

# **Is good governance priced? An examination of listed firms from OECD equity markets**

## **1. Introduction**

The outward governance structure of firms provides a strong indication of the incentives shaping internal managerial decision-making and strategic orientation with respect to the attraction and retention of minority outside investors. In this way the adoption of costly governance provisions designed to enhance and protect the property rights of minority owners reduces their agency-related bonding costs from participating in the firm's ownership structure (Jensen and Meckling, 1976). The consequent reduction of risks associated with residual claims facilitates their ease of transaction and exchange, where this in turn supports active external markets for these capital claims (Jensen and Meckling, 1976; Fama, 1980). Thus, the outward governance structure of firms provides a strong indication of the revealed preferences towards expropriation by incumbent insiders and owners with voting rights in excess of their cash flow ownership who typically have effective control over the corporation.

However, firms alone do not influence their bonding costs with outside investors, and it is necessary to take into account wider state-level investor protection in the form of quality institutions underpinning the external contracting environment. The relative strength or quality of external contracting environment critically determines the effectiveness of governance provisions at firm-level (Doidge et al., 2007; Gompers, Ishii and Metrick, 2003). The institutional environment not only provides ease of access to regulatory contractual enforcement mechanisms such as legal and judicial systems, but also to more normative notions of industry-level corporate governance "best practice" that act as a substitute for deficiencies in formal legal contracting as well as professional accounting and auditing associations that underscore effective reporting standards. Transparency through stringent accounting standards is only as effective as the quality of national reporting systems which themselves are contingent on state-level institutional quality. For example, a firm may be unable to commit to credible external verification of its income disclosures if the necessary infrastructure for such verification is either not available or is lacking in effectiveness (Doidge et al., 2007). In this way, the macro-level institutional environment determines the effectiveness of external capital markets in facilitating investors ability to exchange residual risk claims in any given firm (Jensen and Meckling, 1976).

Consequently, in countries with weaker state investor protection, capital markets will be less developed and more inactive, implying that firm's will be motivated less to adopt costly external governance provisions in shaping their outward governance structure. Thus, there will be less reliance on external capital infusions and comparatively greater reliance on controlling block shareholders and incumbent insiders with control rights in excess of their cash flow entitlements (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2002). Conversely, in countries with higher institutional quality, firms are more focussed on raising capital from external minority investors and thereby more prone to adopting the Berle and Means (1932) separation of ownership from control through diversified ownership model of governance. Therefore, they will be more motivated to adopt costly governance provisions in order to reduce outside investor bonding costs and thereby reap the benefits associated with raising external finance on more cost effective terms. As such, country-level institutional quality determines the quality of protections afforded to supporting the external contracting environment, and thus determines the benefits accruing to firms adopting more costly governance provisions in their outward structure. In this way, we argue that state-level institutional quality and firm-level governance are complementary – where if it were costless for firms to adopt governance provisions then all would do so, but in environments shaped by differing institutional quality, the costs and subsequent benefits accruing to firms adopting costly measures varies significantly.

We build on the premise of the seminal work of Gompers et al (2003) that firm's outward governance provisions can be categorized as either supporting democratic notions of one-share one-vote and enhancement of minority protections, as opposed to dictatorial with these enhancing incumbent insiders and controlling block entities who have voting rights in excess of cash flow entitlements. Furthermore, given the inherent difficulties in measuring expropriation, the outward governance structure – be this more democratic or dictatorial – provides an indication of revealed preferences towards expropriation by insider groups. We argue that in a long horizon model, on balance or in aggregate, the costs associated with expropriation by insider groups will be borne by minority outside owners. This will impact on their welfare. Thus, firms adopting outwardly democratic governance structures are more motivated to extract fewer private benefits of control and thereby better protect the property rights of minority investors as compared to those adopting dictatorial governance provisions.

In this paper, our first contribution is in creating a unique index of 45 outward governance provisions where each is designated as either “democracy” or “dictatorship” in terms of the protection afforded to minority investor rights vis-à-vis dominant insiders or controlling block owners. This draws on the ASSET4 governance database of firm-level provisions, disseminated by Thomson

Datastream alongside regular trading data. Furthermore, it extends the Gompers et al (2003) notion of firm-level governance through a bespoke “G-index” incorporating 24 distinct outward provisions adopted by firms. It yields a considerably clearer picture of the governance of firms as compared to the 6 governance provisions in the “anti-director rights” index developed by La Porta et al (1998) or the limited coverage in Credit Lyonnais Securities Asia (henceforth CLSA) governance universe where 495 firms drawn from across 25 emerging markets and 18 sectors (see Klapper and Love, 2004). We draw on the blue-chip index constituent lists of 35 OECD national equity markets where in the UK this also includes FTSE100 (large cap stocks) as well as FTSE250 (mid cap stocks) and in US it includes constituents of S&P1,500 in the form of S&P500 (large cap stocks), S&P400 (mid cap stocks) and S&P600 (small cap stocks). This amounts to a universe of 4,714 stocks, where 2,984 of these are also included in the ASSET4 governance universe. Firm’s included in the ASSET4 universe have governance parameters estimated annually based on their annual reports.

Our second contribution extends the intuition of the Gompers et al (2003) study of a trading strategy based on exploiting weak (dictatorial) versus strong (democratic) governed firms to produce abnormal profits during period 1990-1999. This has further been elaborated by Bebchuck, Cohen and Ferrell (2009) where they subsequently found only six of these governance provisions – formed into a distinct “E-index” – generated abnormal profits. We argue that outward governance differences are an effective proxy for expropriation tendencies by insider controlling groups and block owners – where these will impact minority investor welfare in the long run. We also incorporate country level institutional quality, to capture the quality of external contracting environment, in the form of an equally weighted average of the six World Governance measures (see Kaufman et al., 2009). We propose a new stock returns governance-based measure formed from cross product of firm’s individual governance indices and country-level institutional quality that captures the dynamics of relative firm governance and country institutional quality as well as the complementarity between the two. We extend the Gompers et al (2003) arguments of pricing anomalies caused by governance in proposing a new returns-based valuation factor to be included into a two-factor capital asset pricing model alongside the market factor.

Our empirical findings reveal systematic variations in investor welfare in relation to our new governance valuation factor across deciles ranked on basis of governance quality or the degree of democracy as opposed to dictatorship. Stocks in higher democratic deciles attract a discount, while those in less democratic and more dictatorial deciles attract a premium. These findings are robust across the OECD overall universe as well as sub-universes formed on OECD equity markets omitting the US and the US only universe. This latter distinction between sub-universes is important since in

the US only case the distinguishing characteristic between individual firms is the governance index itself, while in the multi-country OECD excluding US universe, national institutional quality must also be taken into account. Our findings are also robust to changes in the institutional quality measurement through our additional employment of “Legal Structure and Security of Property Rights Index” developed by Gwartney and Lawson (2007), which focusses on the legal security of property rights for minorities. Finally, our proposed two-factor CAPM augmented by the new governance valuation factor outperforms comparable asset pricing models based on liquidity (Liu, 2006), ownership-based investor protection (Hearn et al, 2017), the size and book-to-market factors of Fama and French (1993) three factor model, henceforth FF3F, and the four-factor extension of this including momentum of Carhart (1997).

We proceed as follows: Section 2 focusses on the development of our governance index, the construction of its associated governance valuation metric and theoretical propositions linking governance to investor welfare. Section 3 describes data while section 4 addresses valuation factor construction and comparative performance and descriptive statistics. Section 5 outlines our empirical results while section 6 details robustness tests. The final section concludes.

## **2. Firm governance**

### *2.1 Firm-level governance index*

Prior literature on the construction of governance indices has fallen into two areas: the first being on indices capturing governance-related elements of national legal codes that apply to firms within that jurisdiction, while the second focusses on variation in individual firm’s governance structure. The first adopts survey or questionnaire methods in codifying national legal code responses to governance clauses. This emanated from the pioneering “anti-director rights” index of La Porta et al (1998) which captured six dimensions of shareholder protection defined within prevailing national legal code statutes. These broadly cover two areas of property rights: the first three are concerned with shareholder voting, with these focussing on voting by mail and proxy, voting without blocking of shares, and ability to call an extraordinary meeting, while the second three are related to minority protection and address proportional board representation, pre-emptive rights and judicial remedies<sup>1</sup>. The dataset was drawn from 49 national legal codes as well as the ownership structure of the five largest publicly traded private (non-state) non-financial firms. More recent innovations to this have

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<sup>1</sup> La Porta et al (2000) defines the six index dimensions as (1) the permissibility of proxy voting, (2) deposit of shares prior to general shareholders meeting, (3) cumulative voting or proportional representation of minorities on board of directors, (4) an oppressed minorities mechanism is in place, (5) whether the minimum percentage of share capital ownership to call an extraordinary shareholders meeting is less than or equal to ten percent, and (6) when shareholders have pre-emptive rights that can only be waived by a shareholders meeting

included Djankov, La Porta, Lopez-de-Silanes and Schleifer's (2008) anti self-dealing index, constructed from questionnaire responses of 102 "Lex Mundi" law firms in 72 countries worldwide, and broken down into sub-indices representing ex-ante and ex-post private control of self-dealing. Spamann (2010) introduced a revised version of the original "anti-director rights" index which also drew on questionnaire appraisal of national commercial codes by local lawyers as the source of primary data for a revised governance index.

The second, more firm-related strand of governance index literature, has developed from the inaugural contribution by Gompers et al (2003) and the introduction of a governance "G" index covering a total of 24 provisions with 22 of these drawn from individual firm's bylaws, charters, annual reports and US SEC listing filings and a further 2 drawn from state-level commercial code legal provisions. The sample here drew on constituent firms of US equity market's S&P500 index, and the annual lists of largest corporations in the publications of Fortune, Forbes and Businessweek that were also covered in the detailed listings of corporate governance provision published by Investor Responsibility Research Centre (IRRC). These were extracted for years 1990, 1993, 1995 and 1998 inclusive. This itself has been revised by Bebchuck, Cohen and Ferrell (2009) with an "E" index comprised of 6 of the original 24 elements that were found to significantly drive empirical performance results.

Our new index draws on the comprehensive Thomson Reuters ASSET4-ESG database of governance attributes of individual listed firms worldwide (see Thomson Reuters ESG Scores, 2017<sup>2</sup>). This was fully integrated into the Thomson Datastream platform in 2009 along with backdated data from its inception in 2002. In this way, it is seamlessly integrated with trading data which are more typically associated with the formation of valuation factors used in asset pricing models. ASSET4-ESG uses data drawn from individual listed firm's annual reports to populate three distinct categories of organizational structure: (1) environmental, (2) social and (3) *governance*. The third, namely "governance", encompasses structural parameters relating to three thematic categories, namely (a) *management*, (b) *shareholders* and (c) CSR strategy. Collectively categories (1) environmental and (2) social, alongside the third dimension (c) or CSR strategy of third category (3) relating to governance form the basis of the Environmental and Corporate Social Responsibility characteristics reported in the ASSET4-ESG database. However, our new governance index is comprised solely from elements drawn from third category (3) *governance*, and specifically the thematic dimensions (a)

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<sup>2</sup> Thomson Reuters ESG Scores, 2017 refers to full overview of ESG scores and definition of structural elements and parameters – sourced from website [financial.thomsonreuters.com/esg](http://financial.thomsonreuters.com/esg)

*management*, and (b) *shareholders* which forms the core of the governance theme of ASSET4-ESG database.

At this stage it is worth noting that despite the unique and extensive coverage of the ASSET4-ESG database, that firstly this has significantly grown over time since inception in 2002 where the overwhelming majority of coverage was limited to largest blue-chip firms in US, Western European and Swiss equity markets. There are annual significant jumps or increases in the coverage of the ASSET4 database with one of the largest of these being during period 2007-2009. However, even by September 2017 the coverage of emerging economies was minimal where this is exemplified by approximately 170 Chinese and 100 Indian firms where these are two of the largest emerging economies worldwide. This largely justifies our focus on a sample of constituent firms from OECD equity markets as opposed to the much broader sample of MSCI world equity markets. Secondly the maintenance and current availability of individual structural and/or governance elements varies considerably from firm to firm. Consequently, while there are almost 300 structural and governance elements per firm included in the ASSET4-ESG database, there is marked variability in current maintained data availability across constituent firms. As such this further reduces the sample to 86 structural-related attributes that are consistently maintained and populated with data. However, of these only 45 are strictly focussed on “governance” elements which are coded as “Yes”/ “No” or “Y/N” responses, as opposed to various numerical values. Thus, our final sample is comprised of 45 binary elements covering firm’s outward governance structure.

These are outlined in Table 1 where they are further subdivided into four thematic groups with these being minority rights, voting, delay, and director incentives. The minority rights group includes 16 provisions relating to underlying board of directors’ composition as well as individual director liability. The former addresses issues relating to minority property rights in terms of representation on board and the selection or nomination of directors to board as well as their ability to provide effective monitoring and surveillance over corporate affairs and executive decision-making. The latter focusses on entrenchment issues and legal liability of individual directors in relation to their decisions and breaches of fiduciary responsibility while in office. The voting group is comprised of 16 provisions relating to the protection of minority shareholder voting rights. These focus on the centrality of one-share one-vote as opposed to different classes of share and infringements of control rights in relation to cash flow entitlements, confidentiality of voting and ability to vote by proxy and motions such as supermajority and written consent. The delay group includes 6 provisions designed to slow down a hostile takeover. The market for corporate control is the ultimate disciplinary recourse in the Jensen and Meckling (1976) agency-theoretic view of firm. These six provisions relate to significant reforms

to director tenure inhibiting potential changes following a takeover, as well as the firm's ownership control structure being enmeshed within extensive cross-shareholding networks – such as Japanese keiretsu or business groups. It also covers golden shares with preferential “veto” rights, and unlimited restriction on authorized capital of firm where incumbent insiders effectively have a blank check with which to fight off hostile bidders' accumulation of voting shares. Finally, the director incentives group includes 7 provisions relating to shareholders having uninhibited say on insider director's self-reward tendencies in the form of compensation structure and levels of pay. It also addresses the effectiveness of compensation committee and compensation policy design.

Collectively the four thematic groups containing the 45 governance provisions reflect the internal monitoring and incentive structures used to align controlling insider interests with those of minority outsider shareholder owners. However, they also capture the ultimate disciplinary function of the market for corporate control which externally reinforces the governance system through constant evaluation of incumbent firms.

### **Table 1**

The formation of the new governance index adopts an equally weighted sum of all 45 governance elements. Each element that is coded as a “Yes”/ “No” or “Y/N” response is then binary coded with value 1 for those elements enhancing democracy governance and 0 otherwise, and in the cases of those elements enhancing dictatorship governance a value of 0 for those “Y” values and value of 1 for corresponding “N” values. Missing values are omitted from being coded as either 1 or 0 and thereby not included in the resulting index. It should be noted that while we include more governance elements than in the Gompers study, these are included on the basis of availability in the ASSET4 database. This construction follows that of the Gompers study in attributing the binary value of 1 to governance elements deemed to enhance minority shareholder rights which are termed as “democracy” elements as opposed to those that detract from these and empower incumbent insider groups and block owners, where these in turn are termed “dictatorship” elements. However, a distinctive attribute of our new governance index is that it draws on extensive international coverage and not just availability within the US which is a visible constraint in studies introducing firm-level governance indices such as Gompers et al (2003) and Bebchuck et al (2009).

We construct an annual time series of the new firm-level index, where index values are re-evaluated annually alongside the annual frequency of updating of all elements in ASSET4-ESG universe. However, we adopt the forward-fill method used in both Gompers and Bebchuck studies in carrying forward the individual firm index values from the last reported date of 2016 into 2017.

Mindful of the inception of ASSET4-ESG in 2002 and we also adopt a variant of this and assume those index values prevalent in 2002 are unchanged going backwards for preceding years 2001 and 2000. This is justified owing to the relative rigidity of firm-level governance changes over short periods of time, such as up to 2 years. Importantly it facilitates later comparison between the governance-related portfolios and valuation factor with all other factors estimated over full length of sample period.

The percentage proportion of firms adopting each of the 45 governance provisions that form the basis of our index in year 2015 are reported in Table 2. This draws on sub-samples of our overall OECD sample of 3,244 firms' constituent to 35 national blue-chip stock exchange indices (see Appendix A, Table 1A), where 1,912 are also covered in ASSET4 governance dataset for year 2015. We break this down to compare governance attributes of firms' constituent to the large, mid and small cap US indices – namely S&P500, S&P400 and S&P600, and then contrast firms with their primary listing locations falling between civil code law as opposed to common law jurisdictions. Differences between civil code and common law jurisdiction firms are immediately obvious with “democracy” governance provisions generally being markedly more prominent in the latter legal regime as opposed to the former. This is exemplified by board diversity policy where over 77% of common law firms report adherence as compared to just over 25% of civil code law firms. This pattern is repeated across all governance elements between the two legal systems underscoring the differences in protection of minority investor property rights afforded by each system. This evidence is very similar to that documented in La Porta et al (1998, 2000) which contrasted differences between civil code and common law in terms of national legal governance code provisions. Finally, a clear distinction is visible across US blue chip indices from S&P 500 through S&P 400 to the small cap S&P 600. This last category of firm has the weakest governance protections in terms of adoption of democratic governance attributes. This is anticipated on the basis of smaller, less well capitalized SME firms in S&P 600 index being less able to afford the adoption of costly governance provisions in contrast to their better capitalized and larger blue-chip counterparts in S&P 500. It also signals a clear association between firm size, outward governance structure and the importance of external finance as originally highlighted in La Porta et al (2000).

## **Table 2**

### *2.2 Governance measure*

The final governance metric is the result of the multiplication of underlying individual firm governance index and country-level institutional quality. This is beneficial in its simplicity – where a



tie-breaker is given in sorting stocks that are well-governed but can be distinguished in the relative protection afforded to minority shareholders by prevailing national legal and dispute-resolution systems. The governance measure is defined as:

$$Governance_{ijt} = (\text{Institutional Quality})_{jt} * (\text{Governance Index})_{ijt} \quad (1)$$

for country  $i$  at year  $t$  and Governance Index is the yearly index value for each listed firm  $j$ .

Institutional quality is formed from the average of the six World Bank governance indicators: control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law and democratic voice, and accountability (Kaufman et al, 2009).<sup>3</sup> These indicators range from -2.5 to +2.5 but here have been rescaled to take a value between 0 – 10. Country  $i$  refers to the primary listing location of firm  $j$ . We adopt the country of primary listing as opposed to the country of incorporation on the basis of the “legal bonding” hypothesis of Coffee (1999, 2002) and Charitou et al (2007). Firms incorporated in an overseas jurisdiction adopt or “legally bond” to the governance arrangements of the country of their primary listing. The governance indicators were first reported in 1996 and were updated at two yearly intervals until 2002, after which they were produced annually. In the early years of the series, the indicators in the intermediate year were assumed to be the same as in the preceding one, given the relatively slow nature of institutional change (Williamson, 2000, 2002; North, 1991, 1994). However, drawing on literature such as Klapper and Love (2004) and Chen, Chen and Wei (2009), and one potential shortfall is in the attribution of well governed firms scoring highly on individual firm governance index but are situated in poorly governed national contexts with weak institutional quality. It is important to state that we assume the complementarity of firm-level governance attributes and national institutional quality as opposed to their being substitutes. The complementarity assumption has far reaching implications – where national institutions are deemed essential to support deep capital markets through their facilitation of external third-party contracting, which enable firms to take advantage of these sources of external funds through their adoption of governance. This mitigates minority investor adverse selection through being better able to gauge relative quality of investment opportunities in residual risk claims, as well as recourse to effective institutional sanctions acting as a deterrent to deviations in moral hazard following investment.

### *2.3 Relationship between institutions and firm governance*

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<sup>3</sup> The six indicators are recalculated and updated every two years and were calculated back to 1999. Source: <http://info.worldbank.org/governance/wgi/index.asp>. See Appendix B Table 1B for definitions.

The theoretical basis for our proposition of minority investor welfare differences in relation to governance are based on the premise that differences in the outward governance structure of firms yield pervasive pricing anomalies in the long run equilibrium economy that cannot be simply arbitrated away given they fundamentally relate or proxy an underlying state variable.

While classical efficient market theory (e.g. Fama, 1970) questions whether public information can ever be used to produce abnormal returns, adaptive efficient market theory (e.g. Daniel and Titman, 1999) suggests the ability of any trading strategy based on public information to generate risk-adjusted abnormal profits will dissipate over time. Developing from this basis, Bebchuck et al (2013) argue that market traders effectively “learn” the differences between good and bad governance and incorporate these into arbitrage order flow that adjusts prices in equilibrium. However, these approaches are centred on the notion of rationality in the form of expectations and related behaviours. In contrast, we argue that investors are not fully rational, where this is exemplified in the documented “home bias” in equity portfolio investment based on trading strategies encompassing markets and listed firms that are institutionally compatible with investor’s home equity market. This more institutional shaping of investor preferences incorporates greater degree of persistence in differing reactions towards differences in governance than is otherwise assumed by Schleifer and Vishny’s (1997) “limited arbitrage” which argues that information is slowly incorporated into traded prices over longer time horizons.

Our theoretical model assumes perfectly integrated asset markets that are subject to mild segmentation reflective of differences in corporate control. This extends the restricted CAPM model of Errunza and Losq (1985) and Merton (1987) and follows the intuition developed in Heinkel et al (2001) in considering the asset pricing implications arising from a subset of investors emerging from within a given universe. Further, we assume that at any given time there is a finite number of listed firms and a finite pool of investors. Following Giannetti and Koskinen (2010), two categories of investors are considered: minority portfolio investors and controlling shareholders. This leads to an assumption of a natural difference arising between the outward governance structure of any given firm – where this is either dictatorship or democracy orientated. The former acts to empower insider groups and controlling shareholders, while the latter empowers dispersed minority outside investors. Following La Porta et al (2000) and Giannetti and Koskinen (2010), we argue that there are two payoffs arising from shares. The first is attributable to all security holders in the form of dividends and capital gains, while the second is preferential access to private benefits that accrue only to controlling block shareholders.

Thus, firms with dictatorship governance structures are attractive solely to controlling shareholders who compete to acquire full control over firms through large block shareholdings. Conversely, firms with democratic governance structures have widely dispersed investor bases with few, if any, block holdings. We argue that national institutional quality is complementary to firm governance structure as it supports external capital markets for residual risk claims – but in turn these are representative of the market for corporate control. This is supported by Klapper and Love (2004), who find that average firm level governance is lower in countries with weaker legal systems. Therefore, governance within the firm is correlated with contractual imperfections and levels of asymmetric information in their national environment. We also follow North (1991, 1994), who claims that the institutional development within a given society, or country, is a function of the continuous interaction between firm transactions, the ruling polity and the wider population and this acts as a check or balance to the moral authority of the state. In this way the internal governance of the firm is inextricably linked to the external institutional quality by the nature of the political economy.

As noted above, at the centre of our model is the assumption of perfectly integrated capital markets that are mildly segmented by restrictions in corporate control. Thus, controlling shareholders exert their control through larger block ownership holdings in firms with weak governance (and more dictatorial in nature) - situations that also exhibit greater information asymmetry. Here, the expropriation of private benefits motivates their participation as these augment otherwise low risk-adjusted returns associated with such dictatorially-governed firms.

Our model focusses on the welfare implications for minority portfolio investors arising from the need to diversify by optimising portfolios that draw on a wide cross section of stocks from weak (dictatorship) to strong (democracy) governed firms. Given the mild segmentation assumption, arbitrage trading to close price differentials is impeded, reflecting the laws of supply and demand (Errunza and Losq, 1985; Heinkel et al, 2001). In this way, more dictatorial governed stocks attract controlling shareholders due to the relative ease of extraction of private benefits in an environment of informational asymmetry and opacity in financial reporting and governance practices. Such controlling shareholders dominate ownership of firms through large block holdings and consequently minimal free floats are available for minority portfolio investors. However, the limited supply is offset by a lack of demand by minority portfolio investors given they face the risk of expropriation. Thus, the stock price decreases in equilibrium to reflect the risks associated with informational asymmetry and increased expropriation risk. Therefore, minority portfolio investors demand higher expected returns to compensate for this lower price and this is reflected in a positive premium. Conversely, in firms operating in an environment with high institutional quality, the ownership base is formed from widely

dispersed minority portfolio investors and an absence of controlling blocks. The absence of controlling block shareholders implies a reduction in entrenchment and expropriation risk, while higher institutional quality implies greater protection of property rights for minority investors. Thus, the demand for these shares is greater and the price is driven up. The enhanced price is a reflection of a discount because of the lower risk and therefore expected return.

Our model considers a continuum of investor protection, ranging from weak to strong, following Giannetti and Koskinen (2010). However, we implicitly consider a notional *average* level where minority investors expect a premium when participating in dictatorship-orientated governed stocks and a discount when participating in their democratically-governed counterparts. These differences lead us to anticipate a persistent difference in the cross section of stock returns, attributable to institutional quality and outward governance structure.

Despite literature evidence relating to the formation of governance indices, for example the Gompers et al (2003) “G-index” or Bebchuck et al (2009) “E-index”, and their linkage with abnormal profits associated with governance-based trading strategies exploiting differences between weak and strongly governed firms, this has not been extended into a formal asset pricing framework. The study by Gompers et al (2003),<sup>4</sup> is seminal inasmuch that they created a governance index and used state- and firm-level governance to rank a universe of US firms into decile portfolios ranging from the weakest governance, or *dictatorship* portfolio, to the strongest, or *democracy* portfolio. The market universe is taken from the Investor Responsibility Research Centre (IRRC) and includes approximately 1,500 stocks, which account for over 93% of capitalization of the New York stock exchange (NYSE), the American stock exchange (AMEX) and Nasdaq. These ten governance-ranked decile portfolios were used in an application of the Carhart et al (1997) four factor augmented-CAPM pricing model. This is the standard CAPM augmented by size and book-to-market factors (Fama and French, 1993) plus the momentum factor. Un-priced premiums, the alphas, were found across all deciles, and those associated with the lowest and the highest governance quality deciles were statistically significant. The application of the Carhart et al (1997) four factor model to a zero-cost portfolio, which reflects a structure of buying firms in the weakest governance category and selling in the highest, resulted in annualized abnormal returns of 8.5%. The Gompers study also found that firms with stronger shareholder rights had higher value, higher profits, higher sales growth and lower capital expenditures, all consistent with La Porta et al (2000, 2002). An advance on this study was that undertaken by

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<sup>4</sup> Albuquerque and Wang (2008) develop a dynamic stochastic general equilibrium model to study the association between asset pricing and the welfare implications of imperfect investor protection. They find that countries with weaker investor protection attract larger risk premia, greater return volatility, lower Tobin’s  $q$  and higher interest rates. This is in line with our theoretical model.

Bebchuck et al (2009) where findings revealed that six of the 24 governance provisions used in the preceding Gompers study drove the earlier results. However, despite finding evidence of a premium, no asset pricing application was proposed. This literature forms the basis of our first proposition:

***Proposition 1: Welfare losses arising from diversification between weak (dictatorship) and strong (democracy) governed firms are reflected in a premium***

Theoretically, we argue that our view of firm governance is based on varying transaction costs that impact on the property rights of minority investors seeking diversification across a mildly segmented but otherwise perfectly integrated market universe. While we link systematic changes in corporate control rights using institutional quality and comparable outward governance attributes to diversification premia and the cross section of stock returns, our measure is most closely associated with both the ownership-based investor protection measure recently introduced by Hearn et al (2017) and a liquidity effect. The investor protection measure explicitly considers differences between block shareholders and diversified minorities in terms of relative ability to appropriate firm assets. However, liquidity provides an alternative measure of transaction costs that vary systematically across the cross section of stock returns. Further to traditional approaches, such as Goyenko et al (2009), Lesmond (2005), and Hearn (2014), which contrast various liquidity metrics in capturing transaction costs, we adopt the multidimensional measure of Liu (2006). This combines a modified turnover ratio measured in terms of volume traded, with the proportion of daily zero trading volume days per month, to measure trading speed. This provides a multidimensional focus of transaction costs and improves on the limitations of more singular volume-based or simple price-impact measures, while also capturing a dimension of trading frequency. Thus, liquidity provides an obvious stock-ranking metric based on transaction costs, which are influenced by institutional quality, market microstructure and corporate governance (Bewley, 2002; O'Hara, 2003). However, the transaction costs captured are, by nature, external and do not reflect the governance of the firm, where this is reflective of revealed intentions towards expropriation of minority outsiders, which is at the heart of our new investor protection measure.

Other factors commonly used to explain the cross section of stock returns are in Fama and French (1993), that is additional premiums attributable to persistent differences in size and accounting book to market value of stocks. Size premium in particular relates to small market capitalization firms that persistently underperform in terms of earnings during and following wider financial and economic downturns than larger firms (Fama and French, 1993). Accounting book to market value captures

differences across the cross section in terms of underlying value, with high ratio firms less costly but with higher intrinsic value stocks while the opposite is true for low ratio firms. Fama and French (1993) proposed a three factor CAPM model with size and book to market value factors in addition to the simple market factor. Carhart et al (1997) extended this by adding a momentum factor on top of the underlying Fama and French (1993) model to create a four-factor version. Momentum relies on the past returns performance of stocks with a premium attributed to differences in the cross section of stock returns between low and high performing stocks (Jegadeesh and Titman, 1993, 2001). However, a shortcoming is that size, book to market and momentum factors are based on fundamentals and performance and ignores any consideration of transaction costs, where these are most likely the source of any deviation. Thus, we propose the following:

***Proposition 2: Governance is more robust in capturing the cross section of stock returns than investor protection, liquidity, momentum, accounting book to market value or size measures***

We perform a number of procedures to test the above propositions. Firstly, we disaggregate the OECD overall universe into two components: a OECD excluding US universe and the US as a single country. The selection of the US only universe is based on it being comprised by the large S&P1,500 constituents who are universally covered in ASSET4 database and the importance of including a single equity market where national institutional quality becomes superfluous and firms are solely ranked in accordance to their firm-level governance index. The OECD excluding US universe facilitates comparison across a heterogeneous multi-country mix of national institutional regimes based on civil code law variants and common law while omitting the single largest common law market – namely the US. There are also notable differences in control structure – where cross-shareholding networks are virtually absent and family ownership is minimal in the US case while both are prominent across the rest of OECD member states. Notably in the US a far greater proportion of firms adhere to dispersed ownership model than in OECD counterparts. This distinction based on universe classification facilitates tests of the above propositions and provide an additional context for the asset pricing models. Secondly, we test our new investor protection metric by formulating a returns-based factor in a simple two-factor augmented CAPM framework and compare the performance of this with FF3F, Carhart 4F (including momentum), and Liquidity-augmented two-factor models for each of the four universes. We also compare monthly-rebalancing and annual-rebalancing factor portfolio construction techniques with different valuation factors. Additionally, we relax the time invariant parameter assumptions of the traditional CAPM framework and adopt the Kalman filter approach to the FF3F,

Carhart 4F (including momentum), Liquidity 2F, and Investor Protection 2F models and compare the performance of each. This yields a robust method of evaluating factor performance in explaining the cross section of stock returns.

Finally, we test the robustness of our results by using an alternative proxy for institutional quality, the “Legal Structure and Security of Property Rights Index” developed by Gwartney and Lawson (2007), which focusses on the legal security of property rights for minorities. Our results are on the whole robust.

### **3. Data and summary statistics**

#### *3.1 Sample selection*

Our sample is constructed in two stages. The first sorts all markets within the OECD<sup>5</sup> and uses La Porta et al (2000)’s distinction between those with national jurisdictions that are either common law or civil code law. The second selects stock-level data from the major blue-chip index constituent lists in Datastream (see Appendix A, Table 1A). This criterion ensures they conform to international investors’ selection requirements in terms of marketability and accessibility (foreign ownership restrictions). It also avoids the problem of selection bias that can arise from pre-determined minimum price criteria, as found in Hou et al (2011). The blue-chip index constituent stocks also conform to international asset diversification assumptions regarding inter-market asset market integration that is essential to the CAPM, and thus avoids intra-market segmentation prevalent in emerging stock markets.

The data are from January 2000 to September 2017, although ASSET4 data is only available from January 2001 onwards. This is relatively short but reflects the period for which governance data was compiled by ASSET4-ESG. The data includes single class ordinary shares only and excludes preference shares, dual class shares, warrants, convertibles, REITs, closed-end funds, exchange traded funds and depository receipts. Finally, where any return above 300% that is reversed within one month is treated as *missing*, that is, if  $R_t$  or  $R_{t-1}$  is greater than 300%, and  $(1 + R_t) * (1 + R_{t-1}) - 1 < 50\%$ , then both  $R_t$  and  $R_{t-1}$  are set to *missing*. This follows Ince and Porter (2003).

Following Hou et al (2011), we ensure accounting ratios are known before returns and thus match the end of year financial statement data for year t-1 with monthly returns from July of year t to June of year t + 1. We use the inverse of the market-to-book-ratio (see Appendix B, Table 1B) to calculate the Book to Market Value ratios. In addition, size is defined as the market value of equity at the end of June of year t, while momentum (Mom) for month t is the cumulative return from month t –

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<sup>5</sup> OECD members are from: <http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm>

6 to month  $t - 2$ , skipping month  $t - 1$  to avoid microstructure biases such as bid-ask bounce or non-synchronous trading.

The final sample consists of 4,714 common stocks from the 35 OECD equity markets blue chip indices. However, 2,984 common stocks are covered by the ASSET4 database in terms of governance data availability. Our sample comprises the S&P 1,500 index constituents for US only, alongside a total of 3,214 stocks across the remainder of OECD. Figure 1 shows the distribution of the sample over period January 2000 to September 2017. US stocks contribute 34% of the total OECD universe alone, while Canada contributes 5%, UK and Australia & New Zealand both contribute 7%, Japan 12%, Scandinavia 9% and Western Europe 16%. The rest are from Eastern Europe, Middle East and Latin America. Figures 2 and 3 reveal the development of the sample over time – with the former showing the overall sample, while the latter shows the ASSET4 constituent sample. It is immediately obvious that the ASSET4 coverage has greatly increased since 2002 and that increases occur in distinct annual “step increases” reflecting the frequency of reporting of governance parameters from published annual reports and increased coverage of listed firms across sample markets.

### **Figures 1, 2 and 3**

#### *3.3 Summary statistics*

Table 3 reports the summary statistics for the new governance measure, its underlying firm governance index, alongside a comparison of the investor protection measure, its underlying percentage proportion of free float and country-level institutional quality. The last three columns report market capitalization (in US\$), accounting book to market value ratio and the liquidity metric of Liu (2006). The 35 OECD countries are grouped into regional categories with Europe being divided between developed and emerging using the MSCI classification system. Finally, using the definition by La Porta et al (2000), countries are classified into civil code as opposed to common law jurisdictions. A number of observations can be noted. First, English common law nations are associated with higher institutional quality compared to the majority of civil code countries, reflecting the work of La Porta et al (1999, 2000).

There is considerable variation in the governance metric with this being highest for US S&P 500 constituent firms and lowest for Mexican and Turkish blue-chip index constituent firms. However, it is highest for the common law countries of US (2,242 for S&P 500, 2,193 for S&P 400, and 2,117 for S&P 600), Canada (2,174), UK (2,206 for FTSE 100 and 2,014 for FTSE 250), Ireland (2,119), Australia (2,164) and New Zealand (2,067) as well as civil code law Netherlands (2,145).



Contrastingly it is lowest for Latin America with Mexico (645) and Chile (1,015), Middle East with Turkey (757) and Israel (1,192) and Asia with Japan (1,011) and South Korea (803). However, the low values of these last two Asian countries is in contrast to their rankings under the investor protection measure where both rate very highly. We argue that the new governance measure captures underlying differences in cultural aptitude of firm's towards adopting democratically orientated governance provisions. This is particularly true in Japan and South Korea where there are extensive cross-shareholding networks such as keiretsu and chaebol structures present and national culture is based on communitarian or communalistic norms as opposed to more individualistic norms present in European and North American cultures. This is indicative of a propensity towards extended relational contracting as opposed to external contracting that is typical of European and North American countries. The new governance metric captures this deeper cultural phenomenon reflected in firm's decisions to structure their outward governance structure. Mean firm size is generally higher in US, Canada and Western Europe than other world regions. This ranges from US\$ 16.55 billion in US S&P500 firms, US\$ 25.89 billion in UK FTSE100 firms, US\$ 187.62 billion in Ireland and US\$ 112.51 billion in Netherlands to US\$ 0.29 billion in Iceland and US\$ 0.14 billion in Estonia. It is notable that there is a markedly lower variation in book to market value across the sample. However, there is considerable variation in liquidity levels, measured by Liu (2006) metric, with these being noticeably higher in the less developed equity markets of Eastern Europe and Scandinavia.

### **Table 3**

## **4 Factors driving returns**

### *4.1 The construction of Factor Mimicking Portfolios (FMPs)*

To study the influence of factors, such as size, book to market value, momentum and liquidity on the variation of world stock returns, we follow Fama and French (1993), Liu (2006) and Hou et al (2011) and construct returns-based proxies using zero-investment portfolios. These portfolios go long in stocks with high values of a given characteristic and short in stocks with low values for that characteristic. We use the time-series regressions of Black, Jensen and Scholes (1972), following Fama and French (1993) and more recently Liu (2006), to assess the pricing implications arising from the liquidity metric. In this approach, the excess returns on test portfolios are regressed on the returns of FMPs. The time series slopes are interpreted as factor loadings that inform how various combinations of these FMPs explain the average returns across the portfolios. We form market portfolios based on both equal and value weighted returns of all stocks within a universe at a given time and use the yield on the 10 year US Treasury bill as our risk free rate.

We use size and book to market value (Fama and French, 1993), momentum (Jegadeesh and Titman, 1993) and liquidity (Liu, 2006) to form the FMPs using two different techniques. The first creates 25 quintile portfolios using a two-stage sorting process. The stocks are sorted into five portfolios based on size, and then sorted again by book to market value. At any time, those with missing values for either characteristic are omitted, as are stocks with negative book to market values. FMPs relating to size are created from average returns on small size portfolios minus those on big size portfolios (SMB factor) and similarly with high book to market value portfolios minus low book to market portfolios (HML factor). Portfolio rebalancing takes place annually in June, following Fama and French (1993) and Hou et al (2011). SMB and HML factors are formed from value-weighted returns.

Construction of the momentum and liquidity FMPs are slightly different. These use 10 decile portfolios with stocks ranked on momentum across portfolios, where momentum is defined as the cumulative return over the preceding six months, and on liquidity, defined as in Liu (2006). The FMP for momentum follows the Jegadeesh and Titman (1993) six-month/six-month strategy, where monthly returns are an equally weighted average of six individual strategies of buying the winning decile portfolio and selling the losing decile portfolio. Rebalancing occurs monthly.<sup>6</sup> In order to minimize the bid-ask bounce effect, we skip one month between ranking and holding periods when constructing the momentum FMP. This FMP is formed from equal-weighted returns.

The liquidity FMP is created by first ranking stocks by their Liu (2006) liquidity metrics. These are sorted into 10 decile portfolios and the FMP formed from returns difference between high illiquidity decile portfolios and low illiquidity decile portfolios. Then, two FMPs are created based on the frequency of rebalancing. The first is rebalanced annually in December, following Fama and French (1993). The second is rebalanced monthly with the FMP returns formed from the averages across each of twelve annually held liquidity FMPs, similar to the method used for the momentum portfolio in Jegadeesh and Titman (1993)<sup>7</sup>. This was also used as a robustness check in Liu (2006).

The FMP based on the investor protection measure introduced by Hearn et al (2017) is created by ranking stocks by their individual investor protection metric. Ranking is by the prior month and year. The ranked stocks are then sorted by each period and then put into 10 decile portfolios with the investor protection FMP created from returns difference between low investor protection decile portfolios and high investor protection decile portfolios. In common with the liquidity portfolios, two

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<sup>6</sup> That is, the momentum FMP return for January 2001 is 1/6 of the return spread between the winners and losers from July – November 2000, 1/6 of the return spread between winners and losers from June – October 2000, etc.

<sup>7</sup> That is, this liquidity FMP return for January 2005 is formed from 1/12 of the return spread between high liquidity ranked stocks and low liquidity ranked stocks for January 2003 - January 2004, 1/12 of return spread between high and low liquidity stocks for February 2003 through February 2004, etc.

investor protection FMPs are formed based on the frequency of rebalancing. The first is an annual rebalancing in December of each year, following Fama and French (1993), and with an annual holding period. The second is a monthly rebalancing, with annual holding periods. The resulting FMP returns are created from the averages across each of twelve annually held investor protection FMPs, similar to the method used for the liquidity FMPs.

Finally, the FMP based on the new governance measure follows the procedure outlined above for the investor protection based FMP. However, it only uses annual as opposed to monthly rebalancing in line with both governance and institutional quality being measured annually. Higher governance deciles reflect firms strategically adopting democracy-enhancing governance provisions that facilitate external contracting and lower bonding costs otherwise incurred by minority outside investors. This captures both firms in high quality institutional environments that are typically common law jurisdictions as well as firms in low quality institutional jurisdictions that voluntarily adopt more democratic governance elements in order to competitively attract foreign portfolio investment. In this way the new governance measure captures the strategic intentions of the firm in terms of the degree of adoption of external democratic governance tenets. This is based on the relative importance to individual firms of reducing bonding costs incurred by minority investors.

#### *4.2 Descriptive statistics of Factor Mimicking Portfolios*

Table 4 reports the means, standard deviations, autocorrelations and cross-correlations of monthly returns of the FMPs for the entire sample. The market portfolio has an average excess return of 1.12% over the 201 month horizon in the OECD overall universe (panel 1) which is statistically significant (t stat 3.23). We select the equal-weighted market portfolio. This has an approximately normal distribution, according to the Jarque-Bera statistic rather than the value-weighted market portfolios, which are highly non-normal. The difference in distribution between these two returns series is also reflected in the levels of kurtosis and skewness. These results are not reported but are available from the authors on request.

FMP's relating to size (SMB) and liquidity also have large mean returns that are equally statistically significant (panel 1). Mean returns on SMB are 1.86% (t stat 7.33) for OECD overall universe. In the case of liquidity and mean returns are -1.13% (t stat -4.56). SMB has low kurtosis, skewness and largely conforms to Normal probability distribution, however, this is in contrast to liquidity where Jarque-Bera statistics reveal substantial non-normality in returns.

It is worth noting that of all the FMP's, those attributable to HML and Momentum are smallest in average returns –under 0.50%. This implies that HML and Momentum are largely relevant in

explaining the cross section of stock returns in the US context and are less useful in other equity markets worldwide. This implies that if premiums do exist for each of these factors they are likely to be smaller in absolute size.

Finally, the FMPs associated with investor protection and the new governance measure are generally small in terms of average returns –under 0.50%, while the governance FMP returns are statistically significant across all three universes and the investor protection is only significant in OECD overall and US universes. Finally, it should be noted that the governance FMP mean returns conform to normality the most of any of our FMPs in terms of skewness, kurtosis and Jarque-Bera statistics across all three universes.

It should be noted that we have not reported the monthly rebalancing FMP results for brevity, although these are available from authors upon request. Monthly rebalanced FMPs for liquidity and investor protection are highly correlated with their annually rebalanced counterparts leading to our omission of these monthly liquidity and investor protection FMPs. Therefore, the factors included in the time series asset pricing tests are the equally weighted market excess returns, the value-weighted size and book-to-market FMPs, the equal-weighted momentum FMP, and the annually-rebalanced equal-weighted liquidity and investor protection FMPs.

In terms of correlations (see Table 2, panel 2) it can be observed that correlations are very low (under 0.50) in absolute value between all FMPs and the FMP's and market portfolio. However, it is notable that despite the low absolute size, correlations are statistically significant amongst the market portfolio, SMB, HML, liquidity and momentum FMPs – while this significance is largely lacking between both the investor protection and governance FMPs and any of the others. Finally, concerns regarding autocorrelations are mitigated due to their low absolute size and negligible statistical significance over 1, 6, and 12 month lagged periods. (Table 2, panel 3).

#### **Table 4**

#### *4.3 Descriptive Statistics of Governance Portfolios*

Table 5 panel 1 reports the characteristics of the stocks for the overall universe in each of the ten decile governance portfolios with respect to geographical region and legal origin. It shows clear trends across all decile portfolios in terms of the country of primary listing. In common with La Porta et al (1998, 2000) we find that the highest governance deciles are dominated by stocks from English common law markets, while the lowest are dominated by German, and to a lesser extent French, civil code stocks. The propensity of German civil code law stocks in lowest governance deciles is largely due to Japanese and South Korean stocks minimal democratic governance structure – where these

stocks form sizeable proportions of our underlying ASSET4 sample. Unlike La Porta et al (1998), we find that Scandinavian civil code stocks are more closely associated with English common law and exhibit a dramatically increasing trend towards higher governance deciles. This suggests a similar level of minority investor protection in Scandinavian civil code and English common law countries.

When we separate stocks by regional location of their primary listing venue, these trends are accentuated. Stocks from Australia and North America overwhelmingly populate the highest governance deciles (D5 to D10) with minimal, if any, participation in lower governance deciles (D4 to D1). Developed Europe and Scandinavian stocks are more evenly distributed across all governance deciles – although there is a notable increasing trend towards higher governance deciles. Conversely stocks drawn from Asia, notably Japan and South Korea, are almost universally located in lowest governance deciles – between D4 and D1. This unexpected finding further underscores a marked departure from their comparatively high ranking in terms of investor protection metric and in particular their levels of free float capitalization. Finally, stocks drawn from Latin America, Emerging Europe and Middle East are almost all universally located in lowest deciles – which is a largely anticipated result owing to the weaker institutional environments in these regions and minimal minority investor protection.

Finally, in Table 5, panel 2 we separate stocks in the US only universe across the three sub-components of the S&P 1,500 US equity market index – namely large cap S&P 500, mid cap S&P 400 and small cap S&P 600. There is a clear trend in stocks constituent to S&P 500 blue chip index in the highest governance deciles, while increasing trends in opposite direction are true of stocks constituent to S&P 400 and S&P 600 indices – where these dominate the lowest governance deciles. This evidence implies a distinct size effect where smaller firms that are less capitalized are less able to afford to implement costly outward governance structures.

### **Table 5**

The summary statistics for firm characteristics for the ten investor protection decile portfolios are also reported in Table 5, with the overall universe in panel 3 and the US only universe in panel 4. These support the existence of a governance premium between firms with high as opposed to low governance. First, the evidence from returns is not so strong with mean returns being lower on lowest governance decile (D1) than the highest (D10) where this is only marginally statistically significant in the equal weighted case ( $p \leq 0.10$ ). Second, and the strongest evidence arises from the highly statistically significant ( $p \leq 0.005$ ) differences between lowest and highest governance deciles across all other variables with the sole exception of momentum. This is true across both universes – namely

OECD overall and US only. Liquidity is lower, reflected in a higher Liu (2006) illiquidity metric, in D1 than in D10, while traded volume, book-to-market value ratio, proportion of free float capitalization and investor protection metric is lower in D1 than in D10. This is also true of the firm-level governance index and the new governance metric – both of which are lower in D1 than the highest decile, D10.

A notable exception to the trend of lower value variables in D10 to those in D10 is the proportion of daily zero price-returns where this is reflective of increased informational efficiency in terms of investor preferences shaped by information being crystallized into elevated order flows. This is then reflected in more movements in stock price and hence decreased price rigidity or proportion of daily zero returns. This is an unanticipated finding since it would be expected price rigidity would be in line with the multi-dimensional liquidity construct of Liu (2006). A plausible explanation may be that the unidimensional character of the proportion of zero returns implies it captures “bad” events as much as “good” events in terms of noise traders reacting to news revelations (disclosures) relating to internal company affairs. Thus, sell orders from adverse informational events generate as many price movements as buy orders from more positive, value-enhancing, events. In this way the Liu liquidity metric offers a more comprehensive measure of liquidity that is more representative of true transactions costs of a given firm’s stock.

There are some notable differences between the OECD overall and US only universes in panels 3 and 4. These are price and market capitalization – where both are much higher in lowest governance decile (D1) than the highest decile (D10) in OECD overall universe (panel 3), while the opposite is true in the US only universe (panel 4). This may be explained by there being a greater number of equity markets in the OECD universe than in the single-jurisdiction US market. Therefore, there is greater variation in levels of minority investor protection leading to a propensity for more concentrated cash flow ownership and block shareholders in weakest governance deciles. Block shareholders are less interested in enacting costly democratic governance reforms that would both dilute their cash flow holding, voting control and influence over internal affairs and strategic orientation of the firm. However, in weaker investor protection environments, there is less institutional protection afforded to minority outside shareholders, implying significant value attached to block shareholders whose long term incentives within the firm enhance value. This is reflected in a trend of increasing stock price from highest governance deciles (D10) to lowest governance deciles (D1). The opposite would be expected to be true in the single jurisdiction of US where generally high institutional quality afford optimal protections for minority investors. Here stock prices, indicating elevated value, are attached to firms adhering to democratic outward governance structure that reduces bonding costs and exacerbates

transparency for minority outsiders. This would support the theory with respect to low investor protection, that is, where there are weaker minority shareholder rights the stock market plays a less important role in the economy compared to high investor protection environments (La Porta et al, 1997, 1998). The lower price associated with lower investor protection deciles supports the view that poorer investor protection and the greater likelihood of insider or controlling shareholder expropriation of minorities, leads to lower prices (La Porta et al, 1999, 2000).

## 5. Results

### 5.1 Time-invariant empirical results

Our two-factor CAPM augmented with the new investor protection factor to account for institutional differences across international markets and the comparisons with existing models are in Appendix D, Table 1D. These are the CAPM, the Fama and French three factor model (FF3F), the Carhart four factor model, that is, the FF3F model augmented with an additional momentum factor (Carhart 4F), the Liu liquidity two factor model (Liquidity 2F) and the Investor Protection two factor model (IP2F). All models are estimated using time series OLS, following Black, Jensen and Scholes (1972), Fama and French (1993), Pastor and Stambaugh (2003) and Liu (2006). The expectation is that the Jensen alpha should not be statistically different from zero, given the relationship between an individual portfolio's expected returns and the market (Markowitz 1959)<sup>8</sup>.

The estimation results of the augmented CAPM models on the equally-weighted ten investor protection decile portfolios and the equally-weighted and value-weighted FMP using D1 - D10 are reported in Table 6. These are given for all three universes: OECD overall, OECD excluding US and US in panels 1 to 3 respectively. A general finding for all ten investor protection deciles (D1 to D10) in all models (the CAPM, FF3F, Carhart 4F, Liquidity 2F, Investor Protection 2F and the new Governance 2F) is that the adjusted-R<sup>2</sup> increases by between 1% to 5% in the Governance 2F model (see panel F) compared to all other models in each of the universes. However, the strongest support for the new Governance 2F model is the reduced statistical significance of the alpha terms for all decile portfolios relative to the other models in the three market universes. A final characteristic of the Governance 2F models is the sign on the governance FMP coefficient. Common to the three universes is the positive, large and statistically significant coefficient in the weakest investor protection deciles (D1) that becomes negative in the strongest (D10). This sign reversal is expected and reflects the premium associated with stocks in weak minority shareholder protection environments that is absent

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<sup>8</sup> One limitation to the use of standard OLS time series has been noted 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; Lettau and Ledvigson, 2001). Thus, we also examine time-varying parameter CAPM models explained in the next section.

for stocks in strong investor protection environments. So, the negative coefficients infer a progressive trend towards a discount on a “dispersed ownership” or “democratic” governance model within high institutional quality contexts (i.e. that of Berle and Means (1932) and with optimal protection of the institutional environment that supports a third party contracting and external governance model. In such high institutional quality contexts, third party contracting is supported and minority shareholder rights are better enforced and protected. Therefore, uncertainties about the true intentions of block shareholders (e.g. from their elevated potential for expropriation) are mitigated. The presence of a premium in lower governance deciles represents both weakness in the external contracting environment and higher uncertainties with respect to block holder intentions regarding appropriation, which occur within governance structures dominated by large block entities. The transition in the direction for the coefficient on governance FMP is identical to that for the investor protection FMP (based on cross product of free float and institutional quality) which is also reported in Hearn et al (2017). This further substantiates our argument regarding the persistence of a pricing anomaly that mirrors an underlying state variable related to revealed preferences of controlling shareholders towards the expropriation of minorities.

A notable feature of our results between the investor protection models in panel E and governance models in panel F is that the trend of the direction (sign) on the governance and investor protection betas ranging from low to high governance decile is the same in all OECD universes bar the US only case. As such, there is a premium on poorly governed firms (e.g. D1) transitioning to a discount on well governed firms (e.g. D10). Only in the US case is there an investor protection premium across all governance quality ranked deciles. This further substantiates our argument regarding governance being a reliable proxy for an underlying state variable based on revealed preferences towards expropriation from minorities.

The last two columns of Table 6 show the results of the estimation of the various pricing models to the zero-cost portfolios formed from the returns difference between low investor protection (D1) and high investor protection (D10) portfolios. This is the returns generated from a strategy of buying stocks in low investor protection firms and selling those where shareholder rights are protected. Estimation results for the CAPM, FF3F, Carhart 4F, Liquidity 2F and Investor Protection 2F models show the regression alpha can be viewed as the *abnormal return* that cannot be attributed to any of the included FMPs. Gompers et al (2003) describe these as “...the return in excess of what could have been achieved by passive investments in any of the factors” (p. 122).

Following Gompers, we include both equal and value-weighted returns difference portfolios (see the final two columns). For the OECD overall universe (panel 1) we find a persistent abnormal



return in terms of a statistically significant alpha ( $p \leq 0.05$ ) in all models applied to the value-weighted difference portfolio. This abnormal return ranges from -0.4 basis points per month in the CAPM to -- 0.7 basis points per month in the Liquidity 2F model. However, evidence to support an abnormal return attributable to investor protection is not so clear in the equal-weighted portfolio. Here, the alpha in the Carhart 4F model, Liquidity 2F model and Investor Protection 2F model are statistically significant ( $p \leq 0.05$ ), while in the CAPM and the FF3F model it is statistically insignificant. This suggests that for these models, the investment styles are sufficient to capture differences in the cross section. The evidence is more consistent for the OECD excluding US universe in panel 2 where all regression alphas for all models applied to both equal-weighted and value-weighted difference portfolios are statistically significant ( $p \leq 0.05$ ). Finally, the evidence is mixed for the US only universe (panel 3) where all alphas from application of all models to equally-weighted difference portfolios are statistically significant ( $p \leq 0.05$ ) while only those for CAPM, FF3F, Carhart 4F are statistically significant ( $p \leq 0.05$ ) for value-weighted difference portfolio. However, it should be noted that the variance of value-weighted portfolios is largely reflective of a handful of large stocks that overwhelmingly dominate the portfolio simply because of their relative size. In contrast, equal-weighted portfolios variances are more reflective of the broader cross section of stocks constituent to the portfolio.

Finally, the strongest support for the governance FMP and the two-factor model is found from its application to explain ten investor protection sorted deciles in panel G for each of the three universes. Here, Gov2F regression alphas generally lack statistical significance across all ten investor protection deciles, while the coefficient on the governance FMP is generally statistically significant. Furthermore, adjusted- $R^2$  are high across all models and comparable to those of the Gov2F models applied to governance deciles (panel F).

In summary the evidence so far points to the maintenance of proposition 1 that a premium exists for governance, where this is defined as the product of state institutional quality and individual firm's governance. However, the evidence from the statistical significance of alphas and the explanatory power (adjusted- $R^2$ ) of models is more varied across the different universes. This implies weaker support for proposition 2 where other FMPs such as the size (SMB), book-to-market (HML), Investor Protection 2F (IP) and particularly Liquidity 2F (LIQ) are equally as good as Governance 2F (GOV) in explaining the cross section of stock returns. Momentum is noticeably extremely poor in explaining returns in any multi-country setting and is only of relevance in the single-country context of US. Notably LIQ and IP are often equally as robust in explaining the cross section of stock returns as our GOV measure. However, this is likely to be due to a large overlap in the nature of transactions

costs captured by all three measures – where these additionally take into consideration market microstructural characteristics in the case of liquidity. However, an overlooked part of studies to date is that of consideration of ownership types and the specific *type* of blockholder rather than simply a generic designation of block ownership that typically assumes cash flow ownership concentration. Consideration of ownership types is reported in Appendix D, Table 1D, together with some observations. One immediate observation is the dominance of institutional shareholders in US market through investment companies and pension funds elevated holdings. This is in marked contrast to the rest of OECD where cross-shareholder networks prevail alongside family/employee ownership. Interestingly, despite these differences, our results regarding a governance premium hold.

### Table 6

#### 5.2 Time varying parameter empirical evidence

The final set of asset pricing tests is for the Kalman filter time-varying parameter coefficient models. We apply the Kalman filter estimation, which relies on the notion of state space to estimate the conditional constant term and market beta of the investor protection augmented CAPM, as well as of the comparison models<sup>9</sup>. The Kalman filter estimation allows the relaxation of assumptions on data generating processes and a stochastic time trend accounts for structural breaks. This is preferred to formal switching-regression models as it is not necessary to define the exact point of the switch. This is particularly important in the present study as although the timing of changes is known, the exact date of implementation is not, particularly with respect to changes in formal institutions and regulatory environments. A further benefit of Kalman filter estimation is that it is less demanding of the data compared with Markov-switching models that are generally incompatible with short sample periods (see Grout and Zaleswska, 2006). The process consists of an observation equation and a transition or state equation, which 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 that compose the state vector. The time-varying parameter coefficient models of the Governance 2F augmented CAPM and our comparison models are outlined in Appendix D, Table 1D.

The results are reported in Table 7. The four test assets are the ten size and book-to-market decile portfolios, the ten decile investor protection sorted portfolios and a collection of equally-weighted individual market portfolios that form each of the four universes. These provide a diverse range of test assets to assess the efficiency of our models.

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<sup>9</sup>Applications of this method include Grout and Zaleswska (2006), who examine the effects of regulation on UK and US stocks, and Brooks et al. (1998) who investigate Australian industry portfolios. This approach is appropriate to the measurement of time evolving risk premiums for market and investor protection factors (Grout and Zaleswska, (2006)

In general, maximum likelihood statistical convergence is achieved on average for 80% of the six models applied to the four sets of test assets in each universe. Model selection is based on two sets of statistics: information criteria (Schwarz-Bayesian Criterion, SBC; Hannan-Quinn Criterion, HQC; and Akaike Information Criterion, AIC), and the time series profile of the alpha across models.

Panel 1 (OECD overall universe) shows that the Governance 2F model has the lowest values for decile size, book-to-market and governance test assets and outperforms all other models in terms of the three information criteria. However, the Investor Protection 2F model is preferred in decile investor protection test assets. In the OECD excluding US markets universe (panel 2) asset pricing tests using decile size and governance test assets favour the Governance 2F model, while both decile book-to-market and investor protection test assets favour the Carhart 4F model. Finally, in the US only markets universe (panel 3) the Governance model is favoured over decile size, investor protection and governance test assets while the Carhart 4F model is only superior in the book-to-market portfolios context.

In summary, these time-varying parameter results provide support for the efficiency of the Governance 2F model across OECD universe and subordinate OECD excluding US and US only universes as well as a range of test assets. This is supportive of both propositions 1 and 2. It is noted that in the investor protection decile test assets the alpha is smallest and the share of standard errors that are below zero are highest for the Governance 2F model. This provides some evidence of the benefits of the governance FMP in explaining the cross section of stock returns and its persistence as a viable factor proxying an underlying state variable linked to preferences toward expropriation in explaining pricing anomalies. It equally questions the arguments of Bebchuck et al (2013) that differences in governance are “learned” by market participants and then arbitrated away as these are ultimately incorporated into stock prices.

### **Table 7**

## **6. Robustness Tests.**

We test the robustness of our results by considering another proxy for institutional quality, namely the Legal Structure and Security of Property Rights Index of Gwartney and Lawson (2007) - thereafter GL<sup>10</sup>. This index captures the dimensions of institutional quality that relate specifically to protection and enforcement of property rights associated with economic and financial stakeholders and particularly those associated with minority outside investors. We re-estimate all our main models using

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<sup>10</sup> We are grateful to the anonymous referee for suggesting this alternative proxy for institutional quality.

the GL index.<sup>11</sup> The results are not reported here but are available online.<sup>12</sup> The evidence provides even stronger support for our main analysis that used the broader Kaufman et al (2009) World Governance index.

We first calculate the FMP summary statistics for the aggregate World market universe, and provide details of the nationality of stocks sorted into each of the decile IP portfolios over time.<sup>13</sup> The distribution of stocks is on the whole similar to our main results in Table 5, providing reassurance for the robustness of our stock sorting process and models, with one difference. There is one slight difference with this being a more even distribution of Scandinavian stocks across all ten governance decile portfolios when using the GL index. This contrasts with a very visible increasing trend of Scandinavian stocks from lowest governance decile D1 to highest decile D10 apparent with using the Kaufman World Governance index.

We then present the estimation results from the time invariant CAPM, FF3F, Carhart 4F, Liquidity 2F, Investor Protection 2F and our Governance 2F models, for both universes, namely OECD overall and OECD excluding US.<sup>14</sup> These universes are those susceptible to institutional change and differences between national institutional frameworks that is picked up in our governance measure. The US only universe is the same as in our main results as being a single country the governance measure in effect becomes a metric capturing solely the differences in governance between firms. The results provide substantial support for those obtained in our main analysis when using the Kaufman World Governance index. In particular, there is consistent support in both universes, and confirms the superiority of our new Gov2F model over comparable FF3F, Carhart 4F, Liquidity 2F and IP2F configurations. This is evident in terms of higher adjusted R<sup>2</sup> and low regression Jensen alphas in both in terms absolute size and negligible statistical significance. However, the strongest support for our new IP measure is in the farthest two right hand columns that outline the results from testing all other factor models that explain the variance of equal and value weighted IP portfolios. In all cases the regression Jensen alphas are large and statistically significant.

Results from the application of time varying parameter models also provide further significant support for our Gov2F model.<sup>15</sup> Here the Gov2F model outperforms all other time-varying parameter models (based on CAPM, FF3F, Carhart 4F, Liquidity 2F and IP2F) in terms of informational criteria (SBC, AIC, HQC). This is also substantiated by the high proportions of models that attain maximum

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<sup>11</sup> Index values can be obtained from the authors' website: <http://www.freetheworld.com/>

<sup>12</sup> The tables can be accessed in Appendix E of the SSRN version of the paper.

<sup>13</sup> see Appendix E, Table 1E on the online version.

<sup>14</sup> See Appendix E, Table 2E on the online version.

<sup>15</sup> See Appendix E, Table 3E on the online version.

likelihood convergence, for example, over 70% for our new Gov2F model. These time varying results are notably better than those reported in Table 7 of the main analysis.

## **7. Conclusions**

The level of investor protections afforded by firms to minority owners is reflective of the revealed preferences towards expropriation by controlling insider groups or block holders. These are the focus of the decision to appropriate cash flows rather than pay dividends – where these infringements on property rights are typically hard to measure and evaluate. The outward governance structure of the firm acts to reduce bonding costs and enhance transparency for minorities and thus is a suitable proxy for these underlying appropriation tendencies in terms of whether insiders prefer to adopt costly governance provisions of benefit from an aggregate reduction in the cost of funds that facilitates longer term productivity and profitability of the firm. We argue that contrary to adaptive efficient market theory, investors and market participants do not “learn” the differences between strongly and weakly governed firms and ultimately incorporate these into stock prices. Rather, we argue that outward governance structure is itself a dynamic changing notion and is reflective of underlying changes regarding the revealed preferences towards expropriation by controlling insiders. In this way differences in returns for firms across the cross section of stock returns are reflective of a pervasive underlying state variable that is responsible for persistent pricing anomalies.

We propose a new governance measure of investor protection that is the product of national institutional quality and the governance rating of firms. Firms governance provisions are assessed on the basis of whether they are “democratic” and enhancing minority shareholder protections, or “dictatorship” and engendering insiders control. Extensive tests of variants of the augmented-CAPM, including time-varying parameter Kalman filter methods, show that a two factor CAPM augmented with a factor mimicking portfolio based on our new investor protection metric yields the highest explanatory power for a cross section of stock returns. Our evidence reveals consistent support for the new governance valuation factor and an governance premium attributable to minorities participating in weakly (dictatorship-orientated) governed firms as opposed to a discount for participating in their strongly (democracy-orientated) counterparts. These findings are consistent across single-country (US only) and multi-country (OECD) samples where these groups of markets are characterised by considerable variation in the types of ownership prevalent.

In general, our results indicate variations in abnormal returns on portfolios that reflect returns differences between democratic (strong) and dictatorship (weak) governance sorted deciles not explained by existing augmented CAPMs. These abnormal returns range from 0.4 basis points per

month (4.91% per annum) for equal weighted to over -1.0 basis points per month (-11.36% per annum) for value weighted portfolios. This confirms the importance of differences in governance and that minority investors should seek a premium to compensate for potential welfare losses and a means of hedging these losses within a conventional asset pricing framework.

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**Table 1. Individual elements of firm-level governance**

This table outlines the governance elements we have included as an integral part of the firm-level governance structure. Each element is sourced from Thomson Reuters ASSET4-ESG database and has been classified in terms of “democracy” or “dictatorship” in relation to the degree of power it gives external minority shareholders in comparison with incumbent insiders. This classification follows Gompers, Ishii & Metrick (2003). Each element is defined and has been included due to its simple binary coding of “Y” or “N” which can be easily codified into binary 1/0 facilitating the formation of a governance index.

Governance element	Type	Definition
<b>Minority rights</b>		
Board diversity policy	Democracy	Does the company have a policy regarding the diversity of its board?
Adequate experience of board policy	Democracy	Does the company have a policy regarding the adequate experience on its board?
Board independence policy	Democracy	Does the company have a policy regarding the independence of its board?
Board size policy	Democracy	Does the company have a policy regarding the size of its board?
CEO board member	Democracy	The CEO is a board member.
Chairman is ex-CEO	Dictatorship	Has the chairman previously held the CEO position in the company?
Nomination committee	Democracy	Does the company have a nomination committee?
Succession plan for executives	Democracy	Does the company have a succession plan for executive management in the event of unforeseen circumstances?
Corporate governance committee	Democracy	Does the company have a corporate governance committee?
External consultants	Democracy	Does the board or board committees have the authority to hire external advisers or consultants without management's approval?
Golden parachute	Dictatorship	Does the company have a golden parachute or other restrictive clauses related to changes of control (compensation plan for accelerated pay-out)?
Limitation of director liability	Dictatorship	Does the company have a limitation of director liability?
Limitations on removal of directors	Dictatorship	Are there limitations on the shareholders' right to remove board members (i.e., only for cause, supermajority vote required, etc.)?
Limited shareholder rights to call meetings	Dictatorship	Has the company limited the rights of shareholders to call special meetings?
Majority requirements for election of directors	Dictatorship	Are the company's board members elected with a majority vote?
Poison pill	Dictatorship	Does the company have a poison pill (shareholder rights plan, macaroni defence, etc.)?
<b>Voting</b>		
Advance notice for shareholder proposals	Democracy	Does the company have deadlines relating to shareholder proposals?
Confidential voting policy	Democracy	Does the company have a confidential voting policy (i.e., management cannot view the results of shareholder votes)?
Different share classes different rights	Dictatorship	Does the company have different class stocks with different voting rights?
Elimination of cumulative voting rights	Dictatorship	Has the company reduced or eliminated cumulative voting in regard to the election of board members?
Expanded constituency provision	Democracy	Does the company have expanded-constituency provisions in place?
Fair price provision	Democracy	Is the company subject to fair price provision, either under applicable law or as stated in the company documents (charter or bylaws)?
Min. number of shares to vote	Dictatorship	Has the company set requirements for a minimum number of shares to vote?
Voting cap	Dictatorship	Does the company have shares with a voting cap (ceilings) clause, ownership ceilings or control share acquisition provision?

Significant company transactions (M&A) shareholder's approval	Dictatorship	Limitations to the shareholders right to approve significant company transitions such as M&As (no rights to vote or supermajority required)?
Supermajority vote requirements	Dictatorship	Does the company have a supermajority vote requirement or qualified majority (for amendments of charters and bylaws or lock-in provisions)?
Written consent requirements	Democracy	Does the company permit actions to be taken without meeting by written consent?
Integrated strategy in MD&A	Democracy	Does the company explicitly integrate financial and extra-financial factors in its management discussion and analysis (MD&A) section in the annual report?
Equal voting right policy	Democracy	Does the company have a policy to apply the one-share, one-vote principle?
Shareholder engagement policy	Democracy	Does the company have a policy to facilitate shareholder engagement, resolutions or proposals?
Pre-emptive rights	Dictatorship	Does the company grant pre-emptive rights to existing shareholders?
Public availability corporate statutes	Democracy	Are the company's articles of association, statutes or bylaws publicly available?
<b>Delay</b>		
Classified board structure	Dictatorship	Does the company have a classified board structure?
Staggered board structure	Dictatorship	Does the company have a staggered board structure?
Company cross shareholding	Dictatorship	Does the company have significant cross shareholding that can prevent takeovers?
Golden share	Dictatorship	Does the biggest owner (by voting power) hold the veto power or own golden shares?
Blank check	Dictatorship	Does the company have unlimited authorized capital or a blank check?
State owned enterprise	Dictatorship	Is the company a State Owned Enterprise (SOE)?
<b>Director Incentives</b>		
Shareholder's approval of stock based compensation Plan	Democracy	Does the company require that shareholder approval is obtained prior to the adoption of any stock based compensation plans?
CEO compensation link to shareholder return	Democracy	Is the CEO's compensation linked to total shareholder return?
Compensation committee	Democracy	Does the company have a compensation committee?
Compensation improvement tools	Democracy	Does the company have the necessary internal improvement and information tools for the board members to develop appropriate compensation/remuneration to attract and retain key executives?
Executive retention compensation policy	Democracy	Does the company have a compensation policy to attract and retain executives?
Performance oriented compensation policy	Democracy	Does the company have a performance oriented compensation policy?
Shareholders vote on executive pay	Democracy	Do the company's shareholders have the right to vote on executive compensation?

## Table 2 Summary of governance elements

This table presents the percentage of firms with each provision – classified per US universe (these being constituents of large, mid and small cap indices – namely S&P500, S&P400, and S&P600 and the OECD excluding US – where these are subdivided between common law, civil code law and overall for the year 2015. All data is sourced from Thomson Reuters ASSET4-ESG database. It should be noted that this is the proportion of firms that report governance in ASSET4 database that then have implemented any of the governance provisions – be these dictatorship or democracy orientated elements. Cross shareholding element is not reported in any US firms for year 2015.

Governance element	Type	Percentage (%) of firms with governance provisions in:					
		US			OECD excl. US		
		S&P500	S&P400	S&P600	Civil Code law	Common law	Overall
<b>Minority rights</b>							
Board diversity policy	Democracy	71.30	63.54	69.96	25.73	77.87	50.00
Adequate experience of board policy	Democracy	99.78	99.46	97.63	43.44	95.28	67.57
Board independence policy	Democracy	98.43	93.83	90.91	39.43	64.94	51.31
Board size policy	Democracy	95.07	93.30	86.96	71.04	80.79	75.58
CEO board member	Democracy	98.43	95.44	97.63	41.78	84.49	61.66
Chairman is ex-CEO	Dictatorship	73.32	63.00	53.36	22.90	13.60	18.57
Nomination committee	Democracy	78.03	83.11	86.17	42.07	83.03	61.14
Succession plan for executives	Democracy	98.88	97.05	94.86	36.20	90.11	61.30
Corporate governance committee	Democracy	97.09	95.17	92.49	12.33	35.96	23.33
External consultants	Democracy	99.55	99.73	99.60	44.42	94.49	67.73
Golden parachute	Dictatorship	95.96	72.92	24.90	11.25	36.52	23.01
Limitation of director liability	Dictatorship	99.55	75.34	25.30	57.14	91.80	73.27
Limitations on removal of directors	Dictatorship	45.52	43.16	13.44	6.56	8.88	7.64
Limited shareholder rights to call meetings	Dictatorship	98.65	74.53	24.90	27.01	22.13	24.74
Majority requirements for election of directors	Dictatorship	84.08	66.49	55.73	52.94	87.53	69.04
Poison pill	Dictatorship	5.38	9.38	9.09	0.29	2.92	1.52
<b>Voting</b>							
Equal voting right policy	Democracy	93.95	94.37	92.89	56.36	96.29	74.95
Shareholder engagement policy	Democracy	97.98	95.98	95.26	45.69	81.46	62.34
Pre-emptive rights	Dictatorship	2.69	0.80	0.79	48.14	8.99	29.92
Public availability corporate statutes	Democracy	98.65	96.51	96.44	67.22	61.12	64.38
Advance notice for shareholder proposals	Democracy	99.33	75.07	25.30	33.27	57.30	44.46
Confidential voting policy	Democracy	50.45	23.06	7.91	5.48	6.52	5.96
Different share classes different rights	Dictatorship	6.05	5.63	6.72	40.70	3.37	23.33

Elimination of cumulative voting rights	Dictatorship	77.13	54.69	19.37	18.40	3.71	11.56
Expanded constituency provision	Democracy	9.19	6.70	2.37	1.96	1.46	1.73
Fair price provision	Democracy	19.06	16.89	3.16	0.78	0.34	0.58
Min. no. shares to vote	Dictatorship	0.67	1.34	1.19	32.68	1.01	17.94
Voting cap	Dictatorship	2.02	1.07	0.00	5.19	2.81	4.08
Significant company transactions (M&A) shareholder's approval	Democracy	66.37	49.60	16.21	12.82	2.02	7.79
Supermajority vote requirements	Dictatorship	51.57	45.31	14.62	41.78	58.43	49.53
Written consent requirements	Democracy	46.86	40.21	13.83	1.17	3.60	2.30
Integrated strategy in MD&A	Democracy	8.52	3.49	3.16	11.55	35.51	22.70
<b>Delay</b>							
Classified board structure	Dictatorship	0.00	0.00	0.00	0.68	0.00	0.37
Staggered board structure	Dictatorship	20.18	32.98	9.49	16.14	32.13	23.59
Company cross shareholding	Dictatorship	-- --	-- --	-- --	0.29	0.00	0.16
Golden share	Dictatorship	3.14	2.68	5.14	14.68	8.09	11.61
Blank check	Dictatorship	94.17	69.17	25.30	2.05	26.74	13.55
State owned enterprise	Dictatorship	0.00	0.00	0.00	2.35	0.67	1.57
<b>Director Incentives</b>							
Shareholder's approval of stock based compensation Plan	Democracy	95.07	96.51	95.65	24.27	63.37	42.47
CEO compensation link to shareholder return	Democracy	78.92	62.47	43.08	12.33	64.61	36.66
Compensation committee	Democracy	95.52	97.32	98.42	42.86	87.53	63.65
Compensation improvement tools	Democracy	99.10	98.39	97.23	26.71	88.65	55.54
Executive retention compensation policy	Democracy	99.55	99.20	97.63	28.28	88.09	56.12
Performance oriented compensation policy	Democracy	100.00	99.46	99.21	65.46	92.25	77.93
Shareholders vote on executive pay	Democracy	95.07	96.51	95.65	24.27	63.37	42.47
Number of constituent firms:		500	400	600	2,050	1,164	3,244
Number of firms with governance (in ASSET4):		446	373	253	1,022	890	1,912

**Table 3 Summary of governance, institutional quality and investor protection statistics**

This table reports summary statistics for the sample markets. The start date reflects beginning of data reporting for stocks in each market in Datastream, the number is the stocks in the respective blue chip index used. National blue chip indices and their Datastream codes are in Appendix B Table 1B. Datastream reports the free float proportions (%). Institutional quality is reported on a 0-1 scale, where this is the average of the rescaled six underlying World Governance indicators (Democratic voice and accountability; Political stability and absence from violence; Government Effectiveness; Regulatory quality; Rule of law; and Control of corruption). Indicators 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>. The new investor protection metric is based on a stock-by-stock basis and is the product of free float proportion and country-level aggregate institutional quality, in units of 0 – 10,000. Square brackets indicate median values. Developed and emerging markets are distinguished using the MSCI classification system.

Country	N	N <sub>ASSET4</sub>	Governance metrics		Investor protection metrics			Descriptive statistics		
			Governance (0 – 4,500)	Firm governance (0 - 45)	Investor Protection (0 – 10,000)	Free-Float (%)	Institutional quality (0 - 1)	Market cap. (US\$, b)	Book to Market value ratio	Liu Liquidity metric
<b>North America</b>										
Canada	248	224	2,174 [2197]	23.69 [24.00]	7,201 [7,927]	78.82 [88.00]	0.9143	4.37 [1.27]	0.732 [0.565]	17.37 [9.65]
US S&P 500	500	446	2,242 [2,278]	27.05 [28.00]	6,370 [6,947]	75.81 [84.00]	0.8380	16.55 [0.21]	1.450 [0.905]	13.76 [8.69]
US S&P 400	400	373	2,193 [2,221]	26.53 [27.00]	6,025 [6,425]	72.13 [77.07]	0.8380	2.81 [1.94]	0.504 [0.470]	16.69 [8.68]
US S&P 600	600	253	2,117 [2,049]	25.92 [25.00]	5,905 [6,180]	70.67 [75.00]	0.8380	0.97 [0.61]	0.607 [0.541]	18.09 [8.69]
<b>Europe Developed</b>										
Austria	20	13	1,658 [1,644]	18.49 [18.00]	4,957 [4,902]	54.91 [55.00]	0.8962	3.19 [2.10]	0.841 [0.812]	17.26 [12.60]
Belgium	20	19	1,867 [1,916]	22.12 [23.00]	5,324 [5,104]	62.78 [59.00]	0.8454	24.02 [7.02]	0.773 [0.683]	8.67 [5.77]
France	60	51	1,590 [1,604]	19.53 [20.00]	5,607 [5,890]	68.44 [72.00]	0.8149	22.72 [12.41]	0.650 [0.531]	7.02 [5.77]
Germany	100	48	1,725 [1,704]	19.50 [19.00]	5,263 [6,017]	59.44 [68.00]	0.8855	10.83 [2.65]	1.525 [0.529]	21.96 [7.70]
Ireland	47	14	2,119 [2,095]	24.10 [23.00]	6,166 [6,381]	69.44 [71.50]	0.8830	187.62 [0.47]	1.334 [0.573]	57.32 [16.39]
Italy	74	1	1,073 [1,079]	16.17 [17.00]	2,921 [2,674]	42.96 [40.50]	0.6783	0.31 [0.15]	0.580 [0.685]	15.84 [7.72]
Luxembourg	9	2	1,860 [1,976]	19.98 [21.00]	4,661 [4,858]	49.97 [52.00]	0.9348	10.77 [1.23]	1.504 [1.304]	54.18 [22.29]
Netherlands	140	40	2,145 [2,167]	23.14 [23.00]	5,901 [6,300]	63.32 [66.00]	0.9315	112.51 [0.67]	0.780 [0.582]	26.54 [5.77]
Portugal	47	11	1,548 [1,583]	19.73 [20.00]	2,967 [2,689]	37.83 [34.55]	0.7860	2.64 [0.19]	0.934 [0.728]	38.50 [5.81]
Spain	108	49	1,642 [1,705]	21.80 [22.00]	4,258 [4,011]	55.89 [54.61]	0.7629	9.17 [0.93]	0.601 [0.599]	16.59 [5.81]
Switzerland	100	61	1,900 [1,867]	20.22 [20.00]	6,183 [6,424]	65.57 [68.50]	0.9429	8.87 [1.93]	0.595 [0.456]	13.99 [9.61]
UK FTSE 100	101	98	2,206 [2,166]	25.34 [25.00]	6,526 [7,779]	74.05 [89.00]	0.8768	25.89 [9.46]	0.548 [0.416]	10.75 [7.72]
UK FTSE 250	251	234	2,014 [2,029]	23.12 [23.00]	6,008 [7,141]	68.01 [80.87]	0.8768	1.53 [1.07]	0.745 [0.576]	17.10 [7.72]
<b>Scandinavia</b>										
Denmark	135	34	1,875 [1,850]	19.69 [19.00]	5,797 [5,838]	60.42 [61.00]	0.9556	7.73 [0.08]	0.931 [0.816]	53.79 [14.48]
Finland	135	31	1,870 [1,888]	19.37 [20.00]	5,946 [6,201]	61.19 [65.50]	0.9683	2.22 [0.24]	0.714 [0.610]	34.75 [10.62]
Iceland	16	0	---	---	3,459 [3,133]	38.18 [32.50]	0.9146	0.29 [0.21]	0.751 [0.577]	106.16 [67.58]
Norway	25	17	1,932 [1,995]	20.63 [21.00]	5,677 [5,481]	60.53 [58.25]	0.9359	8.95 [1.98]	0.766 [0.649]	16.63 [9.65]
Sweden	89	58	1,859 [1,874]	19.64 [20.00]	6,590 [7,070]	69.43 [74.54]	0.9452	6.96 [1.65]	0.645 [0.515]	14.36 [9.65]
<b>Europe Emerging</b>										
Czech Republic	24	6	1,329 [1,289]	17.93 [17.50]	2,526 [2,240]	34.63 [30.00]	0.7338	2.28 [0.35]	1.286 [0.947]	66.97 [9.69]

Estonia	32	0	-- --	---	3,770 [3,167]	47.96 [40.00]	0.7804	0.14 [0.05]	0.855 [0.856]	116.21 [103]
Greece	60	18	1,212 [1,224]	18.72 [18.50]	3,406 [3,016]	51.06 [43.17]	0.6568	0.54 [0.21]	1.332 [0.942]	20.52 [11.13]
Hungary	14	4	1,372 [1,428]	19.71 [21.00]	3,586 [3,618]	49.74 [50.00]	0.7148	1.43 [0.11]	0.919 [0.777]	23.99 [11.63]
Latvia	67	0	-- --	---	2,127 [1,337]	31.08 [20.00]	0.6871	44.27 [4.15]	1.231 [1.859]	132.08 [110]
Poland	20	8	1,123 [1,096]	15.87 [15.00]	3,464 [3,487]	49.59 [49.50]	0.7006	4.21 [3.15]	0.720 [0.644]	18.20 [9.69]
Slovakia	50	0	-- --	---	1,494 [1,204]	21.27 [18.00]	0.7004	0.12 [0.06]	2.883 [2.428]	178.58 [198]
Slovenia	7	0	-- --	---	4,320 [4,704]	57.24 [63.00]	0.7549	0.69 [0.47]	1.069 [0.823]	19.55 [12.55]
<b>Australasia</b>										
Australia	300	259	2,164 [2,214]	24.06 [25.00]	6,458 [6,769]	71.61 [75.00]	0.9067	3.40 [0.67]	0.675 [0.556]	29.96 [7.75]
New Zealand	116	45	2,067 [2,019]	21.70 [21.00]	5,927 [6,294]	62.22 [65.50]	0.9496	0.48 [0.14]	0.782 [0.665]	60.90 [20.82]
<b>Asia</b>										
Japan	498	383	1,011 [921]	12.31 [11.00]	6,622 [7,278]	80.36 [88.00]	0.8191	7.33 [2.61]	0.843 [0.778]	18.42 [15.38]
South Korea	100	91	803 [694]	11.37 [9.00]	4,383 [4,466]	62.39 [62.00]	0.7004	6.27 [3.15]	1.136 [0.872]	17.45 [13.49]
<b>MEA</b>										
Israel	101	16	1,192 [1,250]	17.42 [18.50]	2,638 [2,216]	38.93 [32.00]	0.6831	1.02 [0.22]	0.864 [0.746]	43.74 [15.50]
Turkey	30	22	757 [762]	14.88 [14.50]	1,884 [1,780]	37.38 [35.00]	0.5014	3.22 [1.73]	0.8357[0.725]	12.95 [8.72]
<b>Latin America</b>										
Chile	40	23	1,015 [1,011]	12.64 [12.00]	2,950 [2,974]	36.35 [36.00]	0.8056	2.98 [1.67]	0.960 [0.625]	25.76 [11.58]
Mexico	60	32	645 [562]	12.73 [12.00]	3,102 [2,605]	61.03 [51.00]	0.5049	22.97 [1.47]	0.907 [0.578]	42.52 [9.65]
OECD civil code	2,050	1,022	1,317 [1,217]	15.88 [15.00]	5,098 [5,317]	61.27 [64.00]	0.7949	25.48 [1.28]	0.854 [0.688]	35.33 [12.60]
OECD common law	2,664	1,962	2,147 [2,187]	25.25 [26.00]	6,058 [6,563]	70.56 [77.90]	0.8545	7.87 [0.90]	0.811 [0.560]	23.19 [8.69]
OECD excl. US	3,214	1,912	1,678 [1,842]	19.42 [21.00]	5,434 [6,014]	63.63 [70.00]	0.8099	19.61 [1.15]	0.813 [0.647]	34.09 [10.60]
US only	1,500	1,072	2,187 [2,215]	26.54 [27.00]	6,093 [6,510]	72.78 [78.02]	0.8380	6.68 [0.88]	0.863 [0.551]	16.27 [8.69]
OECD Overall	4,714	2,984	1,877 [2,045]	22.20 [24.00]	5,645 [6,311]	66.56 [75.00]	0.8122	15.53 [1.06]	0.829 [0.611]	28.42 [8.71]



**Table 4 Factor mimicking portfolio summary statistics – for aggregate World market universe**

This table reports the descriptive statistics, autocorrelations (at 1, 6 and 12 lags) for returns-based valuation factors including the Market, the Fama and French (1993) size (SMB) and book to market value (HML), the Jegadeesh and Titman (1993) momentum factor and the Liu (2006) liquidity factor used to explain cross section of stock returns across the market universe. The market universe in this case is the aggregate world and is equal-weighted. All factors are obtained from equal-weighted portfolios while the FF size (SMB) and book-to-market value (HML) factors are value-weighted. Summary statistics are also reported, with t-difference in means, for the highest and lowest liquidity sorted portfolios (used to create the liquidity-based valuation factor). These are based on stock returns, book-to-market value, size (market capitalization US\$), stock price, traded volume, monthly bid-ask spread and monthly percentage daily volatility in daily stock returns. Liquidity, Governance and Investor Protection portfolios D1 and D10 are formed from annual rebalancing. †, \*, \*\* indicates significance at the 10%, 5%, and 1% levels respectively

	Market	SMB	HML	Liquidity (1 year)	Momentum	Investor Protection (1 year)	Governance (1 year)
	Equal weight	Value weight	Value weight	Equal weight	Equal weight	Equal weight	Equal weight
<b>Panel 1: Descriptive statistics OECD overall</b>							
Mean (%)	1.12%	1.86%	0.03%	-1.13%	-0.12%	0.15%	0.19%
t-statistic	3.23**	7.33**	0.13	-4.56**	-0.34	1.88†	1.92*
Standard Deviation (%)	4.92%	3.59%	3.18%	3.52%	5.03%	2.48%	2.94%
Skewness	-0.67	-0.42	-0.03	-2.62	2.05	2.47	-0.08
Kurtosis	6.20	4.65	4.64	23.71	12.35	22.62	3.86
Jarque-Bera statistic	100.43	28.68	22.67	3,819.76	873.25	3,429.58	6.40
<b>Panel 2: Pearson correlations OECD overall</b>							
Market	1.000						
SMB	-0.424**	1.000					
HML (Book to Market value)	0.201**	-0.155*	1.000				
Liquidity (1 Year Rebalance)	0.383**	-0.335**	-0.011	1.000			
Momentum	0.412**	-0.458**	0.128*	0.225**	1.000		
Investor Protection (1 Year Rebalance)	-0.028	-0.024	-0.044	0.101†	0.069	1.000	
Governance (1 Year Rebalance)	-0.009	0.071	0.021	-0.046	-0.114*	0.155*	1.000
<b>Panel 3: Autocorrelations OECD overall</b>							
1-Lag	0.217	0.237	0.177	-0.094	0.178	0.106	0.079
6-Lags	-0.118	-0.019	0.118	-0.065	0.004	-0.013	0.027
12-Lags	0.015	0.133	0.106	0.094	0.068	0.098	0.075

**Table 5 Factor mimicking portfolio summary statistics – for aggregate OECD market and US only universes**

This table reports the stock counts by country and ownership descriptive statistics for all ten decile sorted governance portfolios (D1 – D10). The first is a breakdown of stock counts per portfolio with respect to legal origin of their listing market and is by German, French and Scandinavian civil code versus English common law classification, following La Porta et al (2008). Developed and emerging markets are distinguished using the MSCI classification system. The second reports the descriptive statistics for all ten decile sorted investor protection portfolios (D1 – D10), with panel 1 for the World overall and panel 2 for the US-only universes. These show summary statistics for several stock-characteristic variables per decile-sorted portfolio. These are returns (equally and value weighted decile portfolios), momentum, the Liu-liquidity metric, market capitalization (US\$ billions), traded volume (US\$ millions), the monthly proportion of daily zero returns (%), mean daily stock closing price (US\$), Book-to-market value, free float proportion (%) and the investor protection metric. In the first column a t-difference in means statistical significance confidence level is provided for mean values in decile portfolio D1 in relation to the differences between these and D10. †, \*, \*\* indicates significance at the 10%, 5%, and 1% levels respectively.

	D1 (Low)	D2	D3	D4	D5	D6	D7	D8	D9	D10 (High)
<b>Panel 1: Stock count (#) – OECD universe</b>										
English common law	7.32	18.39	65.56	119.74	152.57	169.90	184.70	185.37	192.56	191.95
Scandinavian civil code law	1.43	6.16	17.15	16.96	14.71	10.03	6.92	6.27	5.88	5.33
French civil code law	30.81	32.08	41.39	28.19	16.91	10.61	7.30	7.59	4.39	5.72
German civil code law	181.04	150.93	70.12	26.92	12.72	6.01	2.07	2.36	0.96	0.36
North America	2.01	7.69	34.67	82.14	103.83	114.56	134.03	134.81	139.99	145.45
Europe Developed	13.05	40.46	106.72	95.41	80.24	75.27	57.51	54.14	49.51	41.25
Australasia	0.00	2.07	10.18	13.53	19.03	16.77	16.38	19.07	18.59	20.74
Scandinavia	1.43	6.16	17.15	16.96	14.71	10.03	6.92	6.27	5.88	5.33
Asia	157.73	125.36	44.90	14.14	3.76	0.76	0.06	0.12	0.00	0.00
Latin America	18.74	9.84	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Europe Emerging	6.67	8.29	5.27	1.18	0.54	0.18	0.06	0.00	0.00	0.00
Middle East & Africa	16.58	7.36	2.18	0.66	0.32	0.00	0.00	0.00	0.00	0.00
Total	216.32	207.74	207.35	207.18	207.72	207.54	208.04	208.13	208.09	207.44
<b>Panel 2: Stock count (#) – US-only universe</b>										
S&P 500	22.59	20.08	29.63	36.31	38.81	43.68	49.06	48.19	55.12	56.07
S&P 400	26.30	31.15	24.07	28.90	22.85	21.93	21.04	20.48	17.13	15.10
S&P 600	35.32	24.91	22.46	11.00	14.49	10.66	6.29	7.67	4.22	4.27
Total	84.21	76.14	76.16	76.21	76.14	76.26	76.40	76.35	76.48	75.45

<b>Panel 3: Summary statistics – OECD market universe</b>	<b>D1 (Low)</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>	<b>D5</b>	<b>D6</b>	<b>D7</b>	<b>D8</b>	<b>D9</b>	<b>D10 (High)</b>
	Equal	Equal	Equal	Equal	Equal	Equal	Equal	Equal	Equal	Equal
Returns – equal weight, %	1.0783	1.0509	1.1385	1.2255	1.2258	1.2860	1.1936	1.0612	0.7802	1.2698
Returns – value weight, %	<b>0.2123†</b>	0.1377	0.2436	0.0087	0.6190	-0.3496	1.0704	-0.1423	-0.4529	0.1647
Momentum	0.0704	0.0382	0.0583	0.0660	0.0717	0.0661	0.0667	0.0628	0.0591	0.0595
Liu Liquidity (1 year)	<b>14.58**</b>	13.81	12.26	11.52	11.20	11.19	10.31	10.68	9.53	9.52
Traded volume (shares millions)	<b>54.93**</b>	74.04	44.50	40.98	52.69	59.69	57.33	61.78	85.87	137.17
Market Cap. (US\$ billions)	<b>75.74**</b>	40.67	30.97	39.17	41.14	10.40	11.80	18.26	19.41	41.50
Daily zero returns per month (%)	<b>10.00**</b>	9.42	10.78	11.38	12.97	15.62	16.63	17.52	19.42	22.24
Price (mean month, US\$)	<b>404.99**</b>	101.76	246.31	157.33	147.97	57.81	40.93	39.52	37.50	42.46
Book to Market value ratio	<b>0.7227**</b>	0.7648	0.8774	0.8809	0.9370	0.9738	0.9598	0.8539	0.7060	0.9455
Free Float (%)	<b>66.52**</b>	69.33	67.19	66.26	67.47	70.10	70.65	72.43	74.33	76.03
Investor Protection metric	<b>5,096.93**</b>	5,614.14	5,625.66	5,600.26	5,699.86	5,958.42	5,930.22	6,124.00	6,273.72	6,475.82
Firm governance index	<b>11.30**</b>	15.29	18.35	20.60	22.21	23.49	24.77	25.52	26.85	28.53
Governance metric	<b>844.02**</b>	1,241.94	1,548.55	1,761.24	1,903.70	2,024.05	2,124.88	2,200.66	2,316.84	2,474.15
<b>Panel 4: Summary statistics – US only universe</b>	<b>D1 (Low)</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>	<b>D5</b>	<b>D6</b>	<b>D7</b>	<b>D8</b>	<b>D9</b>	<b>D10 (High)</b>
	Equal	Equal	Equal	Equal	Equal	Equal	Equal	Equal	Equal	Equal
Returns – equal weight (%)	<b>1.2358†</b>	1.3401	1.2036	1.3398	1.0618	0.9857	1.0521	1.0258	0.9850	1.0665
Returns – value weight (%)	0.1032	0.9682	0.4755	0.7787	0.4494	0.3199	0.4136	0.0721	0.5747	0.0824
Momentum	0.0727	0.0758	0.0729	0.0752	0.0615	0.0547	0.0545	0.0565	0.0535	0.0607
Liu Liquidity (1 year)	<b>11.05**</b>	10.29	10.01	10.12	10.29	9.59	9.50	9.46	9.25	9.28
Traded volume (shares millions)	<b>22.56**</b>	26.49	39.49	50.44	43.77	41.39	62.26	68.23	82.23	126.50
Market Cap. (US\$ billions)	<b>3.13**</b>	3.70	3.93	5.59	5.62	7.00	8.84	36.68	39.42	50.17
Daily zero returns per month (%)	<b>14.99**</b>	15.73	20.27	21.84	23.50	25.72	29.67	28.38	33.56	35.16
Price (mean month, US\$)	<b>35.48**</b>	39.56	40.83	44.45	41.57	45.24	44.90	51.77	49.60	51.66
Book to Market value ratio	<b>0.8991**</b>	1.0643	1.3093	1.5774	1.0580	1.6600	0.9381	-0.2490	1.7222	1.2830
Free Float (%)	<b>66.23**</b>	69.08	69.11	70.44	70.53	70.26	72.02	72.54	74.44	75.25
Investor Protection metric	<b>5,288.42**</b>	5,557.82	5,583.84	5,691.20	5,691.98	5,653.38	5,848.10	5,859.19	6,069.92	6,136.87
Firm governance index	<b>21.13**</b>	23.21	24.23	25.00	25.76	26.28	27.10	27.77	28.62	30.10
Governance metric	<b>1,722.98**</b>	1,905.19	1,994.02	2,066.02	2,135.42	2,184.71	2,256.31	2,318.26	2,395.57	2,528.22

**Table 6 Empirical results for 10 governance and investor protection (1 year rank and holding period) decile portfolios – for all universes**

This table reports the beta coefficients for valuation factors with t-statistics, explanatory power ( $R^2$ ) and standard errors for the Fama and French (1993) three factor model (size and book to market value), the Carhart (1997) four factor model (size, book to market value and momentum) and the Liu (2006) two factor liquidity model of Liu (2006) in modelling returns of 10 liquidity sorted quintile portfolios (single-pass stock sorting following Liu, 2006). 1y indicates annual rebalancing used in factor formation (as opposed to monthly rebalancing). D1 is the lowest illiquidity and D10 the highest. These portfolios are formed from annual rebalancing using the liquidity metric. 10 year US Treasury yield is used as the risk free rate. HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000). Numbers in square brackets are t-statistics. †, \*, \*\* indicates significance at the 10%, 5%, and 1% levels respectively.

	D1 (Low) Equal	D2 Equal	D3 Equal	D4 Equal	D5 Equal	D6 Equal	D7 Equal	D8 Equal	D9 Equal	D10 (High) Equal	D1 - D10 Equal	D1 - D10 Value
<b>Weighting:</b>												
<b>Panel 1: OECD market universe</b>												
<b>Panel 1A: CAPM</b>												
Alpha (%)	-0.001 [-0.32]	-0.006 [-4.04]	-0.004 [-2.86]	-0.002 [-1.74]	-0.002 [-1.72]	-0.002 [-1.75]	-0.001 [-1.57]	-0.003 [-3.39]	-0.003 [-3.17]	-0.003 [-2.21]	0.002 [0.87]	-0.004 [-0.89]
Beta: Market (excess return)	0.939 [22.08]	0.972 [21.58]	1.015 [24.63]	1.011 [27.84]	1.045 [53.99]	0.999 [38.9]	0.975 [59.06]	1.064 [46.83]	0.983 [35.53]	0.944 [28.83]	-0.005 [-0.11]	0.299 [3.41]
Adjusted R <sup>2</sup>	0.7895	0.8393	0.9143	0.9221	0.9369	0.9252	0.9299	0.9321	0.9254	0.9079	0.0005	0.0531
<b>Panel 1B: FF3F</b>												
Alpha (%)	-0.001 [-0.20]	-0.005 [-2.76]	-0.002 [-1.28]	-0.001 [-0.10]	-0.001 [-0.44]	-0.001 [-0.58]	-0.001 [-1.10]	-0.002 [-1.41]	-0.002 [-1.65]	-0.001 [-0.82]	0.001 [0.20]	<b>-0.003</b> [-1.61]*
Beta: Market (excess return)	0.935 [21.08]	0.956 [19.73]	0.994 [23.50]	1.002 [26.91]	1.042 [52.17]	0.990 [32.91]	0.974 [49.57]	1.049 [46.62]	0.972 [33.22]	0.922 [33.82]	0.013 [0.28]	0.282 [3.09]
Beta: SMB	-0.009 [-0.21]	-0.060 [-1.71]	-0.070 [-1.85]	-0.102 [-3.37]	-0.062 [-2.26]	-0.047 [-1.13]	-0.014 [-0.46]	-0.085 [-2.41]	-0.069 [-2.36]	-0.079 [-2.01]	0.070 [1.21]	-0.032 [-0.30]
Beta: HML	0.009 [0.19]	-0.020 [-0.39]	-0.006 [-0.12]	-0.172 [-4.71]	-0.123 [-3.51]	-0.047 [-0.86]	-0.028 [-0.94]	-0.094 [-1.94]	-0.074 [-1.82]	-0.019 [-0.4]	0.028 [0.37]	0.054 [0.41]
Adjusted R <sup>2</sup>	0.7874	0.8392	0.9153	0.9353	0.9426	0.9261	0.9296	0.9366	0.9284	0.9098	0.0086	0.0446
<b>Panel 1C: Carhart 4F</b>												
Alpha (%)	0.001 [0.01]	-0.005 [-2.87]	-0.002 [-1.32]	-0.001 [-0.07]	-0.001 [-0.47]	-0.001 [-0.44]	-0.001 [-1.04]	-0.002 [-1.39]	-0.002 [-1.63]	-0.001 [-0.74]	<b>0.001</b> [1.34] †	<b>-0.002</b> [-1.46] †
Beta: Market (excess return)	0.958 [18.56]	0.948 [17.52]	0.991 [23.00]	1.004 [25.88]	1.041 [50.60]	1.001 [34.80]	0.977 [47.34]	1.049 [46.77]	0.971 [37.96]	0.926 [34.81]	0.032 [0.57]	0.323 [3.48]
Beta: SMB	-0.050 [-1.01]	-0.045 [-1.25]	-0.064 [-1.75]	-0.106 [-3.67]	-0.060 [-2.06]	-0.064 [-1.43]	-0.018 [-0.58]	-0.084 [-2.42]	-0.068 [-2.06]	-0.086 [-2.02]	0.036 [0.55]	-0.105 [-0.84]
Beta: HML	0.012 [0.26]	-0.021 [-0.41]	-0.007 [-0.13]	-0.172 [-4.65]	-0.123 [-3.49]	-0.046 [-0.84]	-0.027 [-0.93]	-0.094 [-1.93]	-0.074 [-1.79]	-0.019 [-0.39]	0.031 [0.40]	0.060 [0.45]
Beta: Momentum	-0.085	0.031	0.013	-0.008	0.004	-0.036	-0.009	0.002	0.002	-0.015	-0.070	-0.151

Adjusted R <sup>2</sup>	[-1.87]	[0.72]	[0.56]	[-0.27]	[0.18]	[-1.12]	[-0.36]	[0.08]	[0.06]	[-0.41]	[-1.34]	[-1.2]
	0.7915	0.8390	0.9150	0.9350	0.9424	0.9266	0.9293	0.9363	0.9281	0.9095	0.0029	0.0512
<b>Panel 1D: Liquidity 2F(1y)</b>												
Alpha (%)	-0.001	-0.004	-0.001	0.001	0.001	-0.001	-0.001	-0.002	-0.002	-0.001	<b>0.001</b>	<b>-0.007</b>
	[-0.04]	[-2.60]	[-1.05]	[0.11]	[0.89]	[-0.42]	[-0.31]	[-1.76]	[-1.80]	[-1.14]	<b>[1.60]*</b>	<b>[-1.63]*</b>
Beta: Market (excess return)	0.929	0.943	0.976	0.967	0.999	0.974	0.953	1.034	0.959	0.922	0.006	0.368
	[20.51]	[20.99]	[25.87]	[31.71]	[59.97]	[39.01]	[63.36]	[49.06]	[37.41]	[28.97]	[0.13]	[4.04]
Beta: Liquidity	0.036	0.105	0.145	0.161	0.171	0.091	0.080	0.109	0.088	0.078	-0.042	-0.253
	[0.81]	[1.96]	[3.19]	[3.74]	[5.29]	[3.46]	[2.80]	[2.91]	[2.55]	[2.29]	[-0.71]	[-1.45]
Adjusted R <sup>2</sup>	0.789	0.8428	0.9221	0.932	0.9477	0.9282	0.9324	0.9361	0.9282	0.9101	0.0079	0.0666
<b>Panel 1E: Investor Protection 2F(1y)</b>												
Alpha (%)	-0.001	-0.006	-0.004	-0.002	-0.002	-0.002	-0.001	-0.003	-0.003	-0.002	<b>0.002</b>	<b>-0.004</b>
	[-0.37]	[-4.26]	[-2.84]	[-1.66]	[-1.57]	[-1.41]	[-1.24]	[-2.98]	[-2.79]	[-1.95]	<b>[1.73]**</b>	<b>[-1.91]**</b>
Beta: Market (excess return)	0.939	0.974	1.015	1.011	1.045	0.997	0.973	1.061	0.982	0.942	-0.003	0.301
	[21.97]	[21.71]	[24.57]	[27.64]	[53.06]	[40.09]	[61.31]	[48.47]	[36.57]	[30.13]	[-0.06]	[3.40]
Beta: Investor Protect	0.053	0.126	0.011	-0.016	-0.045	-0.125	-0.141	-0.154	-0.108	-0.130	0.184	0.150
	[0.66]	[1.95]	[0.19]	[-0.31]	[-1.07]	[-2.60]	[-3.21]	[-3.51]	[-2.67]	[-2.66]	[1.70]	[0.71]
Adjusted R <sup>2</sup>	0.7891	0.8421	0.9139	0.9218	0.9371	0.9286	0.9347	0.9368	0.9279	0.9119	0.0142	0.0520
<b>Panel 1F: Governance 2F(1y)</b>												
Alpha (%)	-0.002	-0.007	-0.004	-0.002	-0.001	-0.001	-0.001	-0.003	-0.003	-0.002	---	---
	[-1.07]	[-4.27]	[-2.14]	[-1.57]	[-1.53]	[-1.42]	[-1.18]	[-2.03]	[-1.86]	[-1.07]	---	---
Beta: Market (excess return)	0.942	0.974	1.016	1.011	1.045	0.998	0.974	1.062	0.982	0.942	---	---
	[32.27]	[27.01]	[24.74]	[28.16]	[54.66]	[41.10]	[63.46]	[46.29]	[35.01]	[32.27]	---	---
Beta: Governance	0.700	0.347	0.098	-0.086	-0.146	-0.181	-0.194	-0.236	-0.217	-0.300	---	---
	[21.72]	[6.07]	[2.89]	[-2.15]	[-4.21]	[-4.69]	[-6.56]	[-7.36]	[-8.12]	[-9.30]	---	---
Adjusted R <sup>2</sup>	0.9477	0.8771	0.9169	0.9241	0.9432	0.9358	0.9430	0.9484	0.9413	0.9406	---	---
<b>Panel 1G: Governance 2F(1y) using Investor Protection deciles</b>												
Alpha (%)	0.001	-0.001	-0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.004
	[0.62]	[-0.52]	[-1.59]	[-0.11]	[0.14]	[-0.24]	[0.92]	[-0.05]	[0.01]	[-0.51]	[0.84]	[-0.42]
Beta: Market (excess return)	1.064	1.084	1.046	1.048	1.016	0.972	0.918	0.893	0.906	1.077	-0.014	-0.152
	[29.27]	[57.65]	[64.88]	[49.63]	[54.83]	[67.72]	[62.56]	[46.44]	[44.45]	[53.82]	[-0.34]	[-0.66]
Beta: Governance	0.130	0.101	0.034	-0.063	-0.137	-0.136	-0.073	0.040	0.086	-0.001	0.131	0.726
	[2.52]	[2.08]	[1.16]	[-2.48]	[-4.77]	[-4.76]	[-2.11]	[1.18]	[2.34]	[-0.02]	[2.40]	[1.37]
Adjusted R <sup>2</sup>	0.8623	0.8414	0.9702	0.9538	0.9602	0.9613	0.9502	0.9311	0.9357	0.9460	0.0150	0.0180

**Panel 2: OECD (excluding US) markets universe**

**Panel 2A: CAPM**

Alpha (%)	0.001	-0.004	-0.005	-0.004	-0.003	-0.001	-0.002	-0.002	-0.002	-0.003	<b>0.004</b>	<b>-0.006</b>
	[0.36]	[-2.44]	[-3.14]	[-2.38]	[-1.89]	[-0.58]	[-1.77]	[-1.55]	[-2.23]	[-2.83]	<b>[1.57] †</b>	<b>[-1.44] †</b>
Beta: Market (excess return)	0.946	0.919	0.956	1.014	0.961	1.014	1.063	1.084	1.025	1.023	-0.077	0.327
	[22.28]	[17.52]	[20.43]	[18.18]	[20.55]	[26.20]	[53.37]	[29.84]	[39.99]	[36.05]	[-1.64]	[3.54]
Adjusted R <sup>2</sup>	0.7727	0.7893	0.8357	0.8751	0.8828	0.9161	0.9210	0.8962	0.9058	0.9085	0.0102	0.0684

**Panel 2B: FF3F**

Alpha (%)	0.001	-0.003	-0.004	-0.002	-0.001	0.001	-0.001	0.001	-0.001	-0.002	<b>0.002</b>	<b>-0.003</b>
	[0.34]	[-1.85]	[-2.16]	[-0.86]	[-0.42]	[0.32]	[-0.96]	[0.24]	[-1.22]	[-1.32]	<b>[1.94]**</b>	<b>[-1.75]**</b>
Beta: Market (excess return)	0.957	0.913	0.947	0.984	0.935	1.003	1.061	1.061	1.019	1.000	-0.044	0.293
	[23.46]	[18.55]	[18.23]	[16.8]	[18.88]	[23.8]	[50.14]	[29.26]	[35.56]	[43.38]	[-1.00]	[3.47]
Beta: SMB	0.002	-0.058	-0.032	-0.097	-0.091	-0.052	-0.031	-0.101	-0.045	-0.070	0.073	-0.130
	[0.06]	[-1.54]	[-0.85]	[-2.68]	[-2.52]	[-1.36]	[-0.91]	[-2.92]	[-1.51]	[-1.91]	[1.62]	[-1.27]
Beta: HML	-0.091	-0.112	-0.011	-0.010	-0.027	-0.050	-0.062	-0.080	-0.071	0.004	-0.094	-0.064
	[-2.36]	[-2.21]	[-0.23]	[-0.22]	[-0.55]	[-0.96]	[-1.77]	[-1.94]	[-1.44]	[0.08]	[-1.48]	[-0.57]
Adjusted R <sup>2</sup>	0.7739	0.7949	0.8347	0.8786	0.8868	0.9179	0.9222	0.9023	0.9081	0.9101	0.0184	0.0674

**Panel 2C: Carhart 4F**

Alpha (%)	0.001	-0.003	-0.004	-0.002	-0.001	0.001	-0.001	0.001	-0.001	-0.002	<b>0.002</b>	<b>-0.003</b>
	[0.35]	[-1.86]	[-2.16]	[-0.87]	[-0.42]	[0.32]	[-0.97]	[0.24]	[-1.23]	[-1.32]	<b>[1.97]**</b>	<b>[-1.74]**</b>
Beta: Market (excess return)	0.981	0.909	0.946	0.971	0.934	1.009	1.058	1.059	1.013	1.000	-0.019	0.303
	[21.62]	[16.87]	[17.20]	[17.22]	[18.46]	[23.09]	[45.44]	[30.89]	[36.47]	[47.19]	[-0.41]	[3.42]
Beta: SMB	-0.041	-0.051	-0.03	-0.073	-0.089	-0.063	-0.025	-0.097	-0.035	-0.070	0.029	-0.148
	[-0.89]	[-1.33]	[-0.76]	[-2.03]	[-2.71]	[-1.71]	[-0.72]	[-2.78]	[-1.17]	[-2.16]	[1.55]	[-1.45]
Beta: HML	-0.085	-0.113	-0.011	-0.013	-0.027	-0.049	-0.062	-0.081	-0.073	0.004	-0.088	-0.061
	[-2.35]	[-2.21]	[-0.23]	[-0.28]	[-0.54]	[-0.93]	[-1.76]	[-1.91]	[-1.43]	[0.08]	[-1.37]	[-0.55]
Beta: Momentum	-0.100	0.015	0.006	0.054	0.005	-0.025	0.012	0.009	0.022	0.001	-0.101	-0.041
	[-2.07]	[0.32]	[0.15]	[1.29]	[0.11]	[-0.76]	[0.37]	[0.22]	[0.60]	[0.02]	[-1.88]	[-0.46]
Adjusted R <sup>2</sup>	0.7785	0.7940	0.8339	0.8796	0.8862	0.9179	0.9219	0.9019	0.9079	0.9097	0.0307	0.0634

**Panel 2D: Liquidity 2F (1y)**

Alpha (%)	0.002	-0.002	-0.003	-0.002	0.001	0.001	0.001	0.001	-0.001	-0.002	<b>0.004</b>	<b>-0.007</b>
	[1.95]	[-1.36]	[-1.70]	[-1.94]	[-0.02]	[1.09]	[1.35]	[0.06]	[-1.05]	[-1.34]	<b>[1.41] †</b>	<b>[-1.43] †</b>
Beta: Market (excess return)	0.924	0.882	0.924	0.973	0.915	0.979	1.030	1.050	1.004	0.997	-0.073	0.333
	[21.76]	[18.77]	[19.28]	[19.09]	[21.05]	[26.83]	[50.75]	[32.87]	[36.70]	[38.72]	[-1.49]	[3.60]
Beta: Liquidity	0.084	0.143	0.129	0.160	0.181	0.140	0.134	0.136	0.081	0.103	-0.018	-0.024
	[2.87]	[3.22]	[3.53]	[3.49]	[2.74]	[3.10]	[4.77]	[3.26]	[3.28]	[3.99]	[-0.45]	[-0.23]
Adjusted R <sup>2</sup>	0.7760	0.8021	0.8459	0.8903	0.9050	0.9284	0.9311	0.9059	0.9094	0.9147	0.0058	0.064

**Panel 2E: Investor Protection 2F (1y)**

Alpha (%)	0.001	-0.005	-0.005	-0.004	-0.003	0.001	-0.001	-0.001	-0.002	-0.003	<b>0.003</b>	<b>-0.008</b>
	[0.22]	[-2.67]	[-3.20]	[-2.39]	[-1.72]	[-0.22]	[-1.21]	[-1.08]	[-1.67]	[-2.36]	<b>[1.29] †</b>	<b>[-1.69]**</b>
Beta: Market (excess return)	0.959	0.934	0.954	1.012	0.951	0.992	1.040	1.058	0.993	0.992	-0.033	0.392
	[22.69]	[17.71]	[21.05]	[18.28]	[20.57]	[26.13]	[53.01]	[27.07]	[42.08]	[38.00]	[-0.72]	[4.02]
Beta: Investor Protect	0.122	0.143	-0.024	-0.018	-0.092	-0.197	-0.214	-0.240	-0.286	-0.281	0.403	0.596
	[1.62]	[1.52]	[-0.33]	[-0.24]	[-1.73]	[-4.10]	[-4.40]	[-3.44]	[-5.63]	[-6.23]	[4.49]	[2.78]
Adjusted R <sup>2</sup>	0.7739	0.7917	0.8350	0.8745	0.8837	0.9221	0.9275	0.9038	0.9183	0.9207	0.0812	0.1086

**Panel 2F: Governance 2F(1y)**

Alpha (%)	-0.002	-0.006	-0.005	-0.004	-0.002	-0.001	-0.001	-0.001	-0.002	-0.002	---	---
	[-1.18]	[-1.71]	[-1.89]	[-1.54]	[-1.52]	[-0.06]	[-1.18]	[-1.03]	[-1.58]	[-1.18]	---	---
Beta: Market (excess return)	1.000	0.944	0.969	1.018	0.951	1.001	1.052	1.073	1.009	1.000	---	---
	[38.65]	[21.42]	[22.48]	[18.07]	[20.8]	[27.65]	[55.93]	[28.59]	[38.64]	[38.65]	---	---
Beta: Governance	0.702	0.328	0.158	0.052	-0.134	-0.167	-0.150	-0.150	-0.207	-0.298	---	---
	[21.65]	[5.43]	[2.75]	[1.56]	[-3.84]	[-5.15]	[-4.09]	[-3.65]	[-4.83]	[-9.20]	---	---
Adjusted R <sup>2</sup>	0.9386	0.8278	0.8438	0.8753	0.8889	0.9254	0.9278	0.9024	0.9199	0.9384	---	---

**Panel 2G: Governance 2F(1y) using Investor Protection deciles**

Alpha (%)	0.002	0.001	0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.001	0.001	0.002	-0.001
	[1.46]	[0.59]	[0.60]	[-1.76]	[-0.07]	[-0.91]	[-0.20]	[-2.00]	[-1.36]	[0.10]	[0.99]	[-0.08]
Beta: Market (excess return)	0.968	1.173	1.038	1.070	0.999	1.009	0.897	0.869	0.967	1.063	-0.095	0.093
	[46.51]	[24.49]	[35.31]	[62.64]	[61.85]	[73.03]	[36.64]	[37.55]	[56.69]	[55.64]	[-3.86]	[0.58]
Beta: Governance	0.012	-0.022	-0.026	0.044	-0.034	-0.010	0.068	0.156	0.012	-0.178	0.190	0.236
	[0.32]	[-0.57]	[-0.71]	[1.77]	[-2.62]	[-0.57]	[2.08]	[3.81]	[0.45]	[-6.35]	[4.19]	[0.82]
Adjusted R <sup>2</sup>	0.9015	0.8624	0.7572	0.9667	0.9708	0.9769	0.9203	0.8880	0.9523	0.9478	0.1248	0.0061

**Panel 3: US only markets universe****Panel 3A: CAPM**

Alpha (%)	-0.001	-0.001	-0.002	-0.001	-0.003	-0.004	-0.003	-0.003	-0.003	-0.002	<b>0.001</b>	<b>-0.002</b>
	[-0.84]	[-0.88]	[-1.71]	[-0.68]	[-3.21]	[-4.57]	[-2.73]	[-2.59]	[-2.54]	[-1.76]	<b>[1.69]*</b>	<b>[-1.41] †</b>
Beta: Market (excess return)	0.923	1.003	0.966	0.967	0.942	0.967	0.956	0.924	0.846	0.855	0.068	0.216
	[37.05]	[45.95]	[34.52]	[30.8]	[29.55]	[37.21]	[24.33]	[29.70]	[24.20]	[27.05]	[2.01]	[1.87]
Adjusted R <sup>2</sup>	0.9101	0.9110	0.9169	0.9058	0.8976	0.9145	0.9080	0.9060	0.8948	0.8882	0.0355	0.0313

**Panel 3B: FF3F**

Alpha (%)	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.004	<b>-0.002</b>	<b>-0.008</b>
	[1.88]	[2.39]	[0.39]	[0.59]	[0.07]	[0.08]	[0.04]	[0.95]	[1.79]	[4.17]	<b>[-1.58] †</b>	<b>[-2.40]**</b>
Beta: Market (excess return)	0.952	1.013	1.007	0.988	0.933	0.976	0.946	0.931	0.854	0.870	0.083	0.323
	[38.51]	[50.25]	[43.91]	[29.54]	[28.83]	[46.52]	[31.34]	[36.07]	[30.98]	[41.53]	[2.71]	[2.98]

Beta: SMB	-0.232	-0.207	-0.228	-0.119	-0.151	-0.250	-0.162	-0.247	-0.256	-0.342	<b>0.110</b>	0.052
	[-5.08]	[-4.30]	[-5.38]	[-2.01]	[-2.84]	[-6.45]	[-4.36]	[-5.10]	[-5.93]	[-8.75]	<b>[2.09]*</b>	[0.20]
Beta: HML	-0.053	0.069	-0.144	-0.074	0.170	0.108	0.184	0.118	0.121	0.131	-0.184	-0.830
	[-1.01]	[1.34]	[-3.18]	[-1.69]	[2.81]	[2.79]	[2.99]	[2.7]	[2.46]	[3.50]	[-2.99]	[-3.69]
Adjusted R <sup>2</sup>	0.9246	0.9217	0.9334	0.9095	0.9105	0.9332	0.9230	0.9265	0.9209	0.9310	0.1294	0.1525

### Panel 3C: Carhart 4F

Alpha (%)	0.003	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.004	<b>-0.001</b>	<b>-0.010</b>
	[2.72]	[3.05]	[0.79]	[0.39]	[0.71]	[0.02]	[0.24]	[1.23]	[2.30]	[4.30]	<b>[-1.28] †</b>	<b>[-2.86]**</b>
Beta: Market (excess return)	0.999	1.048	1.032	0.977	0.979	0.973	0.962	0.956	0.885	0.890	0.109	0.230
	[36.60]	[46.02]	[51.29]	[27.50]	[36.11]	[39.64]	[33.52]	[41.18]	[34.08]	[38.68]	[2.94]	[2.32]
Beta: SMB	-0.281	-0.243	-0.254	-0.108	-0.198	-0.247	-0.178	-0.272	-0.288	-0.363	0.083	0.148
	[-6.18]	[-4.89]	[-6.15]	[-1.52]	[-3.55]	[-5.68]	[-4.80]	[-4.80]	[-6.49]	[-8.02]	[1.45]	[0.56]
Beta: HML	-0.054	0.068	-0.145	-0.073	0.168	0.108	0.183	0.117	0.120	0.130	-0.185	-0.826
	[-1.13]	[1.38]	[-3.07]	[-1.75]	[2.93]	[2.79]	[3.12]	[2.79]	[2.68]	[3.42]	[-3.12]	[-3.84]
Beta: Momentum	0.086	0.063	0.046	-0.020	0.084	-0.006	0.028	0.046	0.056	0.038	0.047	-0.169
	[2.97]	[2.22]	[2.63]	[-0.49]	[3.26]	[-0.20]	[1.17]	[1.46]	[2.91]	[1.39]	[1.75]	[-2.64]
Adjusted R <sup>2</sup>	0.9339	0.9258	0.9356	0.9095	0.9188	0.9329	0.9236	0.9288	0.9253	0.9329	0.1491	0.1757

### Panel 3D: Liquidity 2F (1y)

Alpha (%)	-0.001	-0.001	-0.001	0.001	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001	<b>0.001</b>	0.001
	[-1.41]	[-0.32]	[-0.18]	[1.82]	[-2.56]	[-3.59]	[-2.09]	[-1.78]	[-1.81]	[-0.88]	<b>[1.40] †</b>	[1.13]
Beta: Market (excess return)	0.912	0.990	0.934	0.943	0.936	0.954	0.949	0.906	0.833	0.838	0.074	0.166
	[35.69]	[45.13]	[39.37]	[37.49]	[30.36]	[34.38]	[23.08]	[27.69]	[22.60]	[23.65]	[2.08]	[1.63]
Beta: Liquidity	0.078	0.090	0.214	0.164	0.041	0.088	0.046	0.118	0.091	0.118	-0.040	0.338
	[1.98]	[2.00]	[6.14]	[3.60]	[0.65]	[2.35]	[0.89]	[3.49]	[2.12]	[2.72]	[-0.79]	[1.64]
Adjusted R <sup>2</sup>	0.9121	0.9133	0.9334	0.9151	0.8977	0.9169	0.9083	0.9111	0.8982	0.8941	0.0358	0.0598

### Panel 3E: Investor Protection 2F (1y)

Alpha (%)	-0.001	0.001	-0.001	0.001	-0.002	-0.004	-0.003	-0.003	-0.002	-0.002	<b>0.001</b>	0.001
	[-0.16]	[0.10]	[-1.03]	[0.17]	[-2.37]	[-3.98]	[-2.57]	[-2.35]	[-2.12]	[-1.34]	<b>[1.99]*</b>	[1.03]
Beta: Market (excess return)	0.877	0.947	0.921	0.929	0.906	0.948	0.942	0.891	0.816	0.832	0.045	0.104
	[30.32]	[34.76]	[34.80]	[29.55]	[23.46]	[29.62]	[22.16]	[25.03]	[20.30]	[19.87]	[1.06]	[0.76]
Beta: Investor Protect	0.191	0.233	0.187	0.157	0.148	0.078	0.055	0.132	0.123	0.094	0.096	0.461
	[3.95]	[4.61]	[3.76]	[2.03]	[2.03]	[1.46]	[1.13]	[2.09]	[2.14]	[1.24]	[1.46]	[2.16]
Adjusted R <sup>2</sup>	0.9181	0.9213	0.9239	0.9105	0.9019	0.9153	0.9082	0.9095	0.8984	0.8900	0.0481	0.0621

### Panel 3F: Governance 2F(1y)

Alpha (%)	-0.002	-0.001	-0.002	-0.001	-0.003	-0.004	-0.003	-0.003	-0.003	-0.002	---	---
	[-0.37]	[-1.05]	[-1.00]	[-0.76]	[-2.04]	[-3.32]	[-1.53]	[-1.40]	[-1.17]	[-0.37]		



Beta: Market (excess return)	0.892	0.991	0.955	0.962	0.947	0.983	0.963	0.933	0.862	0.892	---	---
	[42.90]	[47.73]	[36.53]	[32.30]	[30.14]	[45.39]	[26.20]	[30.62]	[27.85]	[42.9]		
Beta: Governance	0.465	0.178	0.173	0.076	-0.077	-0.234	-0.113	-0.141	-0.232	-0.535	---	---
	[6.58]	[1.49]	[2.00]	[0.81]	[-0.92]	[-3.18]	[-1.30]	[-2.05]	[-2.89]	[-7.56]		
Adjusted R <sup>2</sup>	0.9355	0.9138	0.9198	0.9060	0.8978	0.9201	0.9090	0.9079	0.9019	0.9266	---	---

**Panel 3G: Governance 2F(1y) using Investor Protection deciles**

Alpha (%)	-0.001	0.001	-0.001	-0.001	-0.002	-0.001	-0.001	0.001	0.002	0.005	-0.006	0.010
	[-1.14]	[0.07]	[-1.56]	[-1.97]	[-3.19]	[-1.27]	[-1.90]	[0.08]	[1.70]	[2.56]	[-2.33]	[1.88]
Beta: Market (excess return)	1.106	1.078	1.044	1.061	1.012	0.975	1.007	0.944	0.919	0.875	0.231	-0.309
	[51.34]	[27.71]	[59.86]	[84.71]	[56.63]	[33.76]	[64.73]	[61.03]	[33.33]	[26.06]	[4.95]	[-2.63]
Beta: Governance	0.043	0.033	0.006	0.016	0.011	-0.020	0.083	-0.101	0.049	-0.144	0.187	0.522
	[0.69]	[0.59]	[0.14]	[0.38]	[0.27]	[-0.36]	[1.90]	[-2.08]	[0.62]	[-1.69]	[1.53]	[1.89]
Adjusted R <sup>2</sup>	0.9590	0.8387	0.9694	0.9747	0.9634	0.9515	0.9710	0.9581	0.8997	0.8572	0.2225	0.0784

**Table 7 Time varying parameter model tests of CAPM-type and multifactor models using monthly excess returns for decile size, book-to-market value, investor protection and governance-sorted portfolios with annual rebalancing for the period January 2001 – September 2017**

This table reports the average time varying alpha terms, proportions of the sample for which the lower standard error band is negative (that is, where the alpha lacks statistical significance) and proportions of testing asset portfolios (deciles portfolios) where convergence is achieved. Time-varying parameter Kalman filter CAPM-type and multifactor CAPM-based models are used where these are based on CAPM, three factor Fama and French (1993) Size and Book-to-Market augmented CAPM, Liu (2006) two factor liquidity-augmented CAPM and the two factor investor protection augmented CAPM. 1y indicates annual rebalancing used in factor formation (as opposed to monthly rebalancing). < denotes the largest negative value of each of the three information criterion (that is the model of choice)

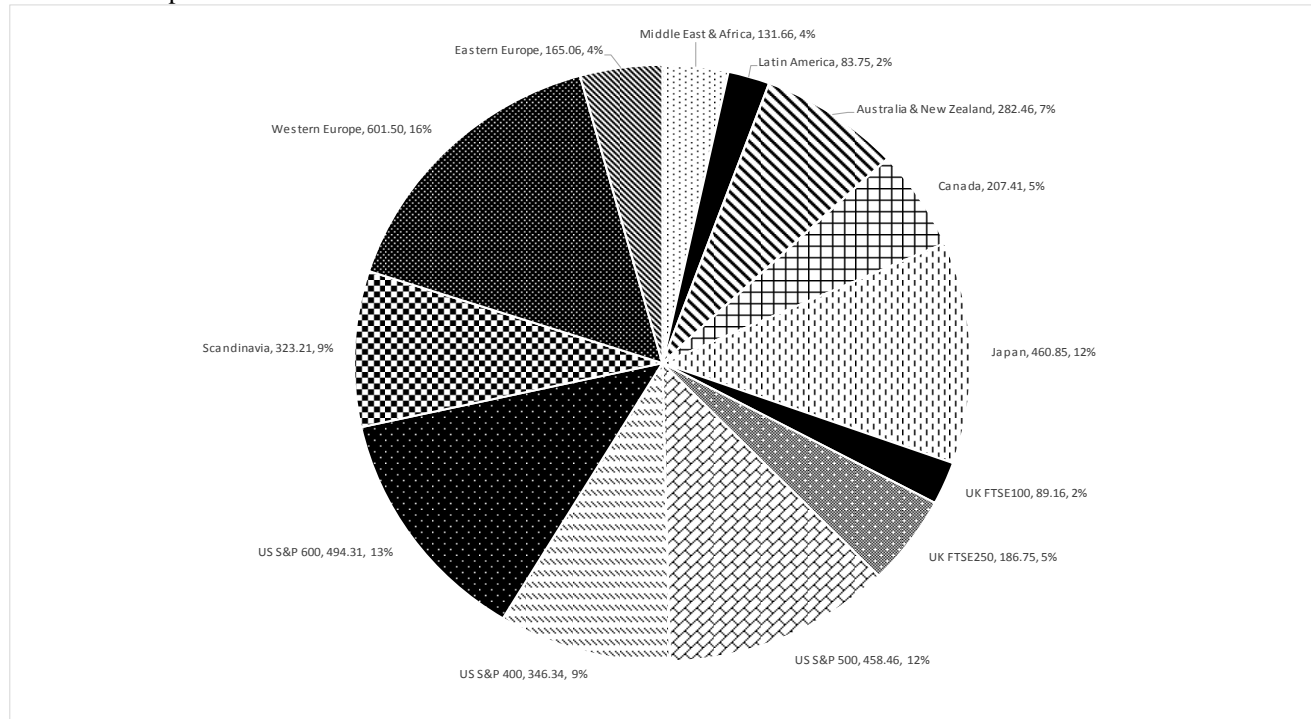
	Time series		Information criterion			% Converge	Time series		Information criterion			% Converge
	Mean alpha	% SE (alpha) negative	SBC	HQC	AIC		Mean alpha	% SE (alpha) negative	SBC	HQC	AIC	
<b>Panel 1: OECD overall</b>	<b>Size decile portfolios</b>						<b>Book-to-Market decile portfolios</b>					
CAPM	-0.00077	58.35%	-5.44	-5.41	-5.43	90.00%	-0.00064	68.44%	-5.59	-5.56	-5.58	100.00%
FF3F	-0.00281	45.15%	-5.56	-5.49	-5.53	40.00%	-0.00050	73.23%	-5.72	-5.65	-5.69	50.00%
Carhart 4F	-0.00145	80.32%	-5.35	-5.26	-5.31	50.00%	0.00061	77.35%	-5.72	-5.65	-5.69	50.00%
Liquidity 2F (1yr)	-0.00030	70.54%	-5.51	-5.46	-5.49	80.00%	-0.00009	73.33%	-5.71	-5.67	-5.69	100.00%
Investor Protect 2F (1yr)	-0.00079	67.20%	-5.46	-5.41	-5.44	70.00%	-0.00067	73.10%	-5.56	-5.51	-5.54	100.00%
Governance 2F (1yr)	-0.00079	66.35%	-5.62<	-5.57<	-5.60<	50.00%	-0.00050	72.29%	-5.81<	-5.76<	-5.79<	80.00%
	<b>Investor Protection-1y decile portfolios</b>						<b>Governance-1y decile portfolios</b>					
CAPM	-0.00008	51.05%	-5.15	-5.12	-5.14	80.00%	-0.00281	72.18%	-4.73	-4.70	-4.72	100.00%
FF3F	0.00009	69.31%	-5.18	-5.11	-5.15	30.00%	-0.00207	78.48%	-4.52	-4.45	-4.49	30.00%
Carhart 4F	-0.00035	76.19%	-5.19	-5.11	-5.16	30.00%	-0.00315	85.19%	-3.85	-3.76	-3.81	10.00%
Liquidity 2F (1yr)	-0.00017	67.45%	-5.13	-5.09	-5.12	100.00%	-0.00041	70.38%	-4.80	-4.76	-4.78	100.00%
Investor Protect 2F (1yr)	-0.00013	63.89%	-5.30<	-5.25<	-5.28<	40.00%	-0.00220	75.00%	-4.81	-4.76	-4.79	80.00%
Governance 2F (1yr)	-0.00037	68.56%	-5.18	-5.13	-5.16	70.00%	-0.00231	76.13%	-5.03<	-4.98<	-5.01<	90.00%
<b>Panel 2: OECD exclude US</b>	<b>Size decile portfolios</b>						<b>Book-to-Market decile portfolios</b>					
CAPM	-0.00077	64.47%	-5.11	-5.08	-5.10	100.00%	-0.00056	72.67%	-5.40	-5.36	-5.38	100.00%
FF3F	-0.00236	79.19%	-5.16	-5.10	-5.14	60.00%	-0.00174	85.45%	-5.39	-5.32	-5.36	20.00%
Carhart 4F	-0.00235	69.14%	-5.22	-5.13	-5.18	50.00%	-0.00088	69.66%	-5.69<	-5.61<	-5.66<	50.00%
Liquidity 2F (1yr)	-0.00049	74.73%	-5.05	-5.01	-5.03	70.00%	-0.00021	72.96%	-5.55	-5.50	-5.53	100.00%
Investor Protect 2F (1yr)	-0.00102	67.28%	-5.33	-5.28	-5.31	60.00%	-0.00024	72.66%	-5.37	-5.32	-5.35	60.00%
Governance 2F (1yr)	-0.00435	76.81%	-5.38<	-5.33<	-5.36<	60.00%	-0.00036	78.31%	-5.40	-5.35	-5.38	70.00%
	<b>Investor Protection-1y decile portfolios</b>						<b>Governance-1y decile portfolios</b>					
CAPM	-0.00018	68.07%	-4.79	-4.76	-4.78	90.00%	-0.00301	71.12%	-4.30	-4.27	-4.29	100.00%
FF3F	-0.00044	62.35%	-4.88	-4.82	-4.86	50.00%	-0.00120	73.17%	-4.24	-4.17	-4.21	70.00%
Carhart 4F	-0.00103	81.06%	-5.14<	-5.06	-5.10	50.00%	-0.00009	58.84%	-4.16	-4.08	-4.13	40.00%
Liquidity 2F (1yr)	-0.00007	67.57%	-5.12	-5.07<	-5.10<	100.00%	0.00022	64.23%	-4.55	-4.50	-4.53	90.00%

Investor Protect 2F (1yr)	-0.00039	58.94%	-4.91	-4.86	-4.89	40.00%	-0.00241	73.47%	-4.31	-4.26	-4.29	70.00%
Governance 2F (1yr)	-0.00034	71.75%	-4.72	-4.68	-4.70	50.00%	-0.00288	81.07%	-4.59<	-4.54<	-4.57<	90.00%
<b>Panel 3: US only</b>												
		<b>Size decile portfolios</b>						<b>Book-to-Market decile portfolios</b>				
CAPM	-0.00123	66.73%	-4.87	-4.84	-4.86	100.00%	-0.00039	66.81%	-5.04	-5.00	-5.02	100.00%
FF3F	0.00006	72.77%	-4.81	-4.75	-4.79	70.00%	0.00018	76.19%	-5.05	-4.98	-5.02	80.00%
Carhart 4F	0.00028	74.71%	-4.81	-4.72	-4.77	50.00%	0.00029	81.14%	-5.10<	-5.02<	-5.07<	60.00%
Liquidity 2F (1yr)	-0.00050	72.31%	-4.10	-4.06	-4.09	60.00%	-0.00034	74.10%	-4.32	-4.28	-4.31	80.00%
Investor Protect 2F (1yr)	-0.00182	75.32%	-4.89	-4.84	-4.87	60.00%	0.00007	68.33%	-4.79	-4.74	-4.77	70.00%
Governance 2F (1yr)	-0.00131	72.56%	-4.96<	-4.91<	-4.94<	90.00%	-0.00008	71.60%	-4.97	-4.92	-4.95	90.00%
		<b>Investor Protection-1y decile portfolios</b>						<b>Governance-1y decile portfolios</b>				
CAPM	-0.00123	66.73%	-4.87	-4.84	-4.86	90.00%	-0.00162	67.55%	-4.65	-4.62	-4.64	100.00%
FF3F	0.00006	72.77%	-4.81	-4.75	-4.79	70.00%	0.00133	76.82%	-4.75	-4.68	-4.72	90.00%
Carhart 4F	0.00028	74.71%	-4.81	-4.72	-4.77	50.00%	0.00139	77.34%	-4.75	-4.67	-4.71	40.00%
Liquidity 2F (1yr)	-0.00050	72.31%	-4.10	-4.06	-4.09	60.00%	-0.00029	76.05%	-4.13	-4.09	-4.12	80.00%
Investor Protect 2F (1yr)	-0.00182	75.32%	-4.89	-4.84	-4.87	60.00%	-0.00011	74.61%	-4.68	-4.63	-4.66	80.00%
Governance 2F (1yr)	-0.00131	72.56%	-4.96<	-4.91<	-4.94<	90.00%	-0.00170	78.18%	-4.85<	-4.80<	-4.83<	90.00%

**Figure 1**

**Global equity market firm sample by country and region, January 2000 to September 2017**

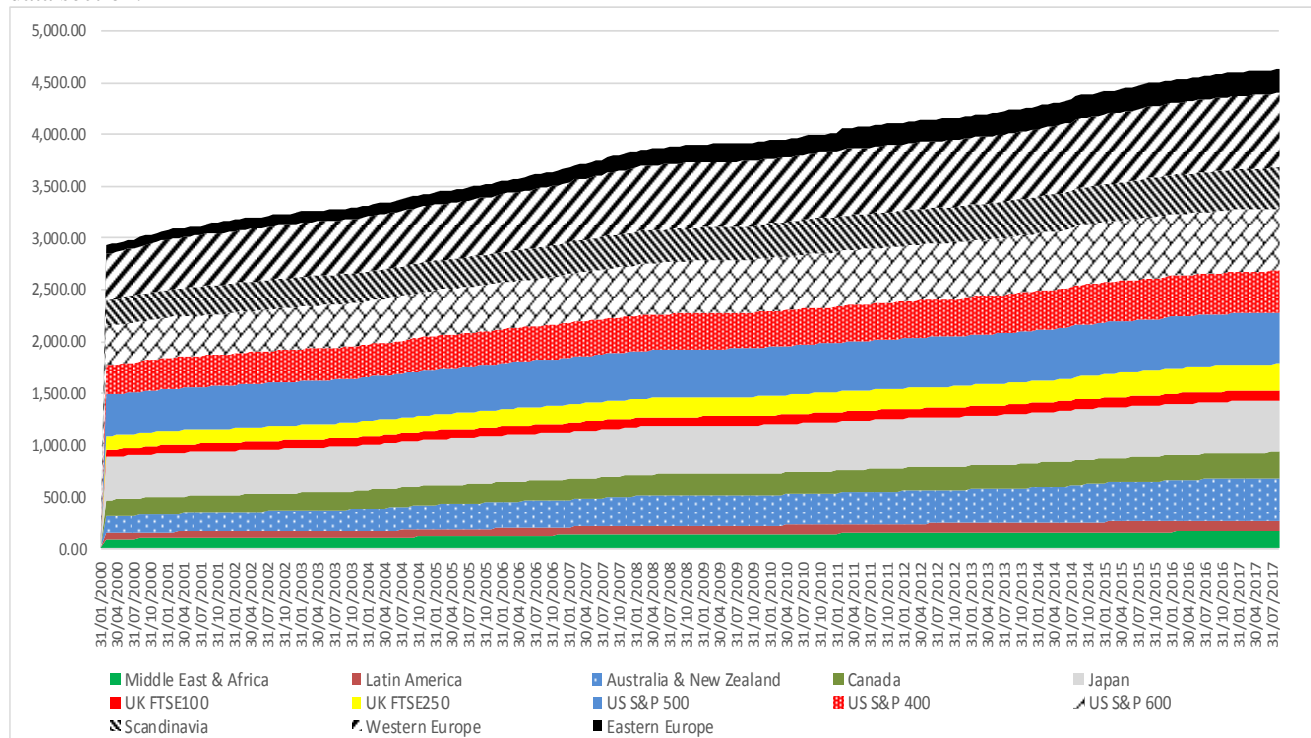
The figure shows the distribution of sample stocks by country or region, with the sample size and percentage of the total for each. The sample selection criteria are described in the data section.



**Figure 2**

**Global equity market firm sample by year, January 2000 to September 2017**

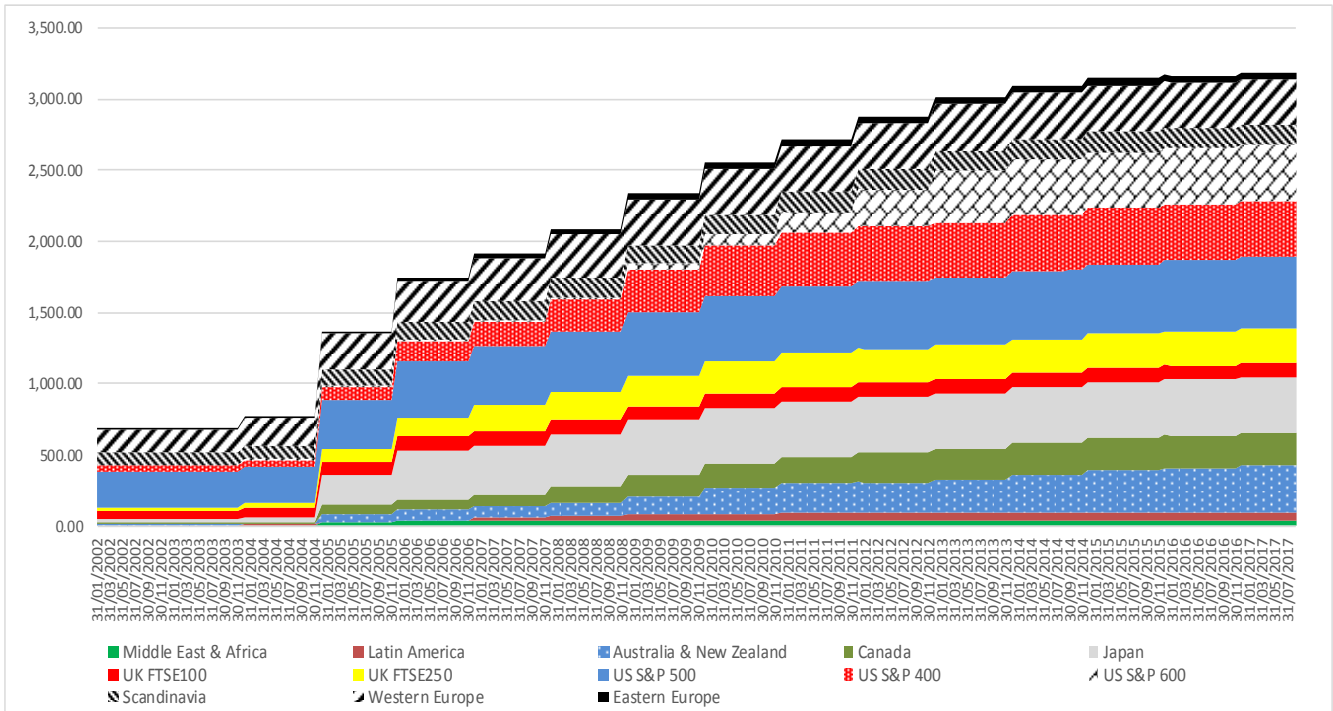
The figure shows the distribution of sample stocks by region and month. The sample selection criteria are described in the data section.



**Figure 3**

**ASSET4 equity market firm sample by year, January 2002 to September 2017**

The figure shows the distribution of sample stocks by region and month. The sample selection criteria are described in the data section.



## Appendix A. Table 1A.

### Datastream variable definitions

All data are from Datastream and Worldscope (accessed through Datastream)

Coverage	Index	Description	Datastream Mnemonic
Australia	S&P/ASX 300 [300]	Source: S&P/ASX	LASX300I
Austria	ATX Index [20]	Source: Wiener Bourse	LATXINDX
Belgium	BEL 20 [20]	Source: Belgium stock exchange	LBGBEL20
Canada	S&P/TSX Composite [248]	Source: S&P/TSX	LTTOCOMP
Chile	IPSA [40]	Source: Santiago stock exchange	LIPSASEL
Czech Republic	Prague SE PX Global [24]	Source: Prague stock exchange	LCZPXGLB
Denmark	OMX Copenhagen [135]	Source: Nasdaq OMX	LCOSEASH
Estonia	TRX Estonia All-Share [32]	Source: Thomson Datastream	LTR0EOXXD
Finland	OMX Helsinki [135]	Source: Nasdaq OMX	LHEXINDX
France	France CAC Large 60 [60]	Source: Euronext Paris	LFRCLR60
Germany	DJ DAX 100 [100]	Source: Deutsche Börse	LDAX100I0700
Greece	Athens Composite [60]	Source: Athens stock exchange	LGRAGENL
Hungary	Budapest (BUX) [14]	Source: Budapest stock exchange	LBUXINDX
Iceland	OMX Iceland All Share [16]	Source: Nasdaq OMX	LICEXALL
Ireland	ISEQ Overall [47]	Source: Irish stock exchange	LISEQUIT
Israel	Dow Jones Tel Aviv 100 [101]	Source: Israel stock exchange	LISTA100
Italy	All Stars [74]	Source: Milan Bourse	LMIBASTR
Japan	S&P TOPIX 500 [498]	Source: Japan stock exchange	LTSET500
Latvia	Latvia TRX All-Sector [67]	Source: Thomson Datastream	LTR0LVXXD
Luxembourg	Luxembourg SE LUXX [9]	Source: Luxembourg stock exchange	LLXLUXXI
Mexico	Indice Compuesto del Mercado Acciones [60]	Source: Mexican stock exchange	LMXIRTCM
Netherlands	All Share General [140]	Source: CBS	LCBSKGEN
New Zealand	S&P/NZX All Index [116]	Source: New Zealand stock exchange	LNZSEALL
Norway	Oslo OBX [25]	Source: Oslo Bors	LOSLOOBX
Poland	Warsaw General 20 [20]	Source: Warsaw stock exchange	LPOLWG20
Portugal	PSI All-Share [47]	Source: Euronext Lisbon	LPOPSIGN
Slovakia	DS Market Constituents SSX [50]	Source: Thomson Datastream	LTOTSTX
Slovenia	Top stocks index [7]	Source: Ljubljana stock exchange	LSLOETOP
South Korea	KOSPI 100 [100]	Source: Korea stock exchange	LKOR100I
Spain	Madrid SE General [108]	Source: Bolsas y Mercados Españoles	LMADRIDI
Sweden	OMX Stockholm Benchmark [89]	Source: Nasdaq OMX	LSWEBENC
Switzerland	UBS100 [100]	Source: SWX Swiss stock exchange	LSBC100I
Turkey	BIST National 30 [30]	Source: Istanbul stock exchange	LTKNAT30
<b>UK</b>	<b>Top 350 stocks</b>		
UK	FTSE 100 [101]	Source: FTSE	LFTSE100
UK	FTSE 250 [251]	Source: FTSE	LFTSE250
<b>US</b>	<b>S&amp;P 1,500 constituents</b>		
US S&P 500	S&P 500 [Large cap stocks] [500]	Source: S&P	LS&PCOMP
US S&P 400	S&P 400 [Mid cap stocks] [400]	Source: S&P	LS&PMIDC
US S&P 600	S&P 600 [Small cap stocks] [600]	Source: S&P	LS&P600I

## Appendix B Table 1B.

### Datastream variable and Worldwide governance indicator definitions

All data are from Datastream and Worldscope (accessed through Datastream) with the exception of the six World Bank Governance indices, which are from <http://info.worldbank.org/governance/wgi/index.aspx#home>

Variable	Definition	Datastream Mnemonic
<b>ASSET4-ESG Governance elements</b>		
<b>Minority rights</b>		
Board diversity policy	Does the company have a policy regarding the diversity of its board? [Y/N]	CGBSDP0013
Adequate experience of board policy	Does the company have a policy regarding the adequate experience on its board? [Y/N]	CGBSDP0015
Board independence policy	Does the company have a policy regarding the independence of its board? [Y/N]	CGBSDP0012
Board size policy	Does the company have a policy regarding the size of its board? [Y/N]	CGBSDP0011
CEO board member	The CEO is a board member. [Y/N]	CGBSDP061
Chairman is ex-CEO	Has the chairman previously held the CEO position in the company? [Y/N]	CGBSDP040
Nomination committee	Does the company have a nomination committee? [Y/N]	CGBSDP005
Succession plan for executives	Does the company have a succession plan for executive management in the event of unforeseen circumstances? [Y/N]	CGBFDP030
Corporate governance committee	Does the company have a corporate governance committee? [Y/N]	CGBFDP005
External consultants	Does the board or board committees have the authority to hire external advisers or consultants without management's approval? [Y/N]	CGBFDP031
Golden parachute	Does the company have a golden parachute or other restrictive clauses related to changes of control (compensation plan for accelerated pay-out)? [Y/N]	CGSRDP055
Limitation of director liability	Does the company have a limitation of director liability? [Y/N]	CGSRDP063
Limitations on removal of directors	Are there limitations on the shareholders' right to remove board members (i.e., only for cause, supermajority vote required, etc.)? [Y/N]	CGSRDP071
Limited shareholder rights to call meetings	Has the company limited the rights of shareholders to call special meetings? [Y/N]	CGSRDP058
Majority requirements for election of directors	Are the company's board members elected with a majority vote? [Y/N]	CGSRDP033
Poison pill	Does the company have a poison pill (shareholder rights plan, macaroni defence, etc.)? [Y/N]	CGSRDP050
<b>Voting</b>		
Equal voting right policy	Does the company have a policy to apply the one-share, one-vote principle? [Y/N]	CGSRDP0011
Shareholder engagement policy	Does the company have a policy to facilitate shareholder engagement, resolutions or proposals? [Y/N]	CGSRDP0013
Pre-emptive rights	Does the company grant pre-emptive rights to existing shareholders?	CGSRDP060
Public availability corporate statutes	Are the company's articles of association, statutes or bylaws publicly available? [Y/N]	CGSRDP044
Advance notice for shareholder proposals	Does the company have deadlines relating to shareholder proposals? [Y/N]	CGSRDP072
Confidential voting policy	Does the company have a confidential voting policy (i.e., management cannot view the results of shareholder votes)? [Y/N]	CGSRDP062
Different share classes different rights	Does the company have different class stocks with different voting rights? [Y/N]	CGSRDP022
Elimination of cumulative voting rights	Has the company reduced or eliminated cumulative voting in regard to the election of board members? [Y/N]	CGSRDP059
Expanded constituency provision	Does the company have expanded-constituency provisions in	CGSRDP075

Fair price provision	place? [Y/N] Is the company subject to fair price provision, either under applicable law or as stated in the company documents (charter or bylaws)? [Y/N]	CGSRDP070
Min. number of shares to vote	Has the company set requirements for a minimum number of shares to vote? [Y/N]	CGSRDP028
Voting cap	Does the company have shares with a voting cap (ceilings) clause, ownership ceilings or control share acquisition provision? [Y/N]	CGSRDP026
Significant company transactions (M&A) shareholder's approval	Limitations to the shareholders right to approve significant company transitions such as M&As (no rights to vote or supermajority required)? [Y/N]	CGSRDP069
Supermajority vote requirements	Does the company have a supermajority vote requirement or qualified majority (for amendments of charters and bylaws or lock-in provisions)? [Y/N]	CGSRDP054
Written consent requirements	Does the company permit actions to be taken without meeting by written consent? [Y/N]	CGSRDP074
Integrated strategy in MD&A	Does the company explicitly integrate financial and extra-financial factors in its management discussion and analysis (MD&A) section in the annual report? [Y/N]	CGVSDP018
<b>Delay</b>		
Classified board structure	Does the company have a classified board structure? [Y/N]	CGSRDP052
Staggered board structure	Does the company have a staggered board structure? [Y/N]	CGSRDP053
Company cross shareholding	Does the company have significant cross shareholding that can prevent takeovers? [Y/N]	CGSRDP061
Golden share	Does the biggest owner (by voting power) hold the veto power or own golden shares? [Y/N]	CGSRDP048
Blank check	Does the company have unlimited authorized capital or a blank check?	CGSRDP051
State owned enterprise	Is the company a State Owned Enterprise (SOE)? [Y/N]	CGSRDP049
<b>Director Incentives</b>		
Shareholder's approval of stock based compensation Plan	Does the company require that shareholder approval is obtained prior to the adoption of any stock based compensation plans? [Y/N]	CGCPDP056
CEO compensation link to shareholder return	Is the CEO's compensation linked to total shareholder return (TSR)? [Y/N]	CGCPDP041
Compensation committee	Does the company have a compensation committee? [Y/N]	CGCPDP005
Compensation improvement tools	Does the company have the necessary internal improvement and information tools for the board members to develop appropriate compensation/remuneration to attract and retain key executives? [Y/N]	CGCPDP011
Executive retention compensation policy	Does the company have a compensation policy to attract and retain executives? [Y/N]	CGCPDP0014
Performance oriented compensation policy	Does the company have a performance oriented compensation policy? [Y/N]	CGCPDP0012
Shareholders vote on executive pay	Do the company's shareholders have the right to vote on executive compensation? [Y/N]	CGSRDP038
<b>Datastream items</b>		
Free Float Number of Shares	The percentage of total shares in issue available to ordinary investors (NOSHFF). That means total number of shares (NOSH) less the strategic holdings (NOSHST). In general, only holdings of 5% or more are counted as strategic.  Strategic ownership data is collected by the Thomson Reuters Ownership team, the data is derived from 11 primary sources, including SEC filings (such as schedule 13D and form 13FD) and the UK Register. Also annual, interim reports, stock exchanges,	NOSHFF



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	official regulatory bodies, third party vendors, company websites, approved news sources and direct contact with company investor relations departments	
	Ownership updates were obtained at end of month prior to August 2009 while after this date values are updated on the 10th and 30th of each month	
	Strategic holdings are defined as the sum of the following categories of shareholding:	
	(1) Government: State (government) or state (government) institution (NOSHGV)	
	(2) Cross Holdings: Holdings by one company in another (NOSHCO)	
	(3) Pension Fund: Pension funds or Endowment funds (NOSHPPF)	
	(4) Investment Co.: Investment banks or institutions seeking a long term return. Note that holdings by Hedge Funds are not included (NOSHIC)	
	(5) Employees: Employees, or by those with a substantial position in a company that provides significant voting power at an annual general meeting, (typically family members) (NOSHEM)	
	(6) Other holdings: Entities outside one of the above categories (NOSHOF)	
	(7) Foreign block holders: Holdings by an institution domiciled in a country other than that of the issuer (NOSHFR)	
Price	This is the adjusted default official daily closing price. It is denominated in primary units of local currency. Prices are generally based on 'last trade' or an official price fixing. The 'current' prices taken at the close of market are stored each day. These stored prices are adjusted for subsequent capital actions, and this adjusted figure then becomes the default price available	P
Book to Market Value	This is defined as the inverse of the market value of the ordinary (common) equity divided by the balance sheet value of the ordinary (common) equity in the company (Worldscope item 03501) which is available through Datastream	BTMV
Traded Volume	This shows the number of shares traded for a stock on a particular day. The data type is reported in thousands. Both daily and non-daily figures are adjusted for capital events. However, if a capital event occurs in the latest period of a non-daily request, then the volume for that particular period only is retrieved as unadjusted.	VO
Number of Shares	This is the total number of ordinary shares that represent the capital of the company. The data type is expressed in thousands.	NOSH
<b>Worldwide governance indicators</b>		
Voice and Accountability	This captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media	-- --
Political Stability and Absence of Violence/ Terrorism	This measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.	-- --

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Government Effectiveness	This captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies	-- --
Regulatory Quality	This captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	-- --
Rule of Law	This captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	-- --
Control of Corruption	This captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media	-- --

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## Appendix C Table 1C.

### ASSET4-ESG governance element detailed definitions

This provides a detailed definition of all ASSET4 governance elements used in study

Variable	Definition
<b>Board composition</b>	
Board diversity policy	Boards of directors with greater diversity amongst their directors draw on more breadth of experience and hence resources. Greater diversity also implies less dictatorial power arising from potential unchecked domination of board affairs by CEO
Adequate experience of board policy	Company policies regarding a guarantee of adequate experience of board members acts to ensure that directors have sufficient social competencies and can bring resources in form of human and social capital networks to board. These act as a check and balance to power exercised by dominant CEO
Board independence policy	Company policy regarding guaranteed independence of its board provides the basis of an effective power check on dictatorial power of dominant insiders and CEO. Independent directors are independent of being subverted by dominant insider groups caused by their having exclusively been hired, or their pay, or contractual terms and conditions being determined by insiders. Thus, independent directors are more effectively able to question company strategy
Board size policy	Policy regarding board size relates to larger sized boards being associated with being more democratized in the sense of drawing on greater numbers of directors. This has been associated with more resources on one hand but questionable coordination and communication efficiencies
CEO board member	The CEO being a board member is indicative of the CEO having a formally mandated director position – either on unitary board or the supervisory board of a dual-tier board governance system prevalent in continental European modes of governance. Thus, the CEO has considerable potential power over board affairs
Chairman is ex-CEO	If the Chairperson is the former CEO then this potentially subverts the independent monitoring capability of the Chairperson over the strategic decision making of the CEO. While the chairperson should ideally be of similar social stature and experience to the CEO, the career progression of the company's CEO into that position potentially weakens monitoring capacity of the nonexecutive directors
Nomination committee	A nomination committee is a dedicated instrument responsible for the hiring and appraisal of executive directors. Nonexecutive directors have oversight of the committee while its establishment implies that dominant insiders or CEO do not have so much influence or subversion over recruitment process which ultimately leads to subversion of internal leadership within company
Succession plan for executives	A succession plan implies a smooth transfer of power should executives leave and avoid potential instability or “power vacuums” arising from rapid departures. Such instability can lead to subversion by powerful insiders or CEO
Corporate governance committee	A corporate governance committee is dedicated to ensuring optimal governance to enhance outside minority shareholder property rights with respect to potential infringements by insiders. As such it has fiduciary responsibility over audit, control and governance structure of firm
External consultants	External consultants working on accounting and audit for the company are independent and provide evaluations independent from subversion by insider groups or CEO. Thus, they enhance transparency and accountability of insiders

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	to outside minority shareholders
Golden parachute	Golden parachutes are a governance element linked to anti-takeover defences. These are structured severance packages for incumbent executives and can be used to prevent or delay hostile takeovers that would otherwise initiate management restructuring and potentially enhance outside minority shareholder value. Thus, golden parachutes act to enhance insider and CEO dominance and dictatorial power
Limitation of director liability	This refers to a limitation on individual director's legal liability for their actions – if these are contrary to their fiduciary responsibility and outside minority shareholder interests. Thus, these enhance dictatorial power of insiders and CEO through a decrease in their accountability
Limitations on removal of directors	Limitations on removal of individual directors acts to reduce shareholder rights and therefore enhances the dictatorial power of insiders and CEO
Limited shareholder rights to call meetings	Limitations on shareholder rights to call extraordinary general meetings to discuss an event is a direct reduction in property rights of minority outside owners and their control over insiders groups power and firm's internal affairs
Majority requirements for election of directors	This refers to a majority of shareholders required to nominate or elect individual directors. This can be used to reduce shareholders democratic property rights
Poison pill	Poison pills are representative of a number of governance elements designed to demotivate hostile takeovers that would otherwise initiate comprehensive managerial restructuring – where this is deemed to enhance minority shareholder value. Thus, poison pills are associated with enhancing insider and CEO power at the expense of minority democratic shareholder rights
<b>Voting</b>	
Equal voting right policy	One share – one vote is a fundamental principle in shareholder rights. Deviations from this include multiple class shares and the issuance of shares with different voting rights
Shareholder engagement policy	Shareholder engagement is the process by which a company involves minority outside shareholders who may be affected by the decisions it makes, or can influence the implementation of its decisions. They may support or oppose the decisions, be influential in the organization or within the community in which it operates, hold relevant official positions or be affected in the long term
Pre-emptive rights	A pre-emptive right is a privilege that may be extended to certain shareholders of a corporation that grants them the right to purchase additional shares in the company prior to shares being made available for purchase by the general public in the event of a seasoned offering, which is a secondary issuing of stock shares. A pre-emptive right, also referred to as pre-emption rights, anti-dilution provisions or subscription rights, is written into the contract between the stock purchaser and the company, although a few states grant pre-emptive rights as a matter of law unless specifically negated in a company's articles of incorporation. A pre-emptive right does not function like a put option that gives a shareholder the right to sell stock at a specified price
Public availability corporate statutes	This refers to the universal public availability of the company's articles of association, statutes or bylaws – where these can potentially be used by outside minority shareholders as proof of defamations to their property rights in the event of infringements by dominant insiders and CEO. As such it focusses on transparency of information property rights of shareholders

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Advance notice for shareholder proposals	This relates to the company having deadlines relating to shareholder proposals
Confidential voting policy	This refers to confidentiality in the shareholder voting – where incumbent management cannot view results of voting nor how individual shareholders voted.
Different share classes different rights	This refers to the company having different class stocks with different voting rights
Elimination of cumulative voting rights	This refers to whether the company reduced or eliminated cumulative voting in regard to the election of board members
Expanded constituency provision	A constituency statute, also called a stakeholder statute, allows corporate directors to consider non-shareholder interests when making business decisions
Fair price provision	State law or a bylaw of a corporation's charter that compels a bidder for the corporation's majority stock to pay at least the fair market price for the stock held by minority stockholders
Min. number of shares to vote	This refers to the company setting requirements for a minimum number of shares to vote
Voting cap	This refers to the company having shares with a voting cap (ceilings) clause, ownership ceilings or control share acquisition provision
Significant company transactions (M&A) shareholder's approval	This refers to limitations to the shareholders right to approve significant company transitions such as M&As (no rights to vote or supermajority required)
Supermajority vote requirements	This refers to the company having a supermajority vote requirement or qualified majority (for amendments of charters and bylaws or lock-in provisions)
Written consent requirements	This refers to the company permitting actions to be taken without meeting by written consent
Integrated strategy in MD&A	This refers to the company explicitly integrating financial and extra-financial factors in its management discussion and analysis (MD&A) section in the annual report. This facilitates transparency in communication to minority outside shareholders
<b>Delay</b>	
Classified board structure	A structure for a board of directors in which a portion of the directors serve for different term lengths, depending on their particular classification. Under a classified system, directors serve terms usually lasting between one and eight years; longer terms are often awarded to more senior board positions (i.e. chairman of the corporate governance committee)
Staggered board structure	A staggered board consists of a board of directors whose members are grouped into classes; for example, Class 1, Class 2, Class 3, etc. Each class represents a certain percentage of the total number of board positions. For example, a class is commonly comprised on one-third of the total board members. During each election term only one class is open to elections, thereby staggering the board directorship
Company cross shareholding	This refers to company having significant cross shareholdings amongst other firms that can prevent takeovers
Golden share	This refers to the biggest owner (by voting power) holding veto power which is also referred to as owing golden shares

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Blank check	A method companies use to simplify the process of creating new classes of preferred stock is to raise additional funds from sophisticated investors without obtaining separate shareholder approval
State owned enterprise	This refers to whether the company a State Owned Enterprise (SOE) where state control is vexed over minority outside shareholders
<b>Director Incentives</b>	
Shareholder's approval of stock based compensation Plan	This refers to formal shareholder approval being required before the initiation of stock-based compensation plans for incumbent insiders, executives and CEO
CEO compensation link to shareholder return	This refers to whether the CEO's compensation is directly linked to minority outside shareholder welfare or return. This amounts to a democratization of CEO compensation whereby insiders are inhibited in self-award tendencies at the expense of minority shareholders
Compensation committee	This refers to the establishment of a dedicated committee staffed by nonexecutive directors who appraise executive directors and award their compensation plans. The committee also has responsibility for the structure of their compensation. The presence of such a committee inhibits incumbent insider director tendencies for self-award at the expense of shareholder welfare which is a form of appropriation
Compensation improvement tools	This refers to the company having the necessary internal improvement and information tools for the board members to develop appropriate compensation/remuneration to attract and retain key executives
Executive retention compensation policy	This refers to the company having a compensation policy that is geared to competitively attracting and retaining executives in the managerial labour market through appropriately designed rewards
Performance oriented compensation policy	This refers to executive compensation being linked to company performance and hence ultimately shareholder welfare. This inhibits insider self-reward tendencies and appropriation
Shareholders vote on executive pay	This refers to whether the company's shareholders have the right to vote on executive compensation

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## Appendix D. Table 1D. Empirical models

This table outlines the time invariant (Panel A) and the time varying parameter models (Panel B). The time invariant parameter models are estimated by OLS. The conditional betas of the Kalman-filter time-varying parameter models are estimated using the observation equation, where  $R_{it}$  and  $R_{Mt}$  are the excess returns of the individual and market portfolios at time  $t$  and  $\varepsilon_t$  is the disturbance term. The exact form of the related transition equation depends on the nature of the stochastic process the betas are assumed to follow and in this case a simple random walk process is imposed, following Brooks et al (1998). The observation equation and the transition equation constitute the Kalman filter state space model. However, a set of prior conditional values are necessary for the Kalman filter to forecast the future value. This technique uses the first two observations to establish the prior conditions and then estimates the entire series recursively providing conditional estimates of the parameters. 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, is contingent on their variance and is estimated from the data. This approach is appropriate for the measurement of time evolving risk premiums for market and investor protection factors (Grout and Zaleska, 2006). Thus, one-step ahead predicted states and their associated standard errors are estimated for all FMPs.

Panel A: Time invariant parameter models	Panel B: Time varying parameter models
<p><b>Model 1a: CAPM</b> The standard CAPM can be estimated by OLS regression:</p> $r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \varepsilon_{it}$	<p><b>Model 1b: CAPM</b> The conditional betas are estimated using the following observation equation:</p> $R_{it} = \alpha_t + \beta_{it}^{Kalman} R_{Mt} + \varepsilon_t, \quad \varepsilon_t \sim N(0, \Omega)$ <p>The corresponding transition equation is defined:</p> $\alpha_{it}^{Kalman} = \alpha_{it-1}^{Kalman} + \eta_{\alpha t}, \quad \eta_{\alpha t} \sim N(0, Q)$ $\beta_{it}^{Kalman} = \beta_{it-1}^{Kalman} + \eta_{\beta t}, \quad \eta_{\beta t} \sim N(0, Q)$ <p>with a set of prior conditional values:</p> $\alpha_0^{Kalman} \sim N(\alpha_0^{Kalman}, P_0)$ $\beta_0^{Kalman} \sim N(\beta_0^{Kalman}, P_0)$
<p><b>Model 2a: FF3F</b> Following Fama and French (1993), additional SMB and HML terms are the size and book-to-market factors and estimated by OLS regression:</p> $r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \varepsilon_{it}$	<p><b>Model 2b: FF3F</b> The conditional betas are estimated using the following observation equation:</p> $R_{it} = \alpha_t + \beta_{it}^{Kalman} R_{Mt} + s_i^{Kalman} SMB + h_i^{Kalman} HML + \varepsilon_t, \quad \varepsilon_t \sim N(0, \Omega)$ <p>The corresponding transition equation is defined:</p> $\alpha_{it}^{Kalman} = \alpha_{it-1}^{Kalman} + \eta_{\alpha t}, \quad \eta_{\alpha t} \sim N(0, Q)$ $\beta_{it}^{Kalman} = \beta_{it-1}^{Kalman} + \eta_{\beta t}, \quad \eta_{\beta t} \sim N(0, Q)$ $s_{it}^{Kalman} = s_{it-1}^{Kalman} + \eta_{st}, \quad \eta_{st} \sim N(0, Q)$ $h_{it}^{Kalman} = h_{it-1}^{Kalman} + \eta_{ht}, \quad \eta_{ht} \sim N(0, Q)$ <p>with prior conditional values denoted by:</p> $\alpha_0^{Kalman} \sim N(\alpha_0^{Kalman}, P_0)$ $\beta_0^{Kalman} \sim N(\beta_0^{Kalman}, P_0)$ $s_0^{Kalman} \sim N(s_0^{Kalman}, P_0)$

	$h_0^{Kalman} \sim N(h_0^{Kalman}, P_0)$
<p><b>Model 3a: Carhart 4F</b>  Following Carhart (1997), we augment FF3F with the momentum term, which is estimated by OLS regression:  <math display="block">r_{pt} - r_{ft} = \alpha_i + \beta_M(r_{mt} - r_{ft}) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \beta_{Mom}Mom_t + \varepsilon_{it}</math></p>	<p><b>Model 3b: Carhart 4F</b>  The conditional betas are estimated using the following observation equation:  <math display="block">R_{it} = \alpha_t + \beta_{it}^{Kalman}R_{Mt} + s_i^{Kalman}SMB + h_i^{Kalman}HML + m_i^{Kalman}Mom + \varepsilon_t,</math> <math display="block">\varepsilon_t \sim N(0, \Omega)</math> The corresponding transition equation is defined:  <math display="block">\alpha_{it}^{Kalman} = \alpha_{it-1}^{Kalman} + \eta_{\alpha t}, \quad \eta_{\alpha t} \sim N(0, Q)</math> <math display="block">\beta_{it}^{Kalman} = \beta_{it-1}^{Kalman} + \eta_{\beta t}, \quad \eta_{\beta t} \sim N(0, Q)</math> <math display="block">s_{it}^{Kalman} = s_{it-1}^{Kalman} + \eta_{st}, \quad \eta_{st} \sim N(0, Q)</math> <math display="block">h_{it}^{Kalman} = h_{it-1}^{Kalman} + \eta_{ht}, \quad \eta_{ht} \sim N(0, Q)</math> <math display="block">m_{it}^{Kalman} = m_{it-1}^{Kalman} + \eta_{mt}, \quad \eta_{mt} \sim N(0, Q)</math> with prior conditional values denoted by:  <math display="block">\alpha_0^{Kalman} \sim N(\alpha_0^{Kalman}, P_0)</math> <math display="block">\beta_0^{Kalman} \sim N(\beta_0^{Kalman}, P_0)</math> <math display="block">s_0^{Kalman} \sim N(s_0^{Kalman}, P_0)</math> <math display="block">h_0^{Kalman} \sim N(h_0^{Kalman}, P_0)</math> <math display="block">m_0^{Kalman} \sim N(m_0^{Kalman}, P_0)</math></p>
<p><b>Model 4a: Liquidity 2F</b>  Liu (2006) introduces a two-factor liquidity model, which is estimated by OLS regression:  <math display="block">r_{it} - r_{ft} = \alpha_i + \beta_i(r_{mt} - r_{ft}) + \beta_{lliq}ILLIQ_t + \varepsilon_{it}</math> We use two versions of the investor protection factor, created from the two rebalancing methods, monthly and annual, both with annual holding periods.</p>	<p><b>Model 4b: Liquidity 2F</b>  The conditional betas are estimated using following the observation equation:  <math display="block">R_{it} = \alpha_t + \beta_{it}^{Kalman}R_{Mt} + z_i^{Kalman}ILLIQ + \varepsilon_t, \quad \varepsilon_t \sim N(0, \Omega)</math> The corresponding transition equation is defined:  <math display="block">\alpha_{it}^{Kalman} = \alpha_{it-1}^{Kalman} + \eta_{\alpha t}, \quad \eta_{\alpha t} \sim N(0, Q)</math> <math display="block">\beta_{it}^{Kalman} = \beta_{it-1}^{Kalman} + \eta_{\beta t}, \quad \eta_{\beta t} \sim N(0, Q)</math> <math display="block">z_{it}^{Kalman} = z_{it-1}^{Kalman} + \eta_{zt}, \quad \eta_{zt} \sim N(0, Q)</math> with prior conditional values denoted by:  <math display="block">\alpha_0^{Kalman} \sim N(\alpha_0^{Kalman}, P_0)</math> <math display="block">\beta_0^{Kalman} \sim N(\beta_0^{Kalman}, P_0)</math> <math display="block">z_0^{Kalman} \sim N(z_0^{Kalman}, P_0)</math></p>
<p><b>Model 5a: Investor Protection 2F</b>  A two-factor CAPM augmented with the new investor protection factor to account for institutional differences across international markets is proposed</p>	<p><b>Model 5b: Investor Protection 2F</b>  The conditional betas are estimated using the following observation equation</p>



<p>and can be stated</p> $E(r_{pt}) - r_{ft} = \beta_M [E(r_{mt}) - r_{ft}] + \beta_{INV-PROTECT} E(INV - PROTECT)$ <p>where <math>r_{pt}</math> is the returns on a portfolio p of stocks at time interval t, <math>r_{mt}</math> is the returns on the market portfolio and <math>r_{ft}</math> the risk free rate. INV-PROTECT is the investor protection factor. This can be rearranged and estimated by OLS regression</p> $r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{INV-PROTECT} INV - PROTECT_t + \varepsilon_{it}$ <p>where <math>\alpha_i</math> is the constant, <math>\beta_M</math> is the market coefficient and <math>\varepsilon_{it}</math> is an iid disturbance term. We use two versions of the investor protection factor, created from the two rebalancing methods, monthly and annual, both with annual holding periods.</p>	$R_{it} = \alpha_t + \beta_{it}^{Kalman} R_{Mt} + \beta_{INV-PROTECTit}^{Kalman} (INV - PROTECT) + \varepsilon_t, \quad \varepsilon_t \sim N(0, \Omega)$ <p>The corresponding transition equation is defined:</p> $\alpha_{it}^{Kalman} = \alpha_{it-1}^{Kalman} + \eta_{\alpha t}, \quad \eta_{\alpha t} \sim N(0, Q)$ $\beta_{it}^{Kalman} = \beta_{it-1}^{Kalman} + \eta_{\beta t}, \quad \eta_{\beta t} \sim N(0, Q)$ $\beta_{INV-PROTECTit}^{Kalman} = \beta_{INV-PROTECTit-1}^{Kalman} + \eta_{st}, \quad \eta_{st} \sim N(0, Q)$ <p>with prior conditional values denoted by:</p> $\alpha_0^{Kalman} \sim N(\alpha_0^{Kalman}, P_0)$ $\beta_0^{Kalman} \sim N(\beta_0^{Kalman}, P_0)$ $\beta_{INV-PROTECT0}^{Kalman} \sim N(\beta_{INV-PROTECT0}^{Kalman}, P_0)$
<p><b>Model 6a: Governance 2F</b></p> <p>A two-factor CAPM augmented with the new governance factor to account for institutional differences across international markets is proposed and can be stated</p> $E(r_{pt}) - r_{ft} = \beta_M [E(r_{mt}) - r_{ft}] + \beta_{GOVERNANCE} E(GOVERNANCE)$ <p>where <math>r_{pt}</math> is the returns on a portfolio p of stocks at time interval t, <math>r_{mt}</math> is the returns on the market portfolio and <math>r_{ft}</math> the risk free rate. GOVERNANCE is the governance factor. This can be rearranged and estimated by OLS regression</p> $r_{pt} - r_{ft} = \alpha_i + \beta_M (r_{mt} - r_{ft}) + \beta_{GOVERNANCE} GOVERNANCE_t + \varepsilon_{it}$ <p>here <math>\alpha_i</math> is the constant, <math>\beta_M</math> is the market coefficient and <math>\varepsilon_{it}</math> is an iid disturbance term. We use two versions of the governance factor, created from the two rebalancing methods, monthly and annual, both with annual holding periods.</p>	<p><b>Model 6b: Governance 2F</b></p> <p>The conditional betas are estimated using the following observation equation</p> $R_{it} = \alpha_t + \beta_{it}^{Kalman} R_{Mt} + \beta_{GOVERNANCEit}^{Kalman} (GOVERNANCE) + \varepsilon_t, \quad \varepsilon_t \sim N(0, \Omega)$ <p>The corresponding transition equation is defined:</p> $\alpha_{it}^{Kalman} = \alpha_{it-1}^{Kalman} + \eta_{\alpha t}, \quad \eta_{\alpha t} \sim N(0, Q)$ $\beta_{it}^{Kalman} = \beta_{it-1}^{Kalman} + \eta_{\beta t}, \quad \eta_{\beta t} \sim N(0, Q)$ $\beta_{GOVERNANCEit}^{Kalman} = \beta_{GOVERNANCEit-1}^{Kalman} + \eta_{st}, \quad \eta_{st} \sim N(0, Q)$ <p>with prior conditional values denoted by:</p> $\alpha_0^{Kalman} \sim N(\alpha_0^{Kalman}, P_0)$ $\beta_0^{Kalman} \sim N(\beta_0^{Kalman}, P_0)$ $\beta_{GOVERNANCE0}^{Kalman} \sim N(\beta_{GOVERNANCE0}^{Kalman}, P_0)$

## Appendix E. Block owner categories per governance sorted decile

As an additional exercise we report the distribution of the seven ownership categories across the ten decile sorted governance portfolios. These are reported in the Table 1E below. Three sets of distributions are given, one for each market universe. The OECD overall sample is in panel 1, the OECD excluding US in panel 2 and the US only in panel 3. Evidence for all three universes supports the hypothesis regarding concentration of control versus cash-flow rights in relation to the quality of the external contracting environment and investor protection (see La Porta et al, 1999; Doidge et al, 2004; Dyck and Zingales, 2004). Some interesting observations can be made. The proportions of cross-shareholding networks used to separate ownership from control dominate the weakest governance deciles in the overall universe (panel 1) and this trend is also seen in the OECD excluding US market universe (panel 2). However, it is clearly missing in the US only universe (panel 3) where there is a very low proportion of cross shareholding networks and this is evenly distributed across all investor protection deciles. Another clear difference is the very high level of institutional investor (investment companies) cash flow ownership in the US only universe (panel 3) which is minimal across the other two universes (panels 1 and 2). Foreign ownership notably increases in the OECD excluding US universe from lower governance (D1) to higher governance deciles (D10). However, the opposite trend is visible in the US only universe. It is also notable that across the OECD excluding US universe (panel 2) that state ownership increases towards weaker governance deciles – where this category of owner is almost non-existent in US only universe.

**Table 1E. Block owner categories per governance sorted decile**

The second panel provides details of block shareholders per decile-sorted governance portfolio by category. Datastream categorizes block holders into seven types: cross-shareholder networks, employee/family, foreign, state, institutional investor, other, and pension funds. Categories of block shareholder are from Datastream.

<b>Block owners (%)</b>										
	<b>D1</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>	<b>D5</b>	<b>D6</b>	<b>D7</b>	<b>D8</b>	<b>D9</b>	<b>D10</b>
<b>Panel 1: OECD universe</b>										
Cross-shareholder networks	30.90	5.66	4.48	5.18	16.28	25.91	15.85	24.29	22.08	13.53
Employee/ Family	12.57	9.85	6.17	6.67	12.04	16.80	9.43	23.40	15.00	11.59
Foreign	12.06	3.39	2.56	6.72	13.12	11.39	5.66	11.81	10.97	11.66
State	1.16	0.20	0.09	0.63	2.40	3.82	0.53	2.67	2.81	0.99
Investment companies	11.97	21.04	20.64	19.28	11.33	8.59	6.41	7.03	8.94	9.75
Other	2.62	2.68	2.12	2.47	6.62	8.87	3.81	14.17	9.95	3.35
Pension Funds	2.06	1.94	3.60	3.73	2.39	2.36	1.23	1.16	3.70	1.98
<b>Panel 2: OECD (excl. US) universe</b>										
Cross-shareholder networks	17.09	17.92	19.88	31.33	16.31	25.91	15.87	24.29	22.10	13.53
Employee/ Family	11.40	11.90	9.28	15.04	12.05	16.79	9.43	23.41	15.02	11.59
Foreign	6.88	10.12	7.41	17.35	13.14	11.40	5.69	11.80	10.97	11.66
State	4.92	3.48	0.99	1.52	2.40	3.82	0.54	2.66	2.81	0.99
Investment companies	9.43	5.40	8.02	9.23	11.33	8.59	6.41	7.04	8.93	9.75
Other	3.78	5.16	11.58	3.51	6.63	8.88	3.81	14.17	9.95	3.35
Pension Funds	4.15	2.04	2.82	2.54	2.39	2.36	1.22	1.15	3.69	1.98
<b>Panel 3: US-only universe</b>										
Cross-shareholder networks	3.67	4.84	3.76	3.52	1.85	2.00	0.28	6.69	4.47	3.84
Employee/ Family	4.79	6.76	3.59	2.93	6.45	4.71	6.74	9.62	6.66	4.22
Foreign	6.88	1.45	3.14	2.38	6.62	1.85	1.46	3.80	2.50	3.20
State	0.30	0.00	0.00	0.48	1.43	0.00	0.71	0.13	0.08	0.42
Investment companies	21.77	19.43	25.29	22.76	18.39	20.97	23.19	20.80	20.94	20.62
Other	2.23	1.73	0.87	0.96	2.39	0.42	0.32	2.77	2.15	1.25
Pension Funds	3.39	3.92	4.62	3.49	3.79	3.03	1.05	1.55	3.41	4.16