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Mapping the Business Systems of 61 Major Economies: A Taxonomy and Implications for Varieties of Capitalism and Business Systems Research

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Efforts to build a universal theory of the world's business systems require empirical grounding in an understanding of the variety that need explaining. To support such theorizing, we analyzed the institutional structures of 61 major economies, accounting for 93.5 percent of 2013 world GDP (PPP). We found nine main types of business systems: Highly Coordinated, Coordinated Market, Liberal Market, European Peripheral, Advanced Emerging, Advanced City, Arab Oil-Based, Emerging, and Socialist Economies. Our findings suggest empirical support for the CME vs. LME dichotomy for part of the OECD; identify some of the business systems proposed recently as sub-types of larger clusters; indicate that institutional diversity seems to increase with development level; and cast doubt on the notions of state-led and family-led capitalism as types of business systems.

Keywords: Varieties of Capitalism; Africa; Asia; Central and Eastern Europe; Middle East; South America

JEL Classification :P1, P2, P50

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1. Introduction

What are the world's main types of business systems,[1] and what are their characteristics? The answer to this question is of great relevance not only to multinational enterprises grappling with varying rules of the game in different countries. It is also a prerequisite for the building of a general theory of varieties of business systems in the world, which in turn would enable theorizing about the implications of these varieties for economic and political outcomes such as wealth generation and distribution or comparative advantages. Such theory can only emerge when it is clear what it needs to explain (Starbuck, 1993; Weick, 1995; Swedberg, 2014)—that is, when the gamut of business systems in the world economy is known.

Recent years have seen the literature move towards a more encompassing understanding of business systems. Whitley's (1999) seminal work on business systems focused essentially on the OECD and Northeast Asia, while Hall and Soskice's *Varieties of Capitalism* (2001) as well as Amable's work (2003) limited their scope to the OECD. Subsequent works have since added insights on business systems in different regions of the world, including Africa (e.g., Wood and Frynas, 2006; Amaeshi and Amao, 2009), Asia (e.g., Kim, 2010; Boyer *et al.*, 2012; Kalinowski, 2013; Witt and Redding, 2013; Zhang and Whitley, 2013), Eastern Europe (e.g., Nölke and Vliegenthart, 2009; Bohle and Greskovits, 2012), and South America (e.g., Schneider, 2009; Schneider, 2013; Musacchio and Lazzarini, 2014). A growing number of pieces have also explored categories that span regions, such as those of state capitalism (e.g., Bremmer, 2009; Nölke, 2010) or of emergent LMEs (e.g., Fainshmidt *et al.*, forthcoming). The overall result of these efforts has been a much-improved empirical understanding of the institutional structures of previously understudied geographies. However, a consolidated overview of the overall landscape of the business systems in the world economy, and thus a firmer foundation for theorizing about them, is still absent from the literature.

The objective of this paper is to take a step towards evolving such a firmer foundation. We propose a first step towards a geographically encompassing taxonomy of the world's major business systems and their characteristics. Based on a synthesis of prior research and the in-

[1] We use the terms "business systems" and "varieties of capitalism" interchangeably. As Witt and Redding (2013: 266) explained: "Our definition of business system deviates from the original meaning proposed by Whitley (1999), who used the term for the institutional structure of firms, which in turn is derived from the societal institutional structure in which firms are embedded. However, in subsequent use, the focus of the term has widened to include institutions both at the firm and the societal levels… and even Whitley's own usage has been ambiguous... We stay consistent with this evolved meaning."

depth knowledge of regional experts, we undertake an analysis of the business systems of 61 major economies in the world. Our sample spans all continents save Antarctica, and it accounts for 93.5 percent of 2013 world GDP, measured at purchasing power parity (PPP) (World Bank, 2015). While our coverage does not reach 100 percent – an unlikely feat for any paper in the foreseeable future – it seems to us that just as a jigsaw puzzle that is 93.5 percent complete, our results should provide a reasonable approximation of the overall picture.

Our analysis identified nine main types of business systems. Three of these include economies from at least two continents, which suggests the presence of underlying drivers other than geography. Our findings have a number of potentially important implications for the field. Among others, they underline the validity of the CME vs. LME dichotomy for parts of the OECD, but not the rest of the world; loosely support the general validity of half of the business system ideal types identified by Whitley (1999); identify some of the labels proposed in recent years as valid but sub-types of larger clusters; find high institutional similarity among most emerging markets as well as advanced emerging markets on the one hand and institutional diversity of advanced industrialized countries on the other; and call into doubt the notions of state-led and family-led capitalism as business systems.

In the sections that follow, we first lay the groundwork by identifying our general epistemological approach in the context of the existing literature. We then explain the dimensions of comparison we employed in this paper, our data, and our methods before presenting our results and discussing the characteristics of the clusters we identified. We then spell our possible implications of our findings for taxonomizing the world's business systems before closing with a discussion of limitations and attendant potential for future research.

2. Motivation and Epistemology

We assume that it is desirable to develop a general theory of the world's business systems, where "theory" is defined as a "systematic [set] of interrelated statements intended to explain some aspect of social life" (Babble, 2012: 44). Fully developed, such a theory would probably spell out mechanisms to account for the origins of the business systems we observe; their likely trajectories over time, also in response to external shocks; and their impact on economic, political, and social factors such as economic growth, quality of life, inequality, and sectoral

strengths and weaknesses. To the extent multiple mechanisms are at work, such theory would ideally also lay out the contingencies under which individual mechanisms are (de)activated.

The field has already evolved important theoretical insights about all aspects of our ideal-typical theory. For instance, a number of works have put the evolution of varieties of capitalism in historical perspective and identified drivers leading to the present diversity among advanced industrialized economies (Streeck and Yamamura, 2001; Thelen, 2004; Hancké *et al.*, 2007; Cusack *et al.*, 2010). In terms of evolution over time, research has explored the question of convergence (Djelic, 1998; Whitley, 1999; Deakin *et al.*, forthcoming), but also an apparent trend towards liberalization (Thelen, 2014; Van der Zwan, 2014) and institutional adaptability more generally (Streeck and Thelen, 2005; Vogel, 2006; Witt, 2006; Hall and Thelen, 2009; Jackson and Deeg, 2012). And with regard to outcomes, the literature has examined the linkages between varieties of capitalism and results such as comparative advantages (Hall and Soskice, 2001; Whitley, 2007; Schneider and Paunescu, 2012; Witt and Jackson, 2016), innovative capabilities (Boyer, 2004; Akkermans *et al.*, 2009; Allen, 2013; Keller and Block, 2013; Boschma and Capone, 2015), CSR (Matten and Moon, 2008; Gjølberg, 2009; Jackson and Apostolakou, 2010; Brammer *et al.*, 2012; Kang and Moon, 2012) and inequality (Rueda and Pontusson, 2000; Schneider and Makszin, 2014; Thelen, 2014). This list is far from exhaustive, and a comprehensive review of these efforts is beyond the possibilities even of dedicated review papers (Wood *et al.*, 2014), leave alone research papers such as this one.

Much, albeit not all, of the above research builds on two major classics in the field, Hall and Soskice's (2001) *Varieties of Capitalism* and Whitley's (1999) *Divergent Capitalisms*. While originally developed for a limited set of economies, as already mentioned, these two seminal pieces (combined with Whitley's 2007 update) are possibly the closest we have to comprehensive frameworks of comparative institutional analysis. However, in our view, neither is likely to provide the theoretical foundations needed to conceptualize global diversity in business systems.

Hall and Soskice argued that there are two main varieties of capitalism among the advanced industrialized economies: coordinated market economies (CMEs) and liberal market economies (LMEs). They also suggested the possible existence of a third type, later dubbed "mixed market economies" (Hall and Gingerich, 2009) (MMEs), combining features of CMEs and LMEs. Hall and Soskice argued (p. 8) that in CMEs, firms rely relatively more on non-

market relationships to solve coordination problems, while firms in LMEs draw primarily on hierarchies and market arrangements. Suitable institutions provide support for these different approaches. Hall and Soskice further suggested that the ideal-typical CME would have coherently complementary institutions supporting non-market coordination across all spheres of the political economy, while the ideal-typical LME would feature coherently complementary institutions supporting market and hierarchical relations. MMEs, in this formulation, are hybrids that are unlikely to attain the same levels of economic performance as the two pure forms (Hall and Gingerich, 2009).

Hall and Soskice's work has remained the most influential approach to comparative institutional analysis to this date, as evident in citations to it. Its parsimony appeals, and the predicted types are connected to the theoretical literature on organizational forms (e.g., Williamson, 1975; Powell, 1990) and economic complementarities (Milgrom and Roberts, 1990; Aoki, 1994).

While Hall and Soskice (2001) thus arguably provided a theory of varieties of capitalism, this theory would very likely classify most economies in the world as MMEs, which suggests a theoretical gap. For instance, Witt and Jackson (2016) examined 22 OECD countries, including those Hall and Soskice (2001) had originally classified as CMEs and LMEs. The found coherently complementary institutions across the five spheres of the political economy posited by Hall and Soskice only in six cases: five LMEs—Australia, Canada, Ireland, the United Kingdom and the United States—and one CME, Austria. The remaining 16 economies are essentially MMEs, including Germany, which Hall and Soskice saw as an ideal-typical CME but which has since liberalized. While the framework thus seems to perform well on the LME side of the spectrum, the evidence suggests insufficient discriminatory power for understanding institutional variations outside that category. In particular, Varieties of Capitalism does not provide a theoretical foundation for the existence of MMEs, nor a basis for distinguishing possible types within this category. Part of the issue is the restrictive conceptualization of complementarities as residing in coherence, which allows only for two fully complementary configurations (Kristensen, 2005; Morgan, 2005; Witt and Jackson, 2016).

In trying to come to terms with the variance outside the LME category, the literature has further voiced concerns that important variables are missing from the original Varieties of Capitalism approach. Such variables include in particular the rule of the state and the kind and

extent of social capital present in an economy (Schmidt, 2002; Hancké *et al.*, 2007; Witt and Redding, 2013). The theoretical reasons for omitting those variables—and including those that were—are unclear. Possibly this happened on the grounds of parsimony, as there is relatively little variance on these dimensions for the OECD countries at the heart of Hall and Soskice's work. The literature has since proposed that differences in the role of the state, even if they appear small compared with the rest of the world, are a key factor in shaping the original batch of MMEs identified by Hall and Soskice (Schmidt, 2002; Hancké *et al.*, 2007), and that social capital becomes important outside the advanced industrialized economies (Witt and Redding, 2013).

Whitley's (1999, 2007) work on business systems includes these and the other variables used by Hall and Soskice (2001). At the same time, it faces different challenges. Whitley (1999) originally argued that there are "at least six major types of business systems" (p. 41) in the world. At the heart of this classification scheme lies essentially a two-by-two matrix of ownership coordination vs. non-ownership (network) coordination, both rated low or high (p. 41). This in itself defines four types of business systems. Two more types are introduced by subdividing one of these four—the "coordinated or collaborative" type—into three subdimensions based on "owner control type, size of firm, and extent of alliance integration between firms and within them" (p. 41). These six types of business systems, in turn, are later linked to six specific configurations of institutions that "help to generate and reproduce different kinds of business systems" (p. 47).

Despite its great influence on the literature, the original business systems approach is unlikely to be helpful for understanding *global* variety of business systems. For one, while the six types of business systems are presented as generic types and the existence of more types is left as a distinct possibility, the work is essentially built around empirical observation of six economies: Chinese business as present in Hong Kong and Southeast Asia, Italian industrial districts, Germany, Japan, South Korea, and the United States. A strict application of the description of the six ideal types, as provided in Whitley's (1999) Tables 2.4 and 2.7, would leave many, if not most, Western economies unclassifiable. Most Asian economies likewise do not neatly fit (Witt and Redding, 2013), and it seems unlikely that the challenge would be smaller for other parts of the world. A loose application of the criteria may help address these

issues, but given the tight connections between distinct institutional structures envisioned by Whitley, this would imply bending the framework to fit the data.

Second, the theory underpinning of the framework is underspecified. As defined earlier, "theory" is a "systematic [set] of interrelated statements intended to explain some aspect of social life" (Babble, 2012: 44). To the extent such statements underlie the business systems approach, they are not consistently and clearly spelled out. For instance, the eight dimensions taken to be "key characteristics of business systems" (p. 34) are presented without theoretical (or empirical) argument why these, and not other, characteristics matter. In the subsequent definition of the six types of business systems, these key characteristics are not used, at least not in the way they were previously introduced. Rather, they are reduced to three larger dimensions—ownership coordination, non-ownership coordination, and employment relations and work management—of which only the first two are used to define the six ideal types. The logic of this aggregation and of dropping the third larger dimension is not clear.

Similarly, Whitley's (1999) Table 2.6 and the text around it seek to connect institutional characteristics to business systems characteristics (using the original eight dimensions). Four pages of text and one large table present the reader with 49 hypotheses about linkages between institutional and business systems characteristics. The proposed linkages may well have merit, but the theoretical mechanisms linking them are not spelled out in sufficient detail.

Whitley amended his approach in later work (Whitley, 2007). The part most relevant to this paper is the definition of now eight ideal types of business systems based on two dimensions, ownership integration and alliance integration, which in turn are subdivided into degree and scope and each expressed on a five-point scale. The book further spells out four ideal types of institutional regimes governing market economies that are essentially based on the presence of four generic state types, and lays out six generic types of innovation systems.

While this addresses some of the challenges mentioned earlier, it leaves others untouched and invites new questions. To give four examples: First, dropping employment relations and work management from the factors defining a business system resolves the tension of excluding it from the matrix defining business systems. At the same time, it raises the question of why this factor was dropped. Ownership coordination and coordination of the work force inside a firm are usually seen as separate spheres, the former a matter of corporate governance, the latter, of management (Lazonick, 1992; Hall and Soskice, 2001; Redding, 2005). Second, while the new

eight types are less obviously derived by generalizing from empirical cases, it is not clear why these eight in particular were singled out as ideal types. In principle, given the five-point scale along four dimensions used, there are 5^4=625 different types of business systems possible. What about the other 617 possibilities? Third, how are these eight types linked with the four ideal types of institutional regimes and state types? While it may be possible to surmise the connections based on the postulated correlations, the precise linkages remain unclear. Fourth, to the extent the book aims to provide a universal framework, predatory states (Evans, 1995) should probably have been included among the state types.

This is not an exercise in faultfinding. Hall, Soskice, and Whitley are leading scholars in our field for a reason, and the explicandum is extremely complex and difficult to come to terms with. Rather, our discussion of Hall and Soskice (2001) and Whitley (1999, 2007) as well as the preceding list of works in the field is intended to illustrate two large points. One is that the field has not succeeded in building a general, unified theory of global business systems, nor indeed an overarching classification scheme. The second is that most of the work in our field has been built around the specific context of the West plus Japan. There is no doubt that these economies and a better understanding of how they work are important. However, this partial approach is a problem from the perspective of building the overall theory we outlined earlier in that, in all probability, much of these theories is geographically contingent.

A key challenge in this context has been that we know much too little about the institutional characteristics of the rest of the world. A comprehensive theory of the kind we introduced earlier cannot emerge unless it is clear what empirical realities it needs to explain (Starbuck, 1993; Weick, 1995; Swedberg, 2014). As Swedberg (2014: 10) summarized, "you cannot theorize without having something to theorize about; and this something you have to acquire through observation." Starbuck (1993) and Weick (1995) make the same point, underscoring the importance of understanding the phenomenon at hand, as expressed in data, as a step towards devising theory. It is then the immersion in these data that allow theories to emerge (Swedberg, 2014), through processes such as abduction (Peirce, 1957). Building out the theory itself is likely to be a protracted process (Sutton and Staw, 1995; Weick, 1995; Swedberg, 2014) that is beyond the scope of this paper.

The first precondition for theorizing about the world's business systems is thus the availability of an empirical understanding of what needs explaining. As mentioned in the

introduction, a growing number of works has begun to evolve the requisite information, albeit usually in a piecemeal fashion. Efforts have also been underway to categorize the empirical insights thus gained into typologies. While a necessary step in making sense of the data, this has created challenges in its own. In particular, different labels are in use for different categories of various overlap. This problem has been with us since the early days, with LMEs (Dore, 2000; Hall and Soskice, 2001), fragmented business systems (Whitley, 1999) and market based capitalism (Amable, 2003) arguably referring to the same set of economies. In addition, since most of the empirical work continues to be geographically organized, it is not necessarily clear whether a given type is regionally confined or part of a larger, globally present pattern. For instance, are there economies in both Europe and Asia that belong to the same, "state-led" variety of capitalism? Proponents of state capitalism would say yes, others (e.g., Witt and Redding, 2013) suggest the answer is no.

As a result, the overall lay of the land of the world's business systems – which economies have similar structures, and how many types actually exist? – remains unclear. The objective of this paper is to help remedy this situation by taking the next step in understanding the data: presenting a typology of the world's major business systems aiming to stimulate the conceptual refinement identified in the studies mentioned above.

3. The world's business systems: a comparison

We generalize the approach taken by Witt and Redding (2013) in their exploration of Asian business systems to gain a comprehensive overview of the types of business systems present in the world's major economies.

Data

Ideally, this study would have included all of the 184 economies presently covered by the World Bank. In reality, very little is known about the institutional structures of most them, which limited the range of economies for which we could hope to obtain the requisite in-depth expert judgment (see below). In selecting our sample, we thus strove to strike a balance between feasibility in terms of data availability and relevance in terms of coverage of global economic activity.

We initially selected the 60 largest economies of the world, as measured by GDP at purchasing power parity (PPP) in 2013, the latest year available at the point of selection (World Bank, 2015). Each of these economies had a total 2013 PPP GDP of at least US$200 billion, and collectively, they accounted for 94.7 percent of world GDP. We added to this sample three smaller economies with a GDP somewhat below US$200 billion, on the grounds that prior treatment in the literature made their inclusion feasible and relevant: Ireland, New Zealand, and Slovakia. During data collection, it further became clear that there was insufficient knowledge about Iran and Iraq, which we had to drop as a result. Our final sample thus encompassed 61 economies, accounting for 93.5 percent of world GDP (Table 1).

*** Table 1 about here ***

For each of these economies, we collected a wide range of institutional data (Tables 2 and 3). To reduce the risk of missing important dimensions—as discussed earlier—this combined the key institutional categories identified in seven major works on varieties of capitalism: Hall and Soskice (2001), Whitley (1999), Amable (2003), Redding (2005), Hancké, Rhodes, and Thatcher (2007), Morgan, Campbell, Crouch, Pedersen, and Whitley (2010), and Witt and Redding (2013). Table 2 gives an overview of the dimensions present in these works and those chosen for this analysis. Essentially, we included a dimension if at least three of these major works identified it as important. Table 3 shows the specific measures we used to operationalize these dimensions.

*** Tables 2 and 3 about here ***

Most of the concrete variables in Table 3 mirror those used by Witt and Redding (2013), but we did make some minor modifications. Some of these were the result of fine-tuning. For instance, consultations with experts on business groups, a form of interfirm relations, revealed that these structures are essentially ubiquitous, with the United States as the key exception. We thus eliminated this measure and instead followed Schneider and Paunescu (2012) by adding statistics for mergers and acquisitions as an indicator of interfirm relations.

In other cases, data availability led to changes. For example, union density information for our full sample was not available. At the same time, the International Trade Union Congress (2014) has since published a new, comprehensive comparison of trade union rights, which provides a more meaningful picture of the institutional structure of employment relations than the size of unions alone. Similarly, the United Nations has stopped publishing the Education Attainment Index, replacing it with the average years of schooling received by adults and the

average years of schooling children can expect to receive. We consequently constructed a new index by factor-analyzing the two variables.

We further found that some of the economies explored in this paper rely heavily on foreign capital (e.g., Bohle and Greskovits, 2012). We thus added the stock of inward foreign direct investment (IFDI) normalized by GDP as a measure in the financial sphere.

As Witt and Redding (2013) discussed, obtaining comparative statistics for institutional analysis is essentially impossible for many variables of interest. We thus followed their approach and used statistics where possible and expert qualitative judgment where necessary. The methodological validity and utility of qualitative measures for the comparison of business systems has received extensive discussion and validation (Ragin, 2000, 2008; Witt and Redding, 2013), and many of the foundational works of our field, including Hall and Soskice (2001) and Whitley (1999) build on heuristic expert judgment. Qualitative judgment for this paper was partially derived from the literature, partially provided by the authors.[2] Specifically, judgments for Anglo-Saxon and Western European economies as well as for those Asian economies covered by Witt and Redding (2013) were based on the extant business systems literature. For all other economies, the authors drew on their personal expertise researching and working in these economies. This process was equivalent to that used by Witt and Redding (2013), with the key difference that we coded our judgments directly while Witt and Redding (2013) extracted theirs from country chapters, written by third authors, in the *Oxford Handbook of Asian Business Systems* (Witt and Redding, 2014). To reduce the risk of false assessments, we further consulted with other scholars with relevant regional expertise.

Cluster analysis

To identify the different types of Asian business systems present in our sample, we performed hierarchical cluster analysis, which has been proposed as an appropriate method to investigate complex and interrelated dimensions of nations not only as a methodology device, but also as a foundational tool for sense-making and conceptualization of the object under investigation (Georgas and Berry, 1995; Ronen and Shenkar, 2013).

[2] The authors of this paper are experts on business systems in different parts of the world. To preserve anonymity in peer review, we cannot reveal our names to establish our credibility. However, we are known to the editor, who is in a position to take this information into account in his decision.

We recoded qualitative data in form of dummy variables. For instance, we expressed differences in employment tenure in three dummy variables, one for short-term, one for medium-term, and one for long-term employment. We normalized all measures to eliminate distortions from differences in numerical magnitude across variables.

We employed hierarchical cluster analysis as implemented in Stata 13.1 (StataCorp, 2013b) using the Gower dissimilarity measure, which is suitable for mixed continuous and categorical variables as present in our data (StataCorp, 2013a). We chose average linkage (more specifically, unweighted pair-group method using averages (UPGMA) linkage), which avoids the tendencies of single linkage and complete linkage to produce extreme results (Greenacre and Primicerio, 2013).

Given growing interest in viewing varieties of business systems as different sets of institutional configurations (Jackson, 2005; Kogut and Ragin, 2006; Schneider and Paunescu, 2012), we considered the use of fuzzy-set qualitative comparative analysis (fsQCA) as an alternative approach. We found the method to be unsuitable because the number of institutional measures in our dataset is too large for fsQCA to handle. At 48 variables, fsQCA would produce a truth table of 2^{48}= 281,474,976,710,656 possible configurations. Factor analysis of our variables identified 11 factors with eigenvalue larger than 1, which would yield 2,048 possible configurations – still too many. Reducing the number of factors to a manageable number of about 5, resulting in 32 combinations, would imply the elimination of 6 meaningful factors and thus a large loss of possibly differentiating information. We consequently decided against the use of fsQCA.

Figure 1 shows the dendrogram produced by the cluster analysis, and Table 4 presents the attendant pairwise dissimilarity measures, or "institutional distances" (cf. Jackson and Deeg, 2008).

*** Figure 1 about here ***

*** Table 4 about here ***

To establish how many clusters are actually present in these results, we drew on the methodological literature on stopping rules, that is, algorithms designed to identify the optimum number of clusters without the influence of subjective author judgment. Among the many stopping rules in existence, the methodological literature has identified two as most reliable: the Calinski-Harabasz pseudo-F index and the Duda-Hart Je(2)/Je(1) index (Milligan and Cooper,

1985; Everitt *et al.*, 2011; StataCorp, 2013a). The literature further suggests that the Calinski-Harabasz stopping rule works better for smaller numbers of clusters in the data, while the Duda-Hart rule performs better if 4 or more clusters are present (Milligan and Cooper, 1985).

Application of the Calinski-Harabasz stopping rule (StataCorp, 2013a) to our results suggested the presence of only 4 clusters in the data: (1) 27 emerging markets, shown in the dendrogram as the branch ranking from ID to CU (read from left to right); (2) a branch mixing 18 advanced emerging markets, Eastern European economies, and Southern European economies, shown in the dendrogram as ranging from HK to GE; (3) a branch with 6 Anglo-Saxon economies (GB to IE); and (4) a branch with 10 Northern European economies plus Japan (NO to JP).

Prior research suggests that this result – 61 economies sorting into only 4 clusters – is likely to be an underestimate. For instance, Whitley (1999) already identified 6 different types of business systems present in the advanced industrialized countries plus Northeast Asia. Witt and Redding (2013) found 7 types of business systems using the advanced industrialized countries as well as the major Asian economies ranging from India eastwards to Japan. And exploring a range of emerging economies, Fainshmidt et al. (forthcoming) identified seven types of clusters. The Calinski-Harabasz rule has a tendency to underestimate the actual number of clusters in the data once the number clusters becomes large (Milligan and Cooper, 1985), and in light of the prior evidence, we suspect such underestimation was the case here.

By contrast, the Duda-Hart stopping rule (StataCorp, 2013a) suggested an optimum number of 9 or 10 clusters. While 9 clusters minimized the Je(2)/Je(1) ratio, the pseudo T-squared value was minimized for 10 clusters. Either choice was thus methodologically defensible, and given prior evidence and advantages of the Duda-Hart stopping rule for 4 or more clusters, likely to be more credible than that produced by the Calinski-Harabasz rule.

To aid us in choosing between 9 or 10 clusters, we conducted a robustness test using weighted average linkage, which may have advantages for clusters with uneven numbers of members (Everitt *et al.*, 2011). The resultant dendrogram positions of the 61 economies were consistent with those produced by average linkage. The Duda-Hart stopping rule suggested the presence of 9 clusters for those results, suggesting that 9 may indeed be the optimum number. However, in doing so, it eliminated Japan as a single-member cluster and instead established Nigeria as a cluster in itself.

On balance, we judged the clustering produced by average linkage to be more credible. Both types of linkages produced an awkward single-member cluster. However, there is evidence to support this positioning for Japan, which differs from its closets kin, Northern European economies, in its reliance on micro-corporatist arrangements (Aoki, 1988; Estevez-Abe *et al.*, 2001; Inagami and Whittaker, 2005). To our knowledge, there is no prior evidence that would support classifying Nigeria as a unique type of capitalism.

In sum, our analysis suggests the presence of 9 clusters among the 61 economies explored, as shown in Table 5. The labels proposed represent what to us seemed as the best descriptive labels possible for these clusters. They are not intended as value judgments, nor do they express any specific theoretical agenda.

*** Table 5 about here ***

Discussion by cluster

Coordinated and Liberal Market Economies. The economies included in these two clusters are identical with the groupings proposed by Hall and Soskice (2001), with the exception of Japan. The replication of these two clusters in our analysis suggests that the original Varieties of Capitalism (VoC) formulation did succeed in capturing a big divide among the advanced industrialized economies.

At the same time, it is also clear from Figure 1 that critics of the VoC approach were correct to point out the existence of important distinctions within these groupings (e.g., Amable, 2003; Campbell and Pedersen, 2007; Hancké *et al.*, 2007). Within the CMEs, for instance, we see two subgroupings: what one could term "classical CMEs" including Austria, Belgium, Finland, Germany, the Netherlands, and Sweden; and CMEs with a twist, including Denmark and Switzerland, which combine features of CMEs with those of LMEs (e.g., Danish "flexicurity" in employment relations), as well as Norway. We likewise see some variance inside the LME camp. Ireland stands out as relatively dissimilar, which is consistent with its relatively recent heritage of corporatism (Ó'Riain, 2014).

The characteristics of these economies have been discussed at length in the literature, so we will not reiterate them here.

Highly Coordinated Economies. The Duda-Hart stopping rule singled out Japan as a cluster of its own, though it is closely related to the CMEs. We named this cluster in accordance with Whitley (1999), who had previously identified Japan as a business system separate from the CMEs. The name also has the virtue of indicating the close kinship of this cluster of one with the Coordinated Market Economies. While one can question whether a cluster of one is meaningful as it seems to represent an exception (albeit an important one) rather than a general pattern, we retained it because doing otherwise would introduce the precise arbitrariness that stopping rules are intended to prevent. There is likewise ample literature on the Japanese business system, so we will not enter a discussion of it here.

European Peripheral Economies. This group comprises the Southern European economies as well as the Central European economies west of the Ukraine. Inside this cluster, we find two sub-clusters (Figure 1): the Southern European economies of France, Greece, Italy, Portugal, and Spain; and the Central European economies of the Czech Republic, Hungary, Poland, Romania, and Slovakia. This subdivision within this cluster is consistent with their separate treatment in the literature (e.g., Schmidt, 2002; Amable, 2003; Nölke and Vliegenthart, 2009; Bohle and Greskovits, 2012).

At the same time, important institutional parallels seem to have evolved. These business systems tend to have[3] high levels of general education, long-term average employment tenures in excess of 10 years, industrial unions with some admixtures of craft unions, bank-led financial systems mixing market and relationship criteria for credit allocation, and top-down decision-making inside firms with medium levels of delegation. They also tend to have an important role for family and some state ownership of firms, about average levels of investor protection, medium to high rule of the law, welfare state structures with developmental admixtures in the Central European economies, top-down political governance, and above average levels of voice and accountability as well as government effectiveness.

Advanced Emerging Economies. This is a geographically heterogeneous group of emerging economies with relatively high levels of per capita GDP. Inside the cluster, Figure 1 suggests three subgroups: Chile and Turkey, Israel and South Africa, and Korea and Taiwan. The pairing of Korea and Taiwan is consistent with prior findings of similarities (Witt and

[3] Please note that the list that follows, and similar lists below, indicate general tendencies. Individual economies may deviate on some dimensions.

Redding, 2013) on the back of similar paths of economic development drawing on developmental state policies (e.g., Amsden, 1989; Wade, 1990). Israel and South Africa may have evolved similarities in the context of international isolation and an active state role in response to security concerns. Chile and Turkey share long periods of military dominance and attendant military involvement in the commercial sector.

Common themes in this cluster are decent levels of general education, medium-length employment tenures, on-the-job and private vocational training, bank-led financial systems mixing relationships and market criteria in allocating funds, and top-down decision-making inside the firm. Other common themes include a strong role for family ownership and control paired with investor protection that is somewhat above average, developmental state policies, top-down state governance, and, except Turkey, above average institutionalized trust, voice and accountability, and state effectiveness.

Advanced City Economies. This cluster comprises Hong Kong and Singapore, which are the only two city-based economies of sufficient size to be included in our sample. Though the details vary somewhat, both are trade-dependent hub economies with high levels of economic freedom so as to attract foreign investors. On the back of these strategies, both have attained very high levels of per capita GDP.

Institutionally, both feature good general education, short-term tenure, private skills acquisition, predominantly industrial unions with limited rights, bank-led financial systems with very high levels of inward foreign direct investment and allocation based on market criteria and relationships. In addition, they show top-down decision-making inside firms with limited delegation, promotions based on relationships with a performance element, a strong role of family ownership (and, in Singapore, state ownership), high levels of investor protection, regulatory states (with developmental elements in Singapore), top-down state decision-making, and high levels of government effectiveness.

Arab Oil-Based Economies. This group brings together Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Common feature of these economies is the continued importance of oil production and exports, attempts at diversification into other industries notwithstanding.

Institutional patterns are historically weak but improving education, usually short-term tenures, the virtual absence of unions and very weak union rights, bank-led financial systems with low stocks of foreign direct investment and market-based allocation of funds, top-down

decision-making in firms with limited delegation to employees and promotions based on relationships and performance. Further, there are important roles for family and state ownership in the economy, poor to average investor protection, above average rule of law, states combining predatory, developmental, and welfare elements, top-down state decision-making, poor voice and accountability, and average (Kuwait, Saudi Arabia) to good government effectiveness.

Emerging Economies. This cluster is by far the largest cluster with a geographically very heterogeneous range of economies. Common tendency is the presence of relatively low levels of per capita GDP, with Russia as an outlier as a result of its revenues derived from resources such as oil and gas. Inside this cluster, we see a number of sub-clusters, many of them based on geographic proximity and documented in the literature. For instance, China and Vietnam cluster together and are in turn relatively similar to India, as established in prior work (Witt and Redding, 2013, 2014). Bangladesh and Pakistan cluster together, which is plausible given that Bangladesh used to be part of Pakistan, and are themselves similar to India, with which they formed British India until 1947. Indonesia, the Philippines, and Thailand cluster together, which is again consistent with prior work (Witt and Redding, 2013). Unsurprising close clustering is further visible among Colombia, Mexico, and Peru.

But there are also a few surprises. Malaysia forms a sub-cluster with Egypt and Morocco, Russia with Algeria, Brazil with Kazakhstan, and Argentina with Ukraine. In this context, it is worth remembering that according to the Duda-Hart stopping rule, these branches do not constitute valid individual clusters, which implies that the similarities within these sub-clusters are not much greater than those across them. Given that our knowledge of the institutional structures of emerging markets is much weaker than that for OECD countries, it is entirely possible that some of these sub-clusters formed on the basis of measurement error.

The overall clustering, however, shows high levels of consistency across the economies included in it. General themes include weak past and current education, short-term job tenures, private skills acquisition, suppressed unions, bank-led finance allocated on the basis of relationships and state guidance, top-down decision-making inside firms with low delegation and promotion based on relationships, family and state ownership of firms with often poor investor protection, low rule of law (except Malaysia), predatory state policies with developmental admixtures in some cases, top-down state decision-making with generally low levels of voice and accountability, and poor state effectiveness (again except Malaysia).

Socialist Economies. This last cluster consists of Cuba and Venezuela. Both represent old-style socialist economies, with Venezuela arguably having regressed to this state under the rule of Hugo Chavez and his successor. Structurally, these economies feature weak current but decent expected education, weak union rights, bank-led financial systems with very low inward foreign direct investment and state allocation of funds, top-down decision-making with low delegation inside firms and promotion based on seniority, state ownership and control of firms (with a family element in Venezuela), very weak investor protection, very weak rule of law, predatory state structures, top-down state decision-making, and very poor voice and accountability as well as state effectiveness.

4. Implications

Our findings have a number of possible implications for our understanding of the world's business systems. First, and most importantly, they should represent a step towards understanding the global varieties of business systems that a unified business systems theory needs to explain. While our findings will no doubt be refined and extended to further geographies, for the first time we have something akin to a map of the institutional make-up of 93.5 percent of the world economy.

Among others, knowledge of these clusters may help us evolve a better understanding of economic outcomes such as comparative advantages, growth, or inequality. Most of the works on these topics so far have drawn on the Varieties of Capitalism framework and, in doing so, have adopted the underlying logic of complementarity residing in coherent strategic or market coordination across institutional dimensions (e.g., Hall and Soskice, 2001; Taylor, 2004; Kenworthy, 2006; Akkermans *et al.*, 2009; Hall and Thelen, 2009; Schneider *et al.*, 2010; Schneider and Paunescu, 2012). Empirical results of these efforts have generally produced mixed results. More recently, Witt and Jackson (2016) have suggested that complementarities may reside not in coherence, but instead in incoherent institutions forming what Streeck (1997) termed "beneficial constraints." While they applied this argument to the question of how radical and incremental innovation translate into comparative advantages, their overall point may generalize to other forms of institutional complementarities and attendant outcomes. The implication is that any of the types of business systems identified in this paper may, in principle, have evolved institutional complementarities that may help, or hinder, certain outcomes. To the

extent similar outcomes are observed within, but not across, the clusters proposed, the general institutional patterns within clusters may play a role in producing these outcomes.

Second, as already briefly mentioned, our results suggest that Hall and Soskice (2001) *did* capture an important pattern by distinguishing CMEs and LMEs, even given the variance within these groups. However, our findings do not support efforts to apply these categories to economies other than those originally included in them. They do not travel. Nor does the addition of a third, MME category resolve this issue, as this group would need to accommodate 46 of the 61 economies present in this study. The bulk of the world's economies may well be "mixed" from the perspective of the Varieties of Capitalism school, but it seems to us that different categories are needed for the field to make sense of the rest of the world.

By extension, this also suggests that the underlying mechanism in the Varieties of Capitalism approach of institutional complementarities through coherence—liberal through for the ideal-typical LME, coordinated for the ideal-typical CME—is unlikely to extend to the rest of the world. This is consistent with recent findings by Witt and Jackson (2016) that only six in 22 advanced industrialized economies exhibited the coherence across spheres of the political economy envisioned by Hall and Soskice (2001). At the same time, even in the absence of full coherence, the nine economies of the present Coordinated Market Economies cluster are apparently structurally relatively similar compared with the rest of the world.

Second, our results support Whitley's (1999) contention that there are *at least* six major business systems in the world: our results put this number at nine for the economies studied. Three of these systems are broadly consistent with Whitley's typology, at least if one allows for the possibility that economies may not have the precise characteristics of Whitley's prototypical business systems but may merely be similar. In Whitley's terms, these are the highly coordinated economy of Japan, the collaborative economies (CMEs), and the compartmentalized economies (LMEs).

It is much harder to map his remaining three categories onto our findings. For instance, which cluster can be singled out as state-organized, given the prominent role of the state in most of the remaining economies? Similarly, what economies quality as coordinated industrial district business systems? Italy, at least in part, may be an exemplar of this type, but it is not obvious that this classification would make sense for the other European Peripheral Economies in our results. Perhaps the "fragmented" label can be applied with some justification to Hong Kong and

Singapore, though especially Singapore also features very high levels of state coordination in its economy (Carney, 2014). Overall, it seems to us that these three categories do not generalize beyond the specific exemplars Whitley used to define them. Recourse to Whitley's (2007) later restatement does not help us solve this challenge, as we remain unclear how in this updated framework institutions link to specific combinations of ownership and alliance integration, as discussed previously.

Third, the results suggest that at least some of the labels used in the field are empirically valid but, globally speaking, probably part of the same clusters. This effect is most striking for the Emerging Economies. Prior research has suggested various labels for economies included in this cluster, such as hierarchical capitalism (Schneider, 2013) and post-socialist economies and emerging Southeast Asian economies (Witt and Redding, 2013). These groupings of countries and the labels these prior works have attached to them have some empirical justification. However, again putting these economies in global perspective and using statistical methods to identify the most defensible clustering suggests that these and similar economies all form one large type business system.

One interpretation is that while there are many ways to be a rich economy – CMEs, LMEs, European Peripheral Economies, and Highly Coordinated Economies – there may be limited institutional variance among poorer emerging markets. This would be generally consistent with Gerschenkron's (1962) observation that late-developing economies leveraged institutional innovations, both relative to other poor economies but also their more advanced counterparts, to catch up. Path dependency and the absence of a clear trend towards institutional convergence among the advanced industrialized economies may then explain the persistence of resultant institutional diversity over time.

While this can account for diversity at the developed end of the spectrum, it leaves open the question why poorer countries are structurally similar. One interpretation might be that there is a default mode of organizing societies that have not experienced profound modernization and attendant institutional and economic development (Giddens and Pierson, 1998; Eisenstadt, 2000; Beinhocker, 2005). One consistent feature of emerging markets in our sample, for instance, is the relatively low levels of institutionalized trust, as expressed in the rule of law. In other words, abstract rules and regulations have not yet superseded the patrimonial structures typical of traditional societies (Li and Redding, 2014).

At the same time, all emerging markets are clearly not the same. China, for instance, has done much better economically than, say, Pakistan or Indonesia. More generally, the Emerging Economies includes both, economies that have seen little development and those that have made great strides. To the extent the latter draw on institutional innovations as envisioned by Gerschenkron (1962), this is not (yet?) visible in the data.

One possible interpretation is that the current dimensions for comparing business systems, as outlined in Table 2, fail to capture these institutional innovations. In other words, this may be a case of omitted variables, and it seems to us that this question would be a fruitful discussion topic for the field. It may, however, also be possible that institutional innovation may matter relatively less for producing growth in economies with lower income levels (Beinhocker, 2005; Fatás and Mihov, 2009). For instance, the quality of institutions, and thus the role of institutional innovation, may become relevant only once an economy approaches middle income levels, and lack of institutional innovation may then lead to stagnation known as the "middle-income trap" (Redding and Witt, 2007; Lewin *et al.*, 2016; Doner and Schneider, forthcoming). The development of institutionalized trust (Redding and Witt, 2007) and attendant changes in governance (Witt, 2016) may be needed to overcome it.

Alternatively, or perhaps in addition, future research may well find that performance differences within this group may be a function less of the presence or absence of individual institutional characteristics, but rather of configurations of institutions and their complementarities. While economies clustering together are institutionally similar, they are not identical, and in some cases, within-cluster differences along some dimensions may produce significant variance in outcomes. As a result, a complementarity, whether through coherence or beneficial constraints, may emerge or be obviated, and outcomes may change accordingly. For instance, it may be acceptable for corruption to be high as long as government effectiveness provides a beneficial constraint in that this private rent seeking can be channeled to contribute to building up industrial capacity – as was arguably the case in China for many years. Where such constraint is missing, as in many emerging markets, the proceeds of corruption may be more likely to materialize on bank accounts in third countries. The devil may be in the detail.

We should also acknowledge the influence of other, non-institutional drivers of performance differences. For instance, the presence of external military threats, ethnic homogeneity, and the absence of natural resources have all been linked to a higher propensity for

economic development. These non-institutional factors are, strictly speaking, beyond the scope of business systems analysis. To the extent business systems theory seeks to evolve an understanding of variety in outcomes, however, these and other factors are likely to need taking into account.

Similarly, the literature has suggested a distinction between Southern European and Central European economies. This divide is visible as a sub-cluster in our results, which provides support for the validity of the respective labels. At the same time, putting these economies in global perspective and applying statistical procedures for deciding the number of clusters present in the data, we find that relative to the rest of the world, similarities are such that both Southern and Central European economies seem to form a single cluster. Much of the above discussion about Emerging Economies applies here as well, mutatis mutandis. For instance, it is possible that the common clustering is a result of the absence from the analysis of institutional dimensions that go beyond those commonly accepted as relevant (Table 2).

Third, the Advanced Emerging Economies combine low geographic proximity with relatively high institutional similarity. The economies in this group have reached relatively high levels of per capita GDP and are generally considered exemplars of successful economic development (stagnant South Africa with its very special economic history being the obvious exception, though recent developments suggest it may be joined by Turkey). This raises the question whether there may, at least currently, be one particular institutional trajectory towards *high* economic development – per capita GDP levels past the middle income trap – for countries that have neither oil (like the Arab nations) nor are cities (like Hong Kong and Singapore). While the economies in this cluster had very different institutional starting points, they apparently converged on similar institutional structures as they got richer—which, in turn, raises the question of what forces may have led to such institutional convergence. It further suggests that notions of a geographically based pattern towards development – such as the "Asian development model" (Kojima, 2000) – may be missing part of the larger picture.

Fourth, our clusters raise questions about the validity of state-led capitalism as a type of business system. We find economies usually associated with the state-led model distributed across several clusters: Emerging Economies, Oil-based Arab Economies, Advanced City Economies, Advanced Emerging Economies, Southern European Economies, and the Socialist

Economies. This is a very large spread of institutional differences that the "state-led" category would need to accommodate—too large, in our view, to be analytically meaningful.

Recent works on state-led capitalism have recognized this issue and have started to provide for subcategories (Musacchio *et al.*, 2015). Given the emphasis on ownership patterns, this may provide for a useful classification with respect to corporate governance outcomes. However, the underlying logic of state-led capitalism *qua* business system will remain flawed because it commits the fallacy of composition: there is a similar role of the state across economies, thus these economies represent a variety of capitalism. This argument will work only if one assumes that all the other dimensions of business systems research has identified (Table 2) are inconsequential, or at least secondary.

The same challenge applies to the newer notion of family-led business systems (Aguilera *et al.*, 2013; Fainshmidt *et al.*, forthcoming). Economies with important roles for family business are present in the Emerging Economies, the Advanced City Economies, the Advanced Emerging Economies of both types, parts of European Peripheral Economies, and the CMEs. Again, this suggests that the "family-led" category includes too much institutional heterogeneity to be useful for defining a type of business system, and the same concerns about the underlying logic as for state capitalism applies.

5. Conclusion and Limitations

In this paper, we have undertaken an analysis of the business systems of 61 of the largest economies in the world, accounting for 93.5 percent of 2013 world GDP at purchasing power parity. We have found nine main types of business systems in our sample and discussed the characteristics of each of these clusters as well as the possible implications for the field. Among others, they underline the validity of the CME vs. LME dichotomy for parts of the OECD, but not the rest of the world; loosely support the general validity of three of the six types of business systems identified by Whitley (1999); identify some of the labels proposed in recent years as valid but sub-types of larger clusters; find high institutional similarity among most emerging markets as well as advanced emerging markets on the one hand and institutional diversity of advanced industrialized countries on the other; and call into doubt the notions of state-led and family-led capitalism as business systems.

Our work, as all others, has limitations. In particular, about half of the data used in the cluster analysis depended on expert judgment. While we have made great efforts to ensure accuracy of these judgments, including through triangulation with other experts and, where possible, the literature, measurement error is bound to have occurred in a number of cases. The same can be said about the statistics used, with data from less developed economies often having a greater probability of measurement error even if they are reported by reputable organizations such as the World Bank.

As a result, it is likely that at least some of the positions identified by our cluster analysis will be affected by measurement error. This error is likely to be smallest for the OECD countries, where good data and plentiful prior research have established a fairly clear picture. As a general rule, the less developed and the less researched a given economy, the higher the risk of measurement error. Presumably, the risk is greatest for the African and Arab economies in the sample.

This points to what we believe to be the most important implication for future research growing out of this discussion. We need better data especially for non-OECD countries to support expert judgment and, ultimately, to provide usable globally comparative institutional data. Especially for the less explored geographies covered by our sample – Africa and the Middle East – the cost/benefit ratio for empirical research seems highly favorable given the very limited state of our current knowledge. Crucial would also be to obtain some sense of how Iran and Iraq function. These economies, which are both troubled but fairly large, may well cluster with the Oil-rich Arab Economies. On the other hand, they may not; Iran, for instance, could present as a separate kind of business system not observed elsewhere.

At the same time, the field needs to be on the lookout for better measures of constructs it has identified as important. The issue of construct validity in comparative institutional analysis was already discussed in Witt and Redding (2013), and we would like to second it here. We overcame some of these issues through expert judgment, but in the end, it would be better to have hard measures. For instance, given the centrality of corporate funding in our understanding of business systems, we need to gain a comparative understanding of where firms (not the private sector, which includes households) get what proportions of their outside funding. Occasionally, such data become available for select countries (e.g., Witt, 2006). Making this kind of

information available on a broadly comparable basis, and ideally in a time series, would be a great boon to future research.

Lastly, future research may of course extend the scope to include further countries. In our view, this would probably be academically interesting but not very substantively meaningful. Once Iran and Iraq have been brought into the picture, the remaining economies account, at present, for less than 5 percent of the world economy. All else equal, it would be more fruitful to put efforts into improving the quality of our measures than to work on including the remaining small economies.

We began this paper with two questions: What are the world's main types of business systems, and what are their characteristics? We hope that with this paper, we have helped shed some light on these questions and helped motivate further research that will help overcome the limitations of this study. Comparative institutional analysis has made great strides in the past two decades, but much work remains yet to be done. The agenda of understanding the world's business systems, and attendant efforts at theorizing them, has a long future ahead.

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Figure 1 Dendrogram of clusters of business systems among the world's major economies

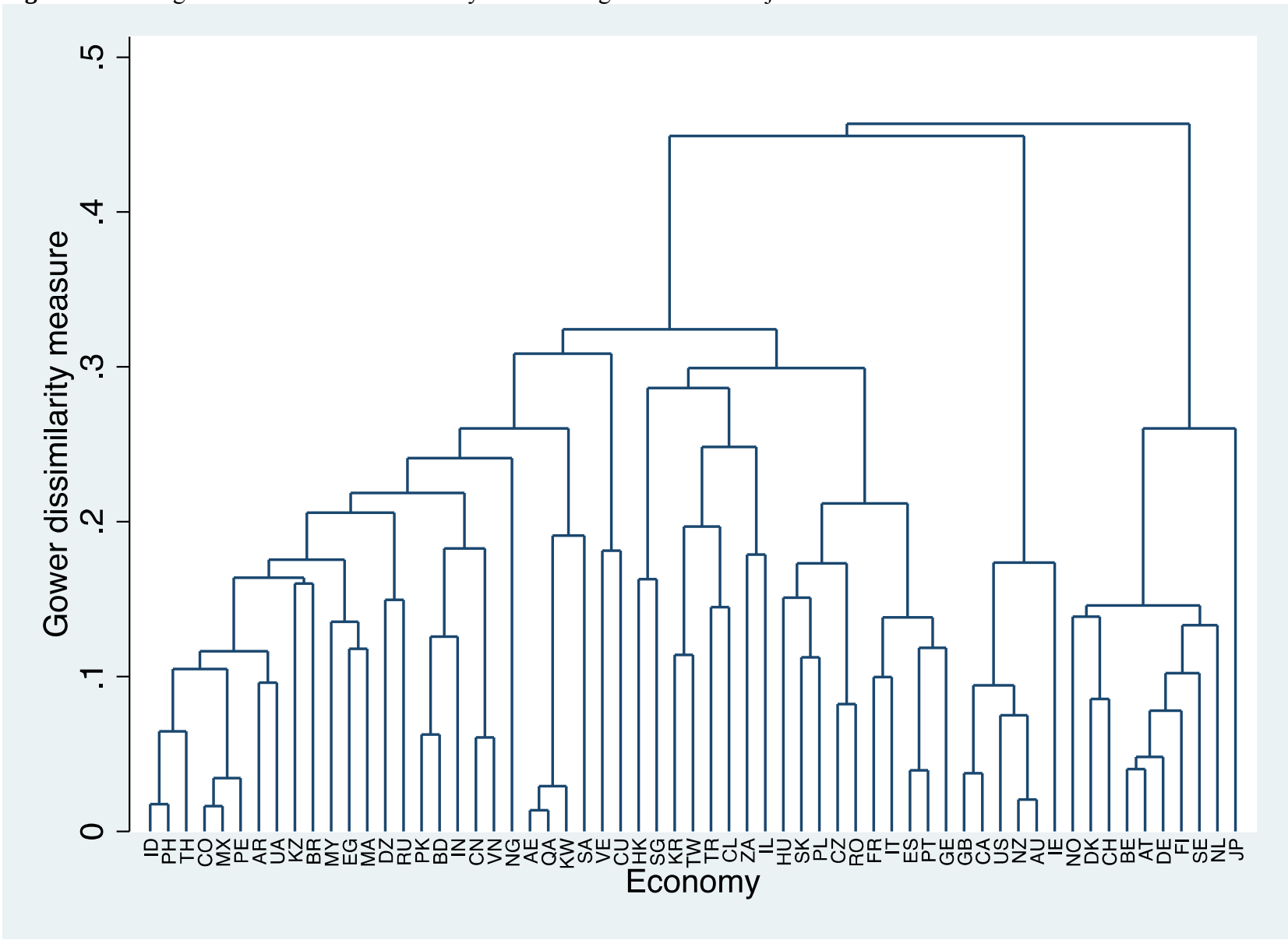


Table 1 Economies included in this study, by GDP size at purchasing power parity (PPP), 2013. Source: World Bank, 2015

Rank	Economy	PPP GDP	Rank	Economy	PPP GDP	Rank	Economy	PPP GDP
1	United States	16,768	23	Argentina	928	45	Austria	385
2	China	16,162	24	Poland	911	46	Hong Kong	382
3	India	6,776	25	Egypt	910	47	Romania	379
4	Japan	4,641	26	Pakistan	838	48	Peru	358
5	Germany	3,585	27	Netherlands	778	49	Norway	333
6	Russia	3,460	28	Malaysia	694	50	Czech Republic	303
7	Brazil	3,413	29	South Africa	663	51	Qatar	297
8	France	2,501	30	Philippines	643	52	Kuwait	287
9	UK	2,465	31	Colombia	600	53	Greece	284
10	Indonesia	2,389	32	Venezuela	553	54	Portugal	280
11	Italy	2,130	33	United Arab Emirates	551	55	Israel	264
12	Mexico	2,014	34	Algeria	522	56	Denmark	244
13	South Korea	1,664	35	Iraq*	500	57	Morocco	242
14	Saudi Arabia	1,547	36	Vietnam	475	58	Hungary	220
15	Spain	1,536	37	Belgium	466	59	Cuba	212
16	Canada	1,520	38	Bangladesh	462	60	Finland	208
17	Turkey	1,425	39	Switzerland	457	62	Ireland	199
18	Iran*	1,207	40	Sweden	433	69	New Zealand	153
19	Australia	1,007	41	Singapore	425	70	Slovakia	137
20	Nigeria	973	42	Ukraine	400			
21	Taiwan	971	43	Kazakhstan	395		Total GDP**	95,569
22	Thailand	965	44	Chile	386		World GDP	102,255

* dropped from the analysis because of lack of data
** sum of the GDP of all economies in this study, excluding Iran and Iraq

Table 2 Institutional dimensions of leading works on comparative institutional analysis (adapted from Witt and Redding, 2013)

Selec-ted	Dimension	Whitley, 1999	Hall and Soskice, 2001	Amable, 2003	Redding, 2005	Hancké et al., 2007	Morgan et al., 2010	Witt and Redding, 2013
-	Civil Society Role	-	-	-	yes	-	yes	-
yes	Education and Skills Formation	yes	yes	yes	yes	yes	yes	yes
yes	Employment Relations	yes	yes	yes	yes	yes	yes	yes
yes	Financial System	yes	yes	yes	yes	yes	yes	yes
yes	Interfirm Networks	yes	yes	-	yes	yes	yes	yes
yes	Internal Dynamics of the Firm	yes	yes	-	yes	yes	yes	yes
yes	Ownership and Corporate Governance	yes	yes	-	yes	yes	yes	yes
-	National Innovation System	-	-	-	-	-	yes	-
-	Product Markets	-	-	yes	-	-	yes	-
yes	Social Capital (Trust)	yes	-	-	yes	-	yes	yes
	Social Protection	-	-	yes	-	-	yes	-
yes	State Role	yes	-	-	yes	yes	yes	yes
-	Transnational and International Institutions	-	-	-	-	-	yes	-

Table 3 Measures and data sources

Dimension	Measure	Options for variables based on qualitative assessment	Source
Education	Literacy rates		CIA World Factbook
	Mean years of schooling		Human Development Report
	Expected years of schooling		Human Development Report
	Mean employment tenure	short, medium, long	
	Main method of skills acquisition	OJT, public vocational training, private	
Employment relations	Union type	company, party, industrial, craft	
	Union rights		ITUC
Finance	Main source of funding	banks, markets	
	IFDI stock over GDP		UNCTAD
	Main criteria for allocation of funds	state, relationships, market	
Interfirm relations	Number of M&A deals over GDP, 2011-2013		Thomson One
Internal dynamics	Internal decision-making structure	top-down, participatory	
	Extent of delegation	low, medium, high	
	Main criteria for pay raises and promotions	seniority, performance, relationships	
Ownership and governance	Main ownership of large firms	family, state, market (widely held)	
	Main controlling owner	family, state, market (widely held)	

	Investor protection		World Bank Doing Business
Social capital	Rule of law		Worldwide Governance Indicators
State	Type	developmental, predatory, regulatory, welfare	
	Decision-making	bottom-up, participatory (corporatist), top-down	
	Voice and accountability		Worldwide Governance Indicators
	Government effectiveness		Worldwide Governance Indicators
	Regulatory quality		Worldwide Governance Indicators

Note: Taiwan data missing from international statistics completed using data from Taiwan National Statistics

Table 4 Pairwise institutional distances (Gower dissimilarity matrix), higher = less similar

		DZ	AR	AU	AT	BD	BE	BR	CA	CL	CN	CO	CU	CZ	DK	EG	FI	FR	DE	GE	HK	HU	IN	ID
DZ	Algeria																							
AR	Argentina	0.18																						
AU	Australia	0.45	0.41																					
AT	Austria	0.54	0.46	0.54																				
BD	Bangladesh	0.26	0.24	0.60	0.46																			
BE	Belgium	0.56	0.43	0.52	0.04	0.48																		
BR	Brazil	0.26	0.19	0.47	0.42	0.22	0.40																	
CA	Canada	0.50	0.46	0.06	0.53	0.60	0.52	0.52																
CL	Chile	0.43	0.31	0.38	0.38	0.36	0.36	0.18	0.34															
CN	China	0.26	0.22	0.53	0.53	0.18	0.55	0.25	0.58	0.42														
CO	Colombia	0.20	0.10	0.39	0.44	0.26	0.41	0.12	0.44	0.24	0.23													
CU	Cuba	0.31	0.37	0.59	0.50	0.24	0.52	0.37	0.60	0.49	0.26	0.40												
CZ	Czech Republic	0.37	0.43	0.45	0.27	0.30	0.28	0.30	0.46	0.32	0.41	0.37	0.29											
DK	Denmark	0.58	0.45	0.46	0.13	0.60	0.13	0.46	0.41	0.38	0.66	0.43	0.59	0.39										
EG	Egypt	0.12	0.16	0.56	0.52	0.14	0.54	0.19	0.61	0.37	0.14	0.18	0.30	0.39	0.61									
FI	Finland	0.55	0.52	0.53	0.06	0.48	0.10	0.44	0.52	0.44	0.54	0.50	0.47	0.28	0.12	0.53								
FR	France	0.44	0.31	0.40	0.16	0.36	0.13	0.27	0.40	0.24	0.43	0.29	0.44	0.21	0.24	0.41	0.22							
DE	Germany	0.58	0.46	0.49	0.05	0.51	0.04	0.42	0.49	0.38	0.57	0.44	0.50	0.31	0.09	0.56	0.07	0.16						
GE	Greece	0.22	0.20	0.51	0.33	0.18	0.35	0.22	0.51	0.32	0.20	0.22	0.31	0.25	0.46	0.20	0.34	0.22	0.37					
HK	Hong Kong	0.33	0.21	0.27	0.43	0.44	0.39	0.27	0.31	0.24	0.37	0.18	0.57	0.42	0.40	0.35	0.47	0.27	0.43	0.31				
HU	Hungary	0.38	0.35	0.54	0.25	0.31	0.27	0.22	0.50	0.22	0.37	0.29	0.34	0.13	0.30	0.31	0.27	0.20	0.30	0.22	0.36			
IN	India	0.20	0.16	0.55	0.46	0.14	0.48	0.18	0.60	0.36	0.15	0.22	0.32	0.39	0.59	0.13	0.48	0.35	0.51	0.14	0.34	0.36		
ID	Indonesia	0.16	0.09	0.40	0.49	0.29	0.46	0.21	0.45	0.34	0.23	0.11	0.44	0.46	0.49	0.18	0.55	0.34	0.49	0.22	0.23	0.38	0.21	
IE	Ireland	0.50	0.46	0.16	0.44	0.51	0.41	0.47	0.17	0.38	0.53	0.39	0.51	0.31	0.42	0.57	0.45	0.30	0.39	0.42	0.40	0.44	0.55	0.45

		DZ	AR	AU	AT	BD	BE	BR	CA	CL	CN	CO	CU	CZ	DK	EG	FI	FR	DE	GE	HK	HU	IN	ID
IL	Israel	0.52	0.34	0.36	0.40	0.48	0.38	0.35	0.30	0.24	0.50	0.32	0.43	0.39	0.30	0.45	0.41	0.31	0.35	0.44	0.33	0.29	0.43	0.42
IT	Italy	0.34	0.25	0.50	0.21	0.26	0.23	0.26	0.50	0.26	0.33	0.28	0.34	0.19	0.34	0.32	0.27	0.10	0.25	0.13	0.31	0.16	0.26	0.29
JP	Japan	0.52	0.53	0.44	0.25	0.53	0.22	0.45	0.45	0.37	0.56	0.47	0.48	0.29	0.29	0.55	0.27	0.29	0.20	0.45	0.51	0.37	0.58	0.47
KZ	Kazakhstan	0.22	0.17	0.52	0.43	0.18	0.40	0.16	0.57	0.33	0.16	0.15	0.26	0.31	0.52	0.15	0.45	0.32	0.43	0.15	0.31	0.28	0.16	0.19

KR	Korea	0.36	0.33	0.38	0.43	0.36	0.41	0.26	0.34	0.20	0.38	0.25	0.40	0.31	0.37	0.34	0.45	0.28	0.38	0.32	0.32	0.26	0.40	0.26
KW	Kuwait	0.29	0.28	0.43	0.39	0.31	0.40	0.20	0.48	0.37	0.28	0.21	0.35	0.31	0.43	0.27	0.40	0.28	0.43	0.26	0.36	0.23	0.32	0.25
MY	Malaysia	0.20	0.15	0.45	0.54	0.25	0.52	0.21	0.49	0.35	0.18	0.15	0.39	0.43	0.53	0.14	0.55	0.38	0.55	0.23	0.28	0.36	0.21	0.11
MX	Mexico	0.20	0.09	0.38	0.43	0.26	0.40	0.11	0.43	0.23	0.24	0.02	0.40	0.35	0.43	0.18	0.49	0.28	0.43	0.22	0.17	0.27	0.23	0.11
MA	Morocco	0.19	0.21	0.50	0.55	0.15	0.57	0.22	0.56	0.40	0.20	0.22	0.37	0.38	0.59	0.12	0.57	0.45	0.60	0.29	0.39	0.35	0.22	0.17
NL	Netherlands	0.60	0.56	0.39	0.15	0.61	0.14	0.53	0.39	0.44	0.68	0.55	0.51	0.32	0.17	0.66	0.15	0.26	0.11	0.48	0.51	0.40	0.61	0.60
NZ	New Zealand	0.46	0.42	0.02	0.53	0.61	0.51	0.48	0.07	0.39	0.54	0.40	0.60	0.45	0.46	0.57	0.53	0.40	0.49	0.52	0.27	0.54	0.56	0.41
NG	Nigeria	0.21	0.19	0.46	0.42	0.29	0.39	0.23	0.52	0.36	0.38	0.17	0.44	0.44	0.42	0.23	0.48	0.27	0.42	0.33	0.30	0.36	0.30	0.17
NO	Norway	0.56	0.52	0.49	0.16	0.58	0.20	0.49	0.43	0.45	0.60	0.50	0.57	0.37	0.12	0.54	0.11	0.31	0.16	0.40	0.46	0.28	0.52	0.56
PK	Pakistan	0.22	0.19	0.56	0.46	0.06	0.48	0.22	0.60	0.40	0.19	0.27	0.30	0.35	0.59	0.15	0.48	0.36	0.51	0.19	0.39	0.36	0.11	0.25
PE	Peru	0.23	0.11	0.36	0.45	0.28	0.42	0.13	0.41	0.21	0.27	0.04	0.43	0.38	0.45	0.20	0.51	0.30	0.45	0.24	0.20	0.30	0.25	0.13
PH	Philippines	0.15	0.10	0.40	0.49	0.30	0.47	0.22	0.45	0.34	0.22	0.11	0.43	0.46	0.49	0.17	0.55	0.35	0.49	0.21	0.24	0.38	0.21	0.02
PL	Poland	0.25	0.22	0.39	0.45	0.32	0.44	0.27	0.44	0.38	0.33	0.21	0.47	0.43	0.45	0.26	0.47	0.36	0.45	0.30	0.31	0.39	0.29	0.21
PT	Portugal	0.24	0.21	0.39	0.45	0.32	0.45	0.27	0.44	0.39	0.32	0.21	0.47	0.44	0.46	0.26	0.48	0.36	0.46	0.30	0.30	0.40	0.29	0.20
QA	Qatar	0.24	0.21	0.39	0.46	0.31	0.45	0.27	0.45	0.40	0.32	0.20	0.48	0.45	0.46	0.25	0.48	0.37	0.47	0.30	0.30	0.41	0.28	0.19
RO	Romania	0.23	0.20	0.39	0.46	0.31	0.46	0.26	0.45	0.40	0.31	0.20	0.48	0.46	0.47	0.25	0.49	0.38	0.48	0.30	0.30	0.42	0.27	0.18
RU	Russia	0.22	0.19	0.38	0.47	0.31	0.47	0.26	0.45	0.41	0.31	0.19	0.49	0.47	0.47	0.24	0.50	0.38	0.48	0.30	0.29	0.42	0.27	0.17
SA	Saudi Arabia	0.21	0.18	0.38	0.48	0.30	0.47	0.26	0.45	0.41	0.31	0.19	0.49	0.48	0.48	0.23	0.50	0.39	0.49	0.30	0.29	0.43	0.26	0.16
SG	Singapore	0.20	0.18	0.38	0.48	0.30	0.48	0.26	0.45	0.42	0.30	0.18	0.50	0.48	0.48	0.23	0.51	0.39	0.50	0.30	0.29	0.44	0.26	0.16
SK	Slovakia	0.19	0.17	0.37	0.49	0.30	0.49	0.26	0.45	0.43	0.30	0.18	0.50	0.49	0.49	0.22	0.52	0.40	0.51	0.30	0.28	0.45	0.25	0.15
ZA	South Africa	0.18	0.16	0.37	0.49	0.29	0.49	0.26	0.45	0.43	0.30	0.17	0.51	0.50	0.50	0.22	0.52	0.41	0.51	0.30	0.28	0.46	0.25	0.14

		DZ	AR	AU	AT	BD	BE	BR	CA	CL	CN	CO	CU	CZ	DK	EG	FI	FR	DE	GE	HK	HU	IN	ID
ES	Spain	0.32	0.19	0.41	0.27	0.29	0.24	0.25	0.42	0.22	0.31	0.22	0.42	0.24	0.35	0.30	0.33	0.12	0.27	0.11	0.22	0.23	0.24	0.23
SE	Sweden	0.61	0.48	0.45	0.12	0.58	0.11	0.49	0.44	0.45	0.60	0.46	0.57	0.38	0.13	0.59	0.11	0.22	0.08	0.40	0.42	0.37	0.53	0.52
CH	Switzerland	0.64	0.51	0.43	0.16	0.61	0.15	0.48	0.38	0.34	0.63	0.50	0.60	0.41	0.09	0.62	0.15	0.27	0.12	0.47	0.37	0.30	0.61	0.55
TW	Taiwan	0.32	0.24	0.42	0.42	0.32	0.39	0.25	0.37	0.18	0.34	0.22	0.45	0.35	0.37	0.30	0.48	0.27	0.42	0.28	0.27	0.24	0.36	0.17
TH	Thailand	0.17	0.10	0.44	0.48	0.26	0.45	0.16	0.48	0.28	0.23	0.07	0.40	0.41	0.47	0.14	0.54	0.33	0.48	0.21	0.23	0.33	0.22	0.06
TR	Turkey	0.39	0.29	0.39	0.43	0.26	0.41	0.21	0.34	0.14	0.37	0.19	0.40	0.31	0.43	0.32	0.49	0.28	0.43	0.30	0.31	0.23	0.36	0.30
UA	Ukraine	0.11	0.10	0.45	0.45	0.20	0.47	0.19	0.50	0.35	0.19	0.13	0.33	0.37	0.49	0.13	0.46	0.34	0.49	0.13	0.25	0.29	0.14	0.12
AE	UAE	0.30	0.30	0.42	0.38	0.32	0.40	0.22	0.47	0.36	0.29	0.21	0.37	0.31	0.42	0.28	0.40	0.27	0.42	0.26	0.35	0.24	0.33	0.27
GB	UK	0.47	0.43	0.08	0.51	0.57	0.49	0.49	0.04	0.31	0.55	0.41	0.61	0.43	0.44	0.58	0.56	0.37	0.51	0.48	0.28	0.47	0.57	0.42
US	United States	0.47	0.43	0.07	0.58	0.62	0.56	0.45	0.12	0.37	0.55	0.41	0.62	0.49	0.52	0.59	0.59	0.44	0.53	0.53	0.31	0.57	0.53	0.42

VE	Venezuela	0.22	0.23	0.53	0.44	0.25	0.46	0.25	0.59	0.43	0.28	0.31	0.18	0.32	0.53	0.21	0.46	0.39	0.49	0.29	0.43	0.28	0.24	0.30
VN	Vietnam	0.26	0.18	0.48	0.53	0.23	0.50	0.26	0.54	0.42	0.06	0.24	0.31	0.45	0.62	0.19	0.54	0.38	0.53	0.21	0.32	0.42	0.15	0.19

		IE	IL	IT	JP	KZ	KR	KW	MY	MX	MA	NL	NZ	NG	NO	PK	PE	PH	PL	PT	QA	RO	RU	SA
IL	Israel	0.36																						
IT	Italy	0.40	0.39																					
JP	Japan	0.30	0.48	0.33																				
KZ	Kazakhstan	0.48	0.41	0.27	0.50																			
KR	Korea	0.33	0.32	0.30	0.28	0.33																		
KW	Kuwait	0.39	0.36	0.27	0.46	0.29	0.35																	
MY	Malaysia	0.44	0.38	0.35	0.48	0.18	0.25	0.24																
MX	Mexico	0.39	0.31	0.27	0.46	0.16	0.26	0.20	0.16															
MA	Morocco	0.51	0.48	0.35	0.53	0.26	0.34	0.21	0.13	0.22														
NL	Netherlands	0.30	0.46	0.36	0.17	0.54	0.44	0.54	0.64	0.53	0.70													
NZ	New Zealand	0.15	0.36	0.50	0.44	0.53	0.39	0.44	0.45	0.39	0.51	0.39												
NG	Nigeria	0.51	0.40	0.31	0.49	0.28	0.33	0.22	0.27	0.17	0.24	0.52	0.47											
NO	Norway	0.44	0.37	0.36	0.36	0.50	0.44	0.45	0.55	0.50	0.62	0.20	0.48	0.53										
PK	Pakistan	0.56	0.53	0.26	0.58	0.19	0.41	0.31	0.26	0.27	0.15	0.62	0.56	0.25	0.57									
PE	Peru	0.36	0.34	0.29	0.43	0.17	0.28	0.22	0.18	0.03	0.24	0.51	0.37	0.20	0.52	0.29								
PH	Philippines	0.45	0.42	0.29	0.48	0.19	0.25	0.26	0.11	0.12	0.18	0.60	0.41	0.17	0.56	0.26	0.14							
PL	Poland	0.37	0.30	0.14	0.26	0.25	0.22	0.30	0.33	0.25	0.37	0.33	0.51	0.29	0.38	0.38	0.27	0.32						
PT	Portugal	0.30	0.38	0.12	0.38	0.23	0.29	0.36	0.29	0.22	0.34	0.41	0.40	0.35	0.41	0.26	0.24	0.24	0.18					
QA	Qatar	0.38	0.35	0.28	0.45	0.30	0.33	0.03	0.24	0.22	0.23	0.53	0.43	0.23	0.45	0.33	0.24	0.26	0.30	0.35				
RO	Romania	0.30	0.45	0.24	0.32	0.32	0.37	0.33	0.46	0.37	0.39	0.31	0.44	0.45	0.41	0.35	0.34	0.48	0.20	0.28	0.34			
RU	Russia	0.45	0.49	0.35	0.53	0.26	0.39	0.30	0.20	0.26	0.22	0.60	0.41	0.35	0.56	0.25	0.27	0.21	0.48	0.36	0.31	0.42		
SA	Saudi Arabia	0.43	0.31	0.36	0.54	0.25	0.28	0.19	0.17	0.20	0.21	0.67	0.48	0.34	0.49	0.29	0.22	0.23	0.38	0.35	0.19	0.41	0.23	
SG	Singapore	0.35	0.31	0.39	0.50	0.31	0.32	0.31	0.22	0.21	0.29	0.55	0.30	0.30	0.45	0.38	0.24	0.28	0.31	0.28	0.30	0.41	0.39	0.35

		IE	IL	IT	JP	KZ	KR	KW	MY	MX	MA	NL	NZ	NG	NO	PK	PE	PH	PL	PT	QA	RO	RU	SA
SK	Slovakia	0.28	0.27	0.18	0.35	0.26	0.33	0.31	0.39	0.26	0.42	0.32	0.42	0.34	0.34	0.39	0.28	0.37	0.11	0.15	0.31	0.21	0.47	0.39
ZA	South Africa	0.29	0.18	0.28	0.45	0.30	0.25	0.26	0.29	0.16	0.37	0.47	0.34	0.29	0.38	0.42	0.18	0.27	0.27	0.25	0.27	0.40	0.38	0.20
ES	Spain	0.31	0.35	0.09	0.34	0.21	0.26	0.35	0.28	0.21	0.38	0.37	0.41	0.34	0.38	0.29	0.23	0.23	0.16	0.04	0.34	0.31	0.33	0.34

SE	Sweden	0.36	0.37	0.32	0.27	0.45	0.45	0.50	0.56	0.45	0.67	0.11	0.45	0.49	0.11	0.58	0.48	0.52	0.30	0.33	0.50	0.41	0.61	0.59
CH	Switzerland	0.48	0.31	0.37	0.30	0.53	0.39	0.49	0.59	0.48	0.65	0.20	0.44	0.47	0.16	0.61	0.51	0.55	0.33	0.40	0.48	0.49	0.64	0.57
TW	Taiwan	0.37	0.30	0.24	0.35	0.29	0.11	0.30	0.18	0.21	0.24	0.52	0.42	0.29	0.48	0.37	0.23	0.17	0.20	0.22	0.29	0.40	0.34	0.24
TH	Thailand	0.44	0.36	0.28	0.46	0.15	0.25	0.25	0.10	0.07	0.17	0.59	0.44	0.18	0.55	0.26	0.09	0.07	0.26	0.23	0.27	0.42	0.25	0.23
TR	Turkey	0.34	0.31	0.27	0.41	0.29	0.20	0.29	0.32	0.20	0.32	0.49	0.39	0.31	0.49	0.32	0.18	0.30	0.25	0.22	0.30	0.28	0.45	0.23
UA	Ukraine	0.50	0.43	0.25	0.57	0.13	0.35	0.22	0.16	0.13	0.19	0.60	0.46	0.22	0.47	0.17	0.15	0.12	0.36	0.25	0.23	0.39	0.15	0.20
AE	UAE	0.38	0.35	0.28	0.45	0.30	0.33	0.03	0.23	0.22	0.23	0.53	0.43	0.23	0.45	0.33	0.24	0.27	0.30	0.35	0.01	0.34	0.32	0.19
GB	UK	0.18	0.33	0.47	0.46	0.54	0.35	0.45	0.46	0.40	0.52	0.42	0.09	0.48	0.47	0.57	0.38	0.42	0.47	0.37	0.44	0.40	0.44	0.40
US	United States	0.21	0.34	0.53	0.48	0.54	0.40	0.45	0.47	0.40	0.53	0.45	0.08	0.49	0.55	0.57	0.38	0.43	0.53	0.43	0.45	0.46	0.45	0.49
VE	Venezuela	0.58	0.42	0.29	0.56	0.24	0.42	0.25	0.32	0.30	0.27	0.55	0.54	0.29	0.51	0.20	0.33	0.31	0.36	0.37	0.27	0.33	0.23	0.29
VN	Vietnam	0.53	0.51	0.33	0.56	0.16	0.38	0.34	0.18	0.25	0.25	0.63	0.49	0.32	0.60	0.19	0.27	0.18	0.40	0.28	0.34	0.47	0.18	0.26

		SG	SK	ZA	ES	SE	CH	TW	TH	TR	UA	AE	GB	US	VE
SK	Slovakia	0.28													
ZA	South Africa	0.25	0.21												
ES	Spain	0.30	0.16	0.23											
SE	Sweden	0.45	0.25	0.39	0.29										
CH	Switzerland	0.44	0.33	0.39	0.37	0.16									
TW	Taiwan	0.26	0.31	0.19	0.20	0.49	0.43								
TH	Thailand	0.22	0.31	0.21	0.22	0.51	0.54	0.16							
TR	Turkey	0.30	0.26	0.16	0.26	0.50	0.44	0.21	0.25						
UA	Ukraine	0.28	0.37	0.28	0.23	0.52	0.55	0.27	0.13	0.31					
AE	UAE	0.30	0.31	0.27	0.34	0.50	0.48	0.30	0.27	0.30	0.24				
GB	UK	0.31	0.40	0.27	0.39	0.47	0.41	0.34	0.45	0.31	0.47	0.44			
US	United States	0.36	0.46	0.37	0.45	0.51	0.50	0.45	0.46	0.41	0.47	0.45	0.14		
VE	Venezuela	0.46	0.40	0.40	0.36	0.56	0.54	0.40	0.31	0.36	0.21	0.28	0.55	0.57	
VN	Vietnam	0.41	0.41	0.40	0.27	0.56	0.58	0.35	0.24	0.38	0.18	0.34	0.50	0.51	0.28

Table 5 Clusters of business systems among the world's major economies

Socialist Economies	Emerging Economies	Arab Oil-Based Economies	Advanced City Economies	Advanced Emerging Economies	European Peripheral Economies	Liberal Market Economies	Coordinated Market Economies	Highly Coordinated Economies
Cuba	Algeria	Kuwait	Hong Kong	Chile	Czech Rep.	Australia	Austria	Japan
Venezuela	Argentina	Qatar	Singapore	Israel	France	Canada	Belgium	
	Bangladesh	S. Arabia		Korea	Greece	Ireland	Denmark	
	Brazil	UAE		S. Africa	Hungary	N. Zealand	Finland	
	China			Taiwan	Italy	UK	Germany	
	Colombia			Turkey	Poland	US	Netherlands	
	Egypt				Portugal		Norway	
	India				Romania		Sweden	
	Indonesia				Slovakia		Switzerland	
	Kazakhstan				Spain			
	Malaysia							
	Mexico							
	Morocco							
	Nigeria							
	Pakistan							
	Peru							
	Philippines							
	Russia							
	Thailand							
	Ukraine							
	Vietnam							