]	4.28 [1.25]	4.31 [1.17]	53.73 [42.00]	0.543	0.456	0.430	0.631	0.384	0.379
Venezuela	French	68.68 [77.27]	0.86 [0.07]	27.99 [0.41]	98.37 [100.00]	0.464	0.433	0.331	0.372	0.271	0.208
Asia Developed											
Japan	German	10.07 [9.09]	140,554.92 [57,838.22]	17.58 [10.32]	86.69 [89.47]	0.819	0.892	0.768	0.779	0.849	0.724
Singapore	Common	33.61 [30.43]	61,005.01 [12,909.35]	1.14 [0.21]	52.76 [44.00]	0.557	0.916	0.992	0.985	0.907	0.965
Asia Emerging											
Bangladesh	Common	43.56 [45.45]	960.36 [18.80]	0.005 [0.001]	100.00 [100.00]	0.443	0.412	0.343	0.391	0.352	0.180
China Shanghai	German	15.16 [8.70]	297.81 [73.83]	3.40 [0.28]	67.77 [100.00]	0.171	0.601	0.491	0.505	0.444	0.337
China Shenzen	German	15.31 [8.70]	191.43 [81.82]	0.98 [0.29]	68.12 [88.50]	0.171	0.601	0.491	0.505	0.444	0.337
Hong Kong	Common	24.56 [17.39]	203.61 [56.94]	3.94 [0.57]	53.71 [48.00]	0.645	0.859	0.813	0.964	0.830	0.785
India	Common	9.99 [5.00]	20.05 [8.55]	2.40 [0.37]	86.50 [100.00]	0.668	0.447	0.475	0.513	0.572	0.354
Indonesia	French	34.40 [30.43]	519.27 [167.59]	4.12 [0.41]	71.65 [100.00]	0.463	0.333	0.384	0.482	0.354	0.223
Malaysia	Common	34.79 [31.82]	23.26 [6.43]	0.79 [0.28]	72.68 [100.00]	0.470	0.707	0.697	0.673	0.645	0.521
Pakistan	Common	20.18 [5.00]	65.27 [46.20]	0.85 [0.37]	99.04 [100.00]	0.287	0.264	0.361	0.436	0.342	0.245
Philippines	French	45.84 [42.86]	71.12 [8.00]	1.62 [0.15]	77.82 [100.00]	0.587	0.437	0.464	0.570	0.435	0.297
South Korea	German	11.15 [9.09]	18.39 [9.04]	3.78 [0.66]	65.35 [67.00]	0.741	0.720	0.700	0.714	0.717	0.527
Sri Lanka	Common	34.60 [30.95]	3.19 [0.49]	0.15 [0.06]	98.52 [100.00]	0.503	0.328	0.443	0.578	0.537	0.403
Taiwan	German	11.66 [8.70]	271.02 [172.82]	3.56 [1.48]	76.92 [78.00]	0.781	0.792	0.713	0.798	0.728	0.614
Thailand	Common	26.80 [22.73]	392.46 [63.62]	0.92 [0.33]	83.88 [100.00]	0.576	0.589	0.534	0.627	0.582	0.385
Middle East											
Israel	Common	8.38 [4.55]	33.09 [7.58]	3.00 [1.24]	54.14 [49.00]	0.743	0.372	0.731	0.792	0.741	0.666
Saudi Arabia	Common	13.94 [9.52]	64.46 [20.35]	3.79 [1.47]	55.69 [54.00]	0.161	0.559	0.456	0.559	0.585	0.475
Turkey	French	22.19 [18.18]	218.36 [69.70]	1.51 [0.55]	68.12 [96.00]	0.492	0.465	0.511	0.617	0.536	0.410
Africa											

Egypt	French	34.07 [22.73]	32.12 [5.86]	0.53 [0.02]	94.71 [100.00]	0.307	0.514	0.409	0.492	0.525	0.331
Kenya	Common	52.50 [50.00]	11.58 [0.47]	0.05 [0.02]	99.02 [100.00]	0.451	0.407	0.345	0.512	0.309	0.204
Morocco	French	34.27 [28.57]	0.54 [0.03]	1.46 [0.70]	89.80 [100.00]	0.439	0.585	0.472	0.548	0.539	0.417
South Africa	Common	11.42 [9.09]	48.56 [28.65]	5.65 [2.67]	65.97 [71.00]	0.768	0.581	0.667	0.675	0.563	0.540

Table 2 Spearman's Rank Correlations

Spearman rank correlation between the Stoll (2000) market control variables and the liquidity measures by market. Price, market capitalisation and volume are expressed in natural logarithms following Stoll (2000) while volatility r is the monthly average of daily price variance. Price is the average of daily prices over each month and is stated in local currency units. Volume is the average of the daily trading volume over each month stated in thousands. Market capitalization is measured as of 1 January for each country and is equity market value for each firm expressed in millions of local currency units. Four liquidity measurement variables are presented. Liu (2006) is a standardized turnover-adjusted number of zero returns over the prior month. Bid Ask spread is the average daily relative bid ask spread over the prior 1 month, where daily relative spread is the US$ denominated spread divided by average of Bid and Ask prices. At the end of each month for the maximum period of data availability for each country cross section averages for each variable are calculated over the stocks in each market. Likewise at the end of each month the cross section Spearman's rank correlation are computed and the time series average of those correlations are reported.

	Price	Volatility	Volume	MV	Book-to-Market	Bid Ask Spread	Liu	Investor Protect
Panel 1: English Common Law								
Price	1.000							
Volatility	-0.253	1.000						
Volume	0.174	0.202	1.000					
MV	**0.778**	-0.187	**0.581**	1.000				
Liu	-0.326	-0.109	-0.484	-0.312	1.000			
Bid Ask Spread	-0.714	0.203	**-0.535**	**-0.724**	0.470	1.000		
Investor Protect	0.074	-0.014	0.066	-0.051	-0.178	-0.170	1.000	
Book-to-Market	-0.443	0.152	-0.137	-0.340	0.235	0.412	-0.085	1.000
Panel 2: French Civil Code								
Price	1.000							
Volatility	-0.161	1.000						
Volume	-0.434	0.267	1.000					
MV	**0.767**	-0.093	0.062	1.000				
Liu	-0.086	-0.253	-0.265	-0.125	1.000			
Bid Ask Spread	0.213	-0.111	-0.495	-0.057	0.164	1.000		
Investor Protect	0.598	-0.167	-0.158	0.321	0.049	0.227	1.000	
Book-to-Market	0.489	-0.132	-0.310	0.122	0.074	0.487	0.368	1.000
Panel 3: German Civil Code								
	Price	Volatility	Volume	MV	Book-to-Market	Bid Ask Spread	Liu	Investor Protect
Price	1.000							
Volatility	-0.151	1.000						
Volume	-0.434	0.264	1.000					
MV	**0.767**	-0.093	0.062	1.000				
Liu	-0.048	-0.253	-0.265	-0.110	1.000			
Bid Ask Spread	0.213	-0.111	-0.495	-0.057	0.164	1.000		
Investor Protect	0.387	-0.167	-0.163	0.321	0.045	0.227	1.000	
Book-to-Market	0.203	-0.105	-0.310	0.122	0.074	0.394	0.381	1.000

	Price	Volatility	Volume	MV	Book-to-Market	Bid Ask Spread	Liu	Investor Protect
Panel 4: Scandinavian Civil Code								
Price	1.000							
Volatility	-0.158	1.000						
Volume	-0.223	0.140	1.000					
MV	0.487	-0.209	**0.538**	1.000				
Liu	0.035	-0.399	-0.369	0.118	1.000			
Bid Ask Spread	0.012	0.083	-0.249	-0.061	0.280	1.000		
Investor Protect	0.078	0.067	-0.023	-0.204	-0.390	-0.218	1.000	
Book-to-Market	-0.319	0.219	0.154	-0.053	0.028	0.207	-0.182	1.000

Table 3 Descriptive statistics for decile investor protection portfolios for period 2000 to 2010

This table presents the individual portfolio descriptive statistics and the count of the average number of stocks separated into each of the decile portfolios created through ranking and stock sorting using investor protection. For each year, t, every stock is ranked by its investor protection measure at the end of December in year t. Stocks are classified into 10 portfolios based on relative levels of investor protection, from the lowest to the highest. Equally weighted excess returns are generated for each portfolio at each month. Repeating this procedure for every year results in an overall sample set of 121 observations on equally weighted portfolios from January 2000 to January 2010. Annual rebalancing takes place annually every December. Value in parentheses is probability for Jarque-Bera statistic

	High	D9	D8	D7	D6	D5	D4	D3	D2	Low
Panel 1: Descriptive statistics										
Mean	0.01305	0.00971	0.01247	0.01348	0.01578	0.01480	0.03199	0.01550	0.01797	0.01672
Median	0.02280	0.01645	0.01919	0.01974	0.02060	0.02323	0.01991	0.02429	0.02492	0.02196
Std. Dev.	0.05788	0.05692	0.05900	0.06025	0.06659	0.06168	0.15341	0.05809	0.06048	0.05795
Skewness	-0.77	-0.67	-0.71	-0.73	-0.80	-0.94	6.49	-0.89	-1.08	-1.17
Kurtosis	5.89	5.72	6.45	5.35	6.44	8.26	53.56	5.99	7.29	7.67
Jarque-Bera	54.07 (0)	46.12 (0)	70.38 (0)	38.66 (0)	72.36 (0)	157.11 (0)	13734.94 (0)	61.21 (0)	116.22 (0)	137.52 (0)
Panel 2: Distribution of stocks										
Developed	313.34	282.98	210.28	164.96	108.01	120.59	88.05	120.50	102.79	71.42
Emerging	1.17	47.44	96.86	154.64	210.99	194.64	208.31	175.50	188.71	232.62
English Common Law	231.27	163.75	149.27	131.43	182.31	120.12	111.73	121.06	92.67	49.33
Scandinavian Civil Code	22.07	20.07	17.04	16.61	9.02	7.38	5.02	8.49	5.10	2.26
German Civil Code	17.44	80.85	74.28	60.42	42.54	77.38	83.79	60.09	86.06	92.07
French Civil Code	49.08	74.63	74.21	83.38	76.22	115.30	109.26	114.77	114.15	149.98
North America	106.06	76.38	64.06	41.62	29.73	22.60	16.75	20.76	15.08	2.10
Western Europe	108.69	118.58	96.33	88.72	58.31	67.92	51.77	74.74	64.31	57.09
Eastern Europe	0.79	12.83	26.83	10.97	9.17	10.52	25.67	25.79	30.12	49.26
Middle East and Africa	0.00	0.30	5.57	14.10	35.43	27.84	30.99	26.59	26.34	28.61
South Asia	0.00	0.00	0.00	2.36	52.45	29.96	26.69	25.91	8.88	6.94
Asia	17.40	93.44	103.77	133.70	168.11	167.16	153.99	145.93	152.70	127.38
Australasia	86.54	36.25	24.38	18.87	8.88	11.46	7.10	7.26	5.70	4.09
Latin America	0.38	1.53	0.69	21.57	20.12	28.67	32.89	30.10	26.59	42.40
Overall	319.86	347.35	322.24	337.79	339.31	338.73	320.21	332.40	322.16	313.11

Table 4 Time series regressions using equally weighted monthly contemporaneous market excess returns for decile portfolios formed on investor protection for period January 2000 – January 2010

This table contrasts the performance of the one factor CAPM with the three-factor model of Fama and French (1993), the two-factor model of Liu (2006) with a two-factor investor protection model including Market and Investor Protection valuation factors. Market returns are the equally weighted excess returns across markets. Size and Book to Market Value factors follow Fama and French (1993) while liquidity valuation factor (ILLIQ) follows Liu (2006). The Investor Protection measure is constructed by ranking all stocks by their level of investor protection at the end of December in each year. Stocks are classified into 10 portfolios based on relative levels of investor protection, from the lowest to the highest. Equally weighted excess returns are generated for each portfolio at each month. Repeating this procedure for every year results in an overall sample of 121 observations on equally weighted portfolios from January 2000 to January 2010. Annual rebalancing takes place annually every December. SMB and HML are tje size and book to market value factors of Fama and French (1993) while ILLIQ is the liquidity factor of Liu (2006). INV-PROTECT denotes the investor protection factor.

Panel 1 presents parameter estimates of the capital asset pricing model, CAPM:

$$r_{it} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \varepsilon_{it}$$

Panel 2 presents parameter estimates of the three-factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \varepsilon_{it}$$

Panel 3 presents parameter estimates of the two-factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{LIQ} ILLIQ_t + \varepsilon_{it}$$

Panel 4 presents parameter estimates of the two-factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{\text{INV-PROTECT}} \text{INV-PROTECT}_t + \varepsilon_{it}$$

where r_{it} is the return of portfolio i in month t, r_{ft} is the 5-year US Treasury yield as risk free rate for month t. Numbers in parentheses are t-statistics.

	High	D9	D8	D7	D6	D5	D4	D3	D2	Low
Panel 1: CAPM-adjusted performance										
α_i	-0.0014	-0.0047	-0.0026	-0.0013	-0.0011	-0.0007	0.0074	0.0005	0.0027	0.0023
	(-0.71)	(-2.80)	(-1.69)	(-0.63)	(-0.57)	(-0.33)	(1.04)	(0.30)	(1.28)	(1.00)
$\hat{\beta}_M$	0.9059	0.9066	0.9418	0.9240	1.0603	0.9697	1.5324	0.9330	0.9501	0.8984
	(18.74)	(20.46)	(18.99)	(16.93)	(21.18)	(13.34)	(3.45)	(22.52)	(16.84)	(14.08)
Adj R^2	0.8576	0.8883	0.8924	0.8231	0.8877	0.8655	0.3443	0.9035	0.8641	0.8412
Panel 2: Fama-French three factor-adjusted performance										
α_i	0.0004	-0.0018	-0.0010	0.0008	0.0010	0.0006	-0.0079	0.0020	0.0040	0.0033
	(0.24)	(-1.20)	(-0.83)	(0.52)	(0.51)	(0.29)	(-1.22)	(1.09)	(1.70)	(1.37)
$\hat{\beta}_M$	0.8961	0.8897	0.9340	0.9132	1.0487	0.9633	1.6082	0.9257	0.9438	0.8942
	(40.63)	(41.74)	(53.63)	(30.07)	(38.09)	(25.13)	(13.82)	(30.91)	(23.27)	(21.22)
$\hat{\beta}_{SMB}$	0.0070	0.0564	-0.0061	-0.0150	-0.0005	-0.0257	0.1080	-0.0056	-0.0121	-0.0392
	(0.48)	(2.44)	(-0.22)	(-0.61)	(-0.02)	(-0.89)	(0.58)	(-0.19)	(-0.24)	(-0.86)
$\hat{\beta}_{HML}$	0.1528	0.1666	0.1444	0.2149	0.1971	0.1640	-1.5154	0.1350	0.1328	0.1540
	(8.10)	(8.00)	(3.96)	(11.88)	(11.05)	(5.53)	(-8.01)	(4.49)	(2.53)	(3.34)
Adj R^2	0.8909	0.9265	0.9232	0.8908	0.9322	0.9054	0.8758	0.9312	0.8890	0.8846

	High	D9	D8	D7	D6	D5	D4	D3	D2	Low
Panel 3: Liu two factor-adjusted performance										
α_i	-0.0002	-0.0035	-0.0012	0.0002	0.0004	0.0009	-0.0060	0.0018	0.0042	0.0038
	(-0.09)	(-2.11)	(-0.83)	(0.13)	(0.20)	(0.47)	(-1.76)	(1.02)	(2.08)	(1.83)
$\hat{\beta}_M$	0.9287	0.9290	0.9675	0.9526	1.0894	0.9994	1.2849	0.9559	0.9768	0.9268
	(36.18)	(37.27)	(56.51)	(30.92)	(43.49)	(27.11)	(23.00)	(34.98)	(29.27)	(26.59)
$\hat{\beta}_{LIQ}$	-0.0773	-0.0763	-0.0873	-0.0973	-0.0990	-0.1009	0.8417	-0.0781	-0.0908	-0.0965
	(-16.24)	(-11.29)	(-16.44)	(-9.35)	(-15.44)	(-9.38)	(12.84)	(-10.88)	(-10.87)	(-6.75)
Adj R^2	0.8925	0.9238	0.9359	0.8745	0.9315	0.9186	0.9486	0.9393	0.9087	0.8960
Panel 4: Investor Protection two factor-adjusted performance										
α_i	0.0018	-0.0034	-0.0019	-0.0011	-0.0014	-0.0013	0.0107	-0.0007	5.15E-05	-0.0013
	(1.16)	(-1.93)	(-1.21)	(-0.49)	(-0.61)	(-0.52)	(1.13)	(-0.40)	(0.02)	(-0.88)
$\hat{\beta}_M$	0.9018	0.9049	0.9410	0.9238	1.0605	0.9705	1.5283	0.9346	0.9535	0.9031
	(18.05)	(21.08)	(18.85)	(17.01)	(21.51)	(13.59)	(3.51)	(24.49)	(20.60)	(18.19)
$\hat{\beta}_{Inv-Protect}$	0.4686	0.1915	0.0937	0.0292	-0.0321	-0.0872	0.4724	-0.1828	-0.3871	-0.5322
	(6.66)	(2.94)	(1.30)	(0.31)	(-0.40)	(-0.85)	(0.91)	(-3.01)	(-4.21)	(-7.60)
Adj R^2	0.9135	0.8973	0.8937	0.8218	0.8870	0.8661	0.3470	0.9113	0.8986	0.9133

Figure 1. Time varying market beta for Asia

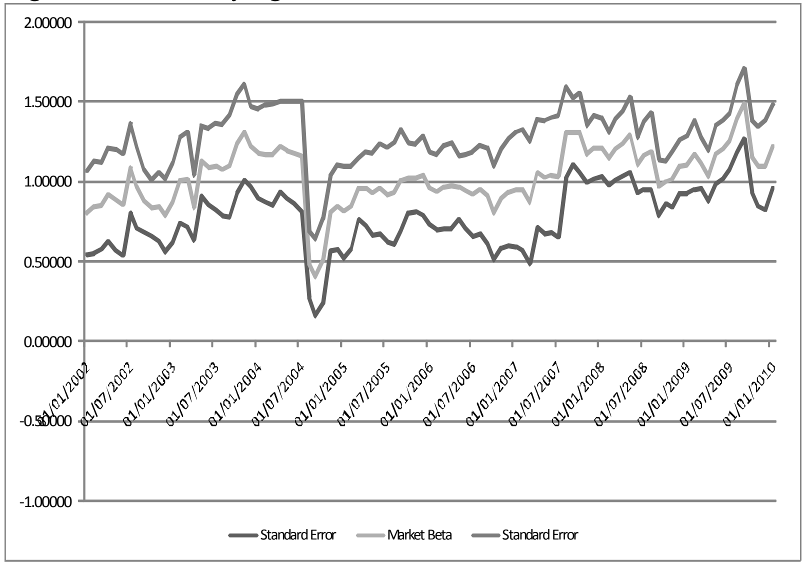


Figure 2. Time varying investor protection beta for Asia

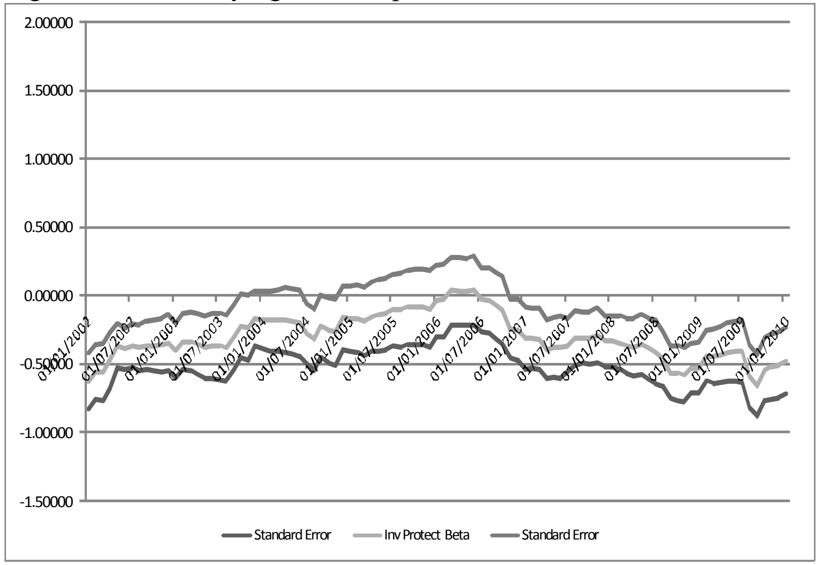


Figure 3. Time varying market beta for Eastern Europe

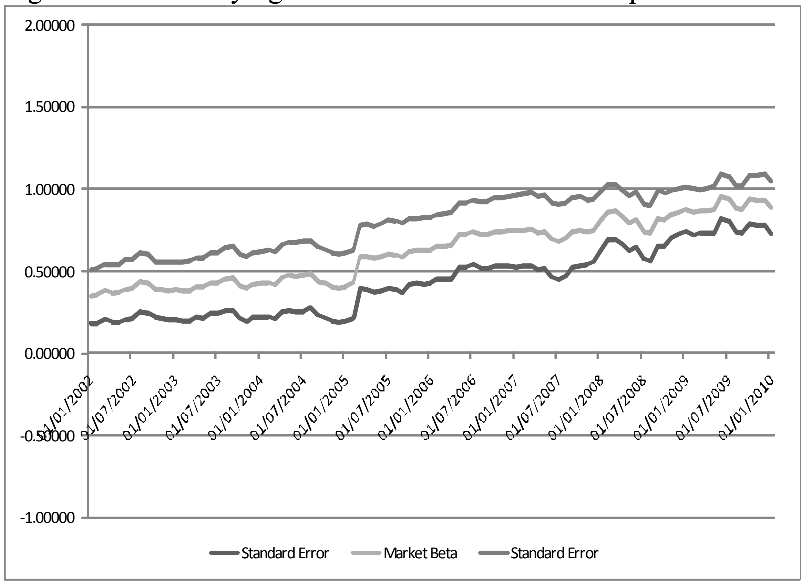


Figure 4. Time varying investor protection beta for Eastern Europe

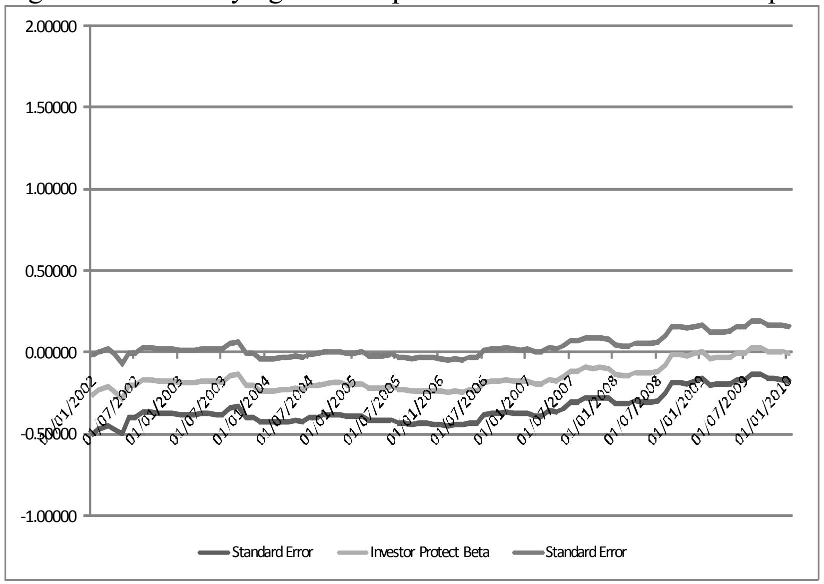


Figure 5. Time varying market beta for Western Europe

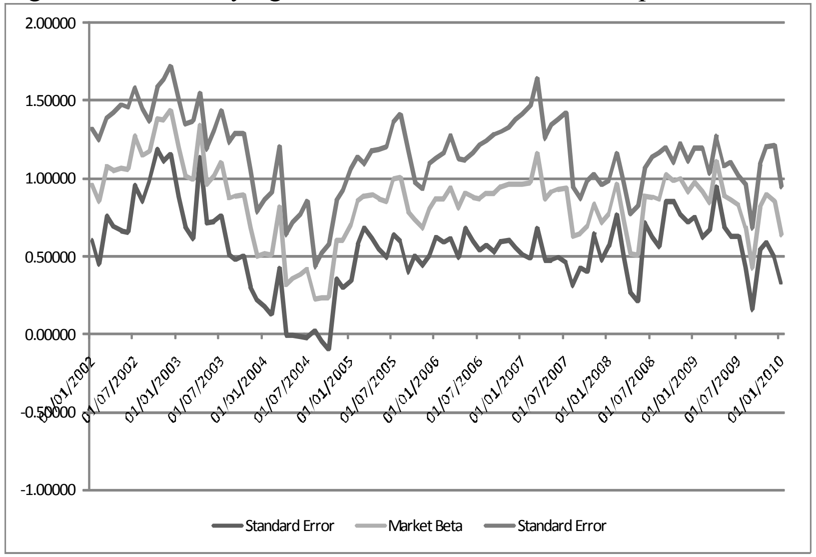


Figure 6. Time varying investor protection beta for Western Europe

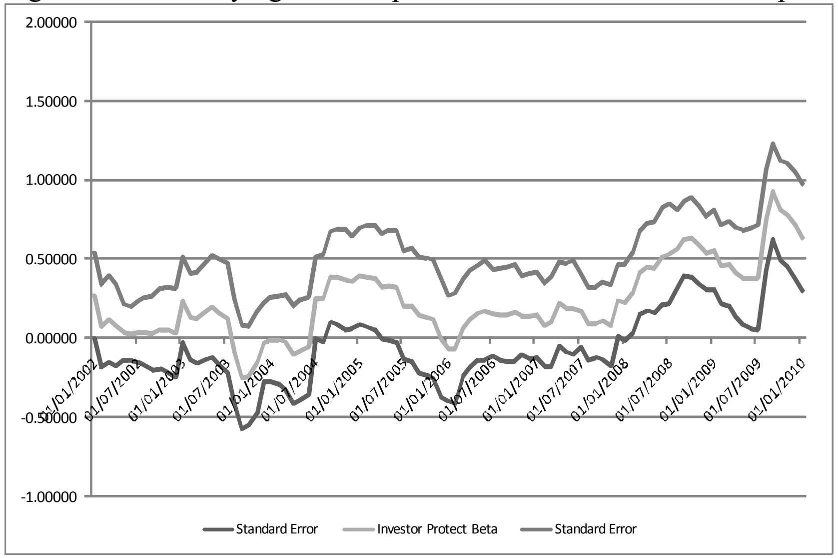


Figure 7. Time varying market beta for North America

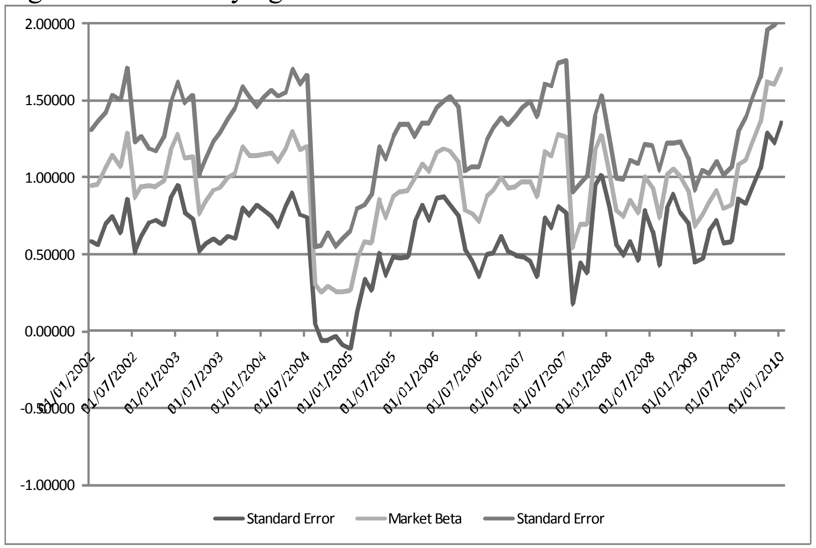
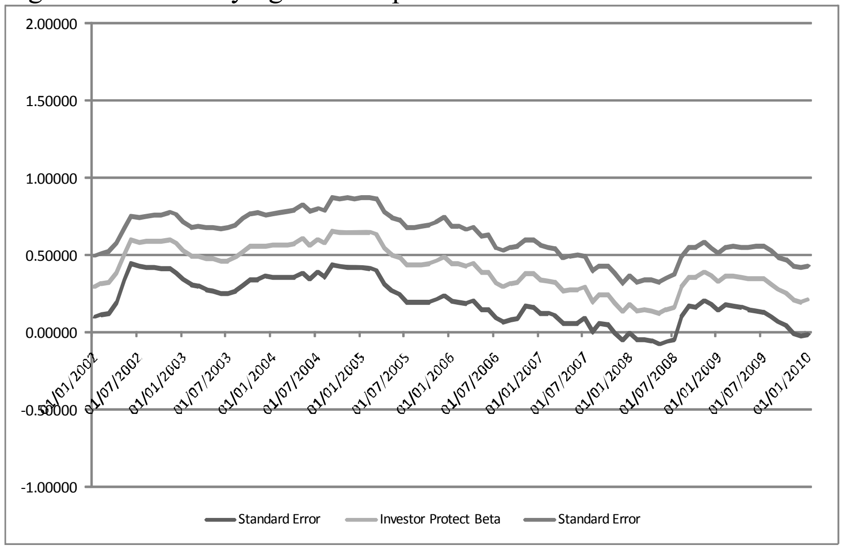


Figure 8. Time varying investor protection beta for North America



Appendix Table 1. Time series regression for equally weighted average country returns for period January 2000 to January 2010

This table contrasts the performance of the one factor CAPM with the three-factor model of Fama and French (1993), the two-factor model of Liu (2006) with a two-factor investor protection model including Market and Investor Protection valuation factors. Market returns are the equally weighted excess returns across markets. Size and Book to Market Value factors follow Fama and French (1993) while liquidity valuation factor (ILLIQ) follows Liu (2006). The Investor Protection measure is constructed by ranking all stocks by their level of investor protection at the end of December in each year. Stocks are classified into 10 portfolios based on relative levels of investor protection, from the lowest to the highest. Equally weighted excess returns are generated for each portfolio at each month. Repeating this procedure for every year results in an overall sample of 121 observations on equally weighted portfolios from January 2000 to January 2010. Annual rebalancing takes place annually every December. SMB and HML are the size and book to market value factors of Fama and French (1993) while ILLIQ is the liquidity factor of Liu (2006). INV-PROTECT denotes the investor protection factor.

Panel 1 presents parameter estimates of the three-factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \varepsilon_{it}$$

Panel 2 presents parameter estimates of the two-factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{LIQ} ILLIQ_t + \varepsilon_{it}$$

Panel 3 presents parameter estimates of the two-factor adjusted CAPM model:

$$r_{it} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{\text{INV-PROTECT}} \text{INV - PROTECT}_t + \varepsilon_{it}$$

where r_{it} is the return of portfolio i in month t, r_{ft} is the 5-year US Treasury yield as risk free rate for month t. Numbers in parentheses are t-statistics. Numbers in bold indicate statistical significance at least at 10 % level.

Explanatory Variables	$\hat{\alpha}$	$\hat{\beta}_M$	$\hat{\beta}_{SMB}$	$\hat{\beta}_{HML}$	$\hat{\beta}_{LIQ}$	$\hat{\beta}_{INV-PROTECT}$	**Adj R^2**
Panel 1: Europe Developed							
Austria	-0.0046 (-1.45)	0.7110 (11.89)	-0.0279 (-0.57)	0.1356 (2.87)			0.6123
	-0.0042 (-1.48)	0.7416 (13.00)			**-0.0887 (-6.57)**		0.6304
	-0.0049 (-1.56)	0.7146 (8.53)				0.1062 (0.96)	0.5817
Belgium	-0.0034 (-1.28)	0.7777 (11.75)	-0.0026 (-0.06)	0.1793 (4.17)			0.6329
	-0.0040 (-1.31)	0.8152 (12.25)			**-0.0926 (-4.56)**		0.6371
	-0.0029 (-0.87)	0.7847 (8.54)				**0.3659 (3.08)**	0.6214
Denmark	0.0041 (0.94)	0.9213 (18.43)	0.0388 (1.49)	0.2006 (8.74)			0.6841
	0.0027 (0.66)	0.9679 (19.02)			**-0.1020 (-7.81)**		0.6910
	0.0025 (0.53)	0.9361 (13.19)				**0.2006 (1.55)**	0.6538
Finland	-0.0004 (-0.14)	1.0113 (21.45)	0.0882 (3.05)	0.1484 (4.31)			0.7508
	-0.0025 (-0.97)	1.0528 (21.56)			**-0.0741 (-3.52)**		0.7531
	-0.0007 (-0.21)	1.0272 (16.70)				**0.4362 (4.02)**	0.7639
France	-0.0054 (-1.94)	0.9877 (18.23)	0.1322 (2.14)	0.2133 (3.80)			0.7648
	-0.0085 (-3.02)	1.0488 (17.76)			**-0.1091 (-4.52)**		0.7691
	-0.0075 (-2.69)	1.0132 (14.49)				**0.3922 (3.72)**	0.7476
Germany	-0.0033 (-1.08)	1.0328 (15.98)	0.1573 (2.22)	0.2702 (4.23)			0.7522
	-0.0072 (-2.24)	1.1064 (15.31)			**-0.1296 (-4.86)**		0.7505
	-0.0072 (-2.14)	1.0657 (12.61)				**0.3004 (2.58)**	0.7050
Greece	-0.0149 (-2.79)	1.1751 (13.76)	0.0491 (0.88)	0.242 (4.33)			0.5054
	-0.0163 (-3.02)	1.2371 (14.60)			**-0.1418 (-7.38)**		0.5223
	-0.0185 (-3.26)	1.1953 (9.58)				0.0135 (0.06)	0.4825
Iceland	-0.0046 (-0.36)	0.7360 (3.86)	-0.201 (-0.87)	-0.1453 (-0.48)			0.1175

	0.0020 (0.16)	0.7245 (3.67)			**-0.0753 (-1.86)**		0.1175
	0.0042 (0.29)	0.6981 (3.30)				**0.4890 (1.28)**	0.1242
Ireland	-0.0045 (-1.09)	1.0509 (12.19)	-0.0482 (-1.21)	0.2294 (3.70)			0.7077
	-0.0046 (-1.08)	1.0881 (10.36)			**-0.1011 (-4.78)**		0.6899
	-0.0042 (-0.99)	1.0559 (8.42)				**0.2838 (2.29)**	0.6669
Italy	-0.0102 (-2.45)	0.9435 (21.02)	-0.0038 (-0.08)	0.1627 (3.22)			0.6648
	-0.0099 (-2.67)	0.9907 (21.72)			**-0.1295 (-8.12)**		0.7080
	-0.0111 (-2.72)	0.9514 (13.42)				0.1352 (0.87)	0.6423
Luxembourg	-0.0091 (-2.23)	1.0957 (14.02)	-0.0079 (-0.14)	0.1930 (2.47)			0.6899
	-0.0090 (-2.33)	1.1452 (15.31)			**-0.1333 (-8.40)**		0.7174
	-0.0092 (-2.06)	1.1035 (10.34)				**0.2854 (1.91)**	0.6724
Netherlands	-0.0080 (-2.80)	0.9892 (23.80)	0.0308 (0.82)	0.1713 (3.7)			0.7619
	-0.0087 (-3.18)	1.0376 (23.36)			**-0.1170 (-8.35)**		0.7927
	-0.0085 (-2.74)	1.0005 (16.20)				**0.2976 (2.64)**	0.7507
Norway	-0.0047 (-0.90)	1.1471 (13.95)	0.1457 (1.95)	0.1989 (2.44)			0.6403
	-0.0075 (-1.47)	1.2180 (13.65)			**-0.1394 (-4.31)**		0.6661
	-0.0081 (-1.44)	1.1750 (13.16)				**0.2280 (1.42)**	0.6215
Portugal	-0.0060 (-1.39)	0.8014 (21.43)	-0.0122 (-0.20)	0.1348 (2.03)			0.5695
	-0.0054 (-1.35)	0.8433 (21.80)			**-0.1206 (-8.49)**		0.6199
	-0.0056 (-1.18)	0.8057 (13.07)				**0.2488 (1.72)**	0.5615
Spain	-0.0017 (-0.67)	0.6728 (20.26)	0.0246 (0.94)	0.1102 (3.79)			0.6426
	-0.0024 (-0.92)	0.7027 (19.75)			**-0.0693 (-7.59)**		0.6611
	-0.0028 (-1.11)	0.6815 (16.71)				0.0928 (0.79)	0.6265
Sweden	-0.0035 (-1.17)	1.0996 (25.31)	0.1379 (2.78)	0.1661 (3.83)			0.7522
	-0.0067 (-2.42)	1.1496 (19.71)			**-0.0785 (-2.71)**		0.748
	-0.0064 (-2.22)	1.1245 (21.70)				**0.2335 (2.74)**	0.7353
Switzerland	-0.0019 (-0.52)	0.8359 (14.10)	0.0723 (1.31)	0.2332 (4.51)			0.7064
	-0.0039 (-1.16)	0.8948 (13.56)			**-0.1232 (-8.67)**		0.7227
	-0.0027 (-0.79)	0.8546 (12.13)				**0.4559 (3.38)**	0.6909
UK	-0.0012 (-0.54)	0.7849 (27.55)	0.0912 (2.21)	0.1969 (4.65)			0.8111
	-0.0037 (-1.68)	0.8344 (33.86)			**-0.0901 (-6.17)**		0.8066
	-0.0040 (-1.57)	0.8064 (16.38)				**0.1707 (2.48)**	0.7606
Panel 2: Europe Emerging							
Bulgaria	0.0092 (0.63)	1.1339 (6.37)	-0.4896 (-2.13)	-0.2334 (-0.91)			0.2414
	0.0214 (1.54)	1.0669 (5.32)			-0.0262 (-0.31)		0.1900
	0.0214 (1.58)	1.0586 (5.07)				0.0626 (0.18)	0.1894
Cyprus	-0.0243 (-2.54)	1.2903 (11.42)	0.1517 (2.23)	-0.0070 (-0.11)			0.4124
	-0.0262 (-2.70)	1.3226 (10.28)			-0.0470 (-0.89)		0.4119
	-0.0264 (-2.85)	1.3080 (10.72)				0.0878 (0.25)	0.4092
Czech Rep.	0.0071 (1.26)	0.6954 (8.55)	-0.0706 (-1.22)	0.1679 (2.27)			0.4301
	0.0082 (1.44)	0.7277 (8.43)			**-0.1063 (-4.65)**		0.4380
	0.0078 (1.37)	0.6949 (5.82)				0.1822 (0.98)	0.3915
Estonia	0.0061 (0.56)	0.9082 (4.62)	-0.1568 (-1.16)	0.1343 (1.00)			0.2608

	0.0090 (0.86)	0.9240 (4.56)			**-0.0933 (-2.57)**		0.2562
	0.0085 (0.82)	0.8953 (4.17)				0.1474 (0.66)	0.2420
Hungary	-0.0027 (-0.41)	1.068 (13.63)	-0.1121 (-2.09)	0.1804 (3.01)			0.4855
	-0.0005 (-0.08)	1.1041 (13.66)			**-0.1341 (-3.86)**		0.4965
	-0.0028 (-0.36)	1.0648 (9.91)				-0.0122 (-0.05)	0.4540
Latvia	0.0036 (0.68)	0.3706 (5.31)	-0.0573 (-1.72)	0.1145 (2.81)			0.1855
	0.0038 (0.68)	0.3799 (5.13)			**-0.0328 (-1.59)**		0.1619
	0.0048 (0.77)	0.3684 (4.67)				0.2121 (1.12)	0.1679
Lithuania	0.0064 (0.73)	0.7919 (4.88)	-0.1962 (-1.88)	0.1386 (1.28)			0.3412
	0.0096 (1.11)	0.7959 (4.43)			**-0.0692 (-1.44)**		0.3037
	0.0078 (0.93)	0.7765 (4.22)				-0.0984 (-0.54)	0.2911
Poland	0.0024 (0.38)	1.2155 (15.28)	-0.0087 (-0.11)	0.1468 (1.67)			0.4667
	0.003 (0.49)	1.2627 (15.74)			**-0.1349 (-5.26)**		0.4937
	0.0045 (0.69)	1.2185 (13.04)				**0.5244 (2.53)**	0.4821
Romania	0.0142 (1.09)	1.1874 (5.23)	0.0230 (0.13)	0.3366 (2.17)			0.2823
	0.0119 (0.96)	1.2472 (5.16)			**-0.1263 (-1.66)**		0.2754
	0.0058 (0.47)	1.2152 (4.92)				**-0.5865 (-1.94)**	0.2742
Russia MICEX	0.0098 (1.18)	1.3096 (11.09)	-0.0707 (-1.86)	0.2003 (3.82)			0.5014
	0.0108 (1.34)	1.3492 (11.1)			**-0.1247 (-4.22)**		0.508
	0.0073 (0.88)	1.3144 (8.72)				-0.2102 (-0.85)	0.4855
Russia RTS	0.0303 (1.63)	1.1452 (4.17)	-0.5442 (-1.02)	0.2981 (1.00)			0.0855
	0.0372 (1.58)	1.0997 (3.14)			-0.0160 (-0.12)		0.0518
	0.0359 (1.44)	1.0963 (3.3)				-0.1521 (-0.50)	0.052
Slovenija	-0.0044 (-0.51)	0.7134 (5.16)	-0.1824 (-1.95)	0.0496 (0.53)			0.3691
	-0.0009 (-0.11)	0.7050 (4.87)			-0.0389 (-1.02)		0.3363
	-0.0043 (-0.51)	0.6970 (5.08)				**-0.3883 (-1.91)**	0.3567
Panel 3: North America							
Canada	0.0095 (2.89)	0.9716 (17.45)	0.0180 (0.41)	0.1342 (2.90)			0.7376
	0.0088 (2.79)	1.0046 (18.86)			**-0.0777 (-5.09)**		0.7473
	0.0107 (3.72)	0.9778 (12.67)				**0.4439 (3.94)**	0.7579
United States S&P 100	-0.0016 (-0.55)	0.6116 (13.92)	0.1394 (1.95)	0.1492 (2.11)			0.6873
	-0.0050 (-1.75)	0.6549 (13.82)			**-0.0586 (-2.60)**		0.6565
	-0.0041 (-1.61)	0.6354 (14.9)				**0.2671 (3.07)**	0.6533
United States NASDAQ 100	0.0041 (1.14)	0.8639 (11.46)	0.2807 (3.67)	0.0469 (0.50)			0.5703
	-0.0007 (-0.18)	0.9187 (9.11)			-0.0579 (-0.92)		0.5182
	0.0002 (0.04)	0.8993 (9.80)				**0.2622 (1.65)**	0.5167
Panel 4: Australasia							
Australia	0.0024 (0.84)	1.0337 (17.37)	0.0358 (1.32)	0.1513 (4.48)			0.7879
	0.0009 (0.3)	1.065 (17.86)			**-0.0611 (-6.39)**		0.7833
	0.0017 (0.56)	1.0448 (14.7)				**0.2461 (2.42)**	0.7787
New Zealand	-0.0042 (-1.14)	0.7817 (13.89)	-0.0450 (-1.29)	0.1180 (3.11)			0.5756
	-0.0042 (-1.14)	0.7817 (13.89)			**-0.0450 (-1.29)**		0.5862
	-0.0025 (-0.62)	0.7803 (13.42)				**0.3114 (2.35)**	0.5745

Panel 5: Latin America							
Argentina	-0.0047 (-0.35)	0.9912 (7.47)	-0.0741 (-1.15)	0.1959 (2.20)			0.2443
	-0.0039 (-0.3)	1.0254 (7.43)			**-0.1083 (-3.11)**		0.2477
	-0.0099 (-0.69)	0.9990 (7.94)				**-0.6165 (-1.35)**	0.2543
Brazil	0.0033 (0.54)	1.3313 (10.14)	-0.0264 (-0.27)	0.1970 (2.22)			0.5609
	0.0039 (0.65)	1.3828 (9.9)			**-0.1469 (-2.88)**		0.5832
	0.0021 (0.34)	1.3388 (9.51)				0.0910 (0.46)	0.5454
Chile	-0.0014 (-0.38)	0.8245 (12.88)	-0.1320 (-3.37)	0.0340 (0.71)			0.5352
	0.0016 (0.41)	0.8278 (11.53)			**-0.0604 (-1.31)**		0.5302
	-3.11E-05 (-0.01)	0.8108 (10.21)				-0.0923 (-0.54)	0.5152
Colombia	0.0096 (1.31)	0.7164 (10.57)	-0.1168 (-4.42)	0.1485 (4.94)			0.3474
	0.0112 (1.6)	0.7319 (9.88)			**-0.0726 (-1.86)**		0.3274
	0.0093 (1.41)	0.7115 (7.59)				-0.1061 (-0.46)	0.3099
Ecuador	-0.3196 (-1.05)	31.3607 (5.39)	9.6475 (1.05)	-72.0886 (-7.61)			0.8417
	-0.3245 (-1.98)	16.3572 (5.35)			**40.6842 (9.92)**		0.9309
	0.5491 (1.26)	28.0444 (1.29)				**31.229 (1.28)**	0.0797
Jamaica	0.0085 (0.72)	0.0672 (0.58)	0.0362 (0.69)	0.1414 (2.61)			-0.016
	0.0067 (0.61)	0.0878 (0.73)			-0.0257 (-0.91)		-0.0143
	0.0053 (0.53)	0.0822 (0.68)				-0.1179 (-0.54)	-0.0145
Mexico	0.0013 (0.26)	1.1957 (13.58)	-0.0268 (-0.78)	0.3325 (7.55)			0.6191
	0.0009 (0.17)	1.2638 (13.97)			**-0.1764 (-8.85)**		0.6242
	-0.0018 (-0.33)	1.2118 (8.80)				0.0218 (0.09)	0.5553
Peru	0.0084 (0.99)	1.1873 (11.54)	-0.2064 (-2.3)	0.3093 (3.78)			0.4289
	0.0116 (1.4)	1.2339 (10.29)			**-0.184 (-3.34)**		0.4137
	0.0047 (0.62)	1.1848 (6.61)				**-0.5696 (-2.17)**	0.3830
Venezuela	0.0177 (1.47)	0.3498 (1.79)	0.0208 (0.17)	0.1624 (1.26)			0.0120
	0.0159 (1.37)	0.3699 (2.02)			-0.0270 (-0.61)		0.0133
	0.0163 (1.31)	0.3609 (2.05)				0.1185 (0.31)	0.0131
Panel 6: Asia Developed							
Japan	-0.0058 (-1.49)	0.6323 (14.86)	0.0747 (2.26)	0.0992 (2.33)			0.4651
	-0.0080 (-2.22)	0.6519 (14.01)			-0.0152 (-0.99)		0.4539
	-0.0071 (-1.83)	0.6459 (15.14)				**0.1687 (1.39)**	0.4603
Singapore	-0.0047 (-1.32)	1.2762 (12.7)	-0.0514 (-1.16)	0.3141 (6.24)			0.7376
	-0.0054 (-1.47)	1.3241 (11.58)			**-0.1217 (-6.72)**		0.7064
	-0.0083 (-2.11)	1.2894 (9.33)				-0.1274 (-0.74)	0.6732
Panel 7: Asia Emerging							
Bangladesh	0.0232 (2.33)	0.0491 (0.32)	-0.0547 (-0.57)	-0.1221 (-1.17)			-0.0147
	0.0255 (2.54)	0.0333 (0.21)			0.0062 (0.25)		-0.0162
	0.0249 (2.69)	0.036 (0.24)				-0.1017 (-0.35)	-0.015
China Shanghai	0.0064 (0.61)	0.6454 (4.06)	-0.1026 (-0.55)	-0.0503 (-0.27)			0.1334
	0.0103 (0.98)	0.6555 (4.59)			**-0.0878 (-3.58)**		0.1522
	-0.0035 (-0.41)	0.6453 (6.12)				**-1.7692 (-5.40)**	0.4292
China Shenzhen	0.0091 (0.85)	0.6641 (4.12)	-0.0913 (-0.49)	-0.0200 (-0.11)			0.1355

	0.0127 (1.19)	0.6821 (4.7)			**-0.1040 (-4.07)**		0.1613
	-0.0018 (-0.19)	0.6676 (6.34)				**-1.8217 (-5.62)**	0.4362
Hong Kong	-0.0016 (-0.42)	1.0961 (19.62)	0.0242 (0.50)	0.1624 (2.86)			0.6786
	-0.0026 (-0.66)	1.133 (19.76)			**-0.0828 (-5.27)**		0.6832
	-0.0043 (-1.13)	1.1091 (17.14)				-0.056 (-0.55)	0.6621
India	0.0105 (1.56)	1.4097 (15.25)	-0.1080 (-1.89)	0.3034 (5.68)			0.6181
	0.011 (1.68)	1.4511 (14.19)			**-0.1258 (-2.89)**		0.5936
	0.0086 (1.31)	1.4146 (11.49)				-0.0576 (-0.29)	0.5676
Indonesia	0.0041 (0.42)	1.3762 (7.95)	-0.1468 (-2.62)	0.5683 (9.12)			0.5078
	0.0042 (0.43)	1.4627 (7.90)			**-0.2425 (-3.98)**		0.4587
	-0.0026 (-0.25)	1.3950 (5.76)				**-0.4097 (-1.49)**	0.3972
Malaysia	-0.0033 (-0.72)	0.636 (11.62)	-0.0440 (-0.75)	0.1335 (1.62)			0.4147
	-0.0027 (-0.62)	0.6629 (13.13)			**-0.0837 (-7.23)**		0.4246
	-0.0064 (-1.36)	0.6413 (10.78)				**-0.3370 (-1.82)**	0.4127
Pakistan	0.0148 (1.55)	0.5462 (3.84)	-0.1153 (-0.79)	-0.0492 (-0.32)			0.0757
	0.0181 (1.95)	0.5395 (3.91)			-0.0360 (-1.13)		0.0801
	0.0171 (1.68)	0.5294 (4.12)				-0.0585 (-0.17)	0.0779
Philippines	0.0189 (1.49)	0.7458 (3.88)	-0.4072 (-1.56)	0.4143 (1.86)			0.1587
	0.023 (1.65)	0.7427 (3.87)			-0.0790 (-1.03)		0.0687
	0.0186 (1.26)	0.7233 (3.75)				**-0.4439 (-1.47)**	0.0707
South Korea	0.0025 (0.35)	1.3416 (11.47)	0.0831 (0.7)	0.2585 (2.11)			0.6111
	-0.0005 (-0.08)	1.3957 (12.54)			**-0.0968 (-3.66)**		0.6035
	-0.0032 (-0.49)	1.3687 (12.83)				-0.1663 (-0.64)	0.5885
Sri Lanka	0.0204 (2.1)	0.4418 (3.37)	-0.0599 (-0.69)	0.2324 (2.35)			0.0679
	0.0208 (2.24)	0.4834 (3.51)			**-0.1206 (-4.54)**		0.0709
	0.0192 (1.93)	0.4475 (2.8)				0.0513 (0.21)	0.0455
Taiwan	-0.0061 (-1.03)	0.9784 (12.24)	-0.1608 (-3.21)	0.204 (3.58)			0.4534
	-0.0033 (-0.57)	1.0102 (12.07)			**-0.1352 (-2.17)**		0.4458
	-0.0064 (-1.06)	0.9716 (8.08)				-0.1374 (-0.58)	0.4018
Thailand	0.0052 (0.75)	1.1585 (11.48)	-0.0425 (-0.66)	0.4518 (5.65)			0.5728
	0.0031 (0.42)	1.2229 (13.44)			**-0.1465 (-5.77)**		0.5073
	-0.0007 (-0.08)	1.1816 (10.76)				-0.1996 (-0.54)	0.4684
Panel 8: Middle East							
Israel	0.0063 (1.33)	0.7489 (12.15)	0.145 (1.57)	0.0462 (0.41)			0.3578
	0.0044 (0.91)	0.7946 (12.74)			**-0.0848 (-2.31)**		0.3716
	0.0044 (0.82)	0.768 (12.45)				0.1892 (1.13)	0.3518
Saudi Arabia	0.0107 (1.03)	0.4426 (2.52)	0.0064 (0.10)	0.0422 (0.70)			0.067
	0.0105 (1.04)	0.4532 (2.56)			-0.025 (-0.82)		0.0754
	0.0088 (0.92)	0.4474 (2.57)				-0.1744 (-0.69)	0.0772
Turkey	-0.0018 (-0.15)	1.7531 (10.18)	0.2948 (3.31)	0.0686 (0.83)			0.4421
	-0.0079 (-0.68)	1.7964 (9.23)			-0.0086 (-0.09)		0.431
	-0.0104 (-0.89)	1.7968 (8.92)				-0.3374 (-1.17)	0.4348
Panel 9: Africa							

Egypt	0.0111 (0.9)	1.0323 (7.01)	-0.0803 (-0.81)	0.2111 (2.19)			0.2812
	0.0124 (1.04)	1.0742 (7.29)			**-0.1341 (-4.24)**		0.2901
	0.0052 (0.49)	1.0410 (6.51)				**-0.7088 (-2.23)**	0.2955
Kenya	0.0068 (0.85)	0.5473 (4.64)	-0.1048 (-1.41)	0.0825 (1.11)			0.1705
	0.0087 (1.07)	0.5551 (4.60)			**-0.0544 (-2.44)**		0.1669
	0.0074 (0.81)	0.5396 (4.37)				-0.0569 (-0.24)	0.1573
Morocco	0.0041 (0.94)	0.3665 (4.31)	-0.1144 (-2.32)	0.1072 (2.08)			0.1679
	0.0062 (1.34)	0.3813 (4.31)			**-0.0776 (-2.19)**		0.1597
	0.0029 (0.63)	0.3611 (3.63)				**-0.2926 (-1.74)**	0.1453
South Africa	0.0023 (0.51)	1.0163 (15.99)	0.0723 (2.07)	0.1773 (4.71)			0.6357
	0.0002 (0.05)	1.0597 (16.65)			**-0.0814 (-5.52)**		0.6367
	0.0018 (0.40)	1.0322 (15.25)				**0.4090 (3.03)**	0.6386