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# **A Network-Based Taxonomy of the World's Legal Systems**

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## **Abstract:**

Legal scholars, economists and other social scientist often refer to the idea that countries can be classified into a number of “legal families” or “legal origins”. Yet, this research is unsatisfactory as regards the actual classifications of the legal systems of the world. Legal scholars often do not attempt to classify all countries: rather, in comparative law textbooks, the legal family taxonomy merely serves as a didactic device to outline some similarities and differences between selected countries. This paper also suggests that the legal origins taxonomy, popular with financial economists, is problematic, since, if one traces the source of this taxonomy, there are no substantive explanations why a particular country is considered as belonging to one of these categories.

Thus, it is the aim of this paper to fill this gap and to develop a more robust taxonomy of legal systems. This taxonomy is based on a new dataset of 157 countries that is subsequently analysed with tools of network analysis. Applying tools of cluster optimisation, this paper finds that the world’s legal systems can be divided into the four clusters of the “Global Anglosphere”, the “Modern European Legal Culture”, the “Rule by Law or Religion”, and the “Weak Law in Transition”. It displays those clusters in a map, akin to the Inglehart-Welzel cultural map. Finally, it is suggested that identifying such clusters has important implications, not only for our understanding of the legal world, but also for the feasibility of legal transplants and harmonisation. Future research may also examine how these legal networks and clusters are related to economic and other data.

## **Keywords:**

network analysis, legal origins, law and finance, legal families, comparative law, legal transplants

## **JEL Codes:**

B52, D85, K00, K40, N20, O57, P37

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# A Network-Based Taxonomy of the World's Legal Systems

Mathias M. Siems\*

## 1. Introduction

Many academic disciplines have developed tools to classify countries, for example, identifying language families, cultural groups or economically similar countries.<sup>1</sup> Law is no exception: legal scholars call those “legal families”, for instance, distinguishing between common and civil law countries. Financial economists have used somehow related categories, for example, examining differences between English and French “legal origins”. However, these previous taxonomies are unsatisfactory as regards the actual classification of the legal systems of the world.

Legal scholars often do not attempt to classify all countries: rather, in the main comparative law textbooks, the legal family taxonomy merely serves as a didactic device to outline some similarities and differences between selected countries.<sup>2</sup> A notable exception is the Website “JuriGlobe” of a research group at the University of Ottawa: this site divides the world into the categories “civil law”, “common law”, “Muslim law”, “customary law” and mixtures of those.<sup>3</sup> Yet, the problem is that these classifications are not based on precise objective criteria, but the subjective views of the researchers which are not explained in detail. For example, the statement that Saudi Arabia is “Muslim law”, Iran a mixture of “Muslim law” and “civil law”, the UAE a mixture of “Muslim law” and “customary law”, and Kuwait a mixture of “Muslim law”, “civil law” and “custom-

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<sup>1</sup> See, e.g., Lewis et al. 2013; Inglehart and Welzel 2010; Nielsen 2011.

<sup>2</sup> See, e.g., David 1985: 21 (“is no more than a didactic device”); Zweigert and Kötz 1998: 72 (“a rough and ready device”); Husa 2011: 116 (a “first roughly sketched map”). For overviews of legal family classification see, e.g., Siems 2014: 74-80; Pargendler 2012; Husa 2012: 493-8.

<sup>3</sup> <http://www.juriglobe.ca/eng/>.

ary law”,<sup>4</sup> invites the criticism that they would need to have explained precisely what justifies these classifications.

The “legal origins” taxonomy, popular with financial economists,<sup>5</sup> is equally problematic. Most contemporary research in business and economics accepts without much criticism how previous studies have divided the world into the countries of English, French, German, Nordic and Socialist legal origins. But if one traces the source of this taxonomy, there are no substantive explanations why a particular country is considered as belonging to one of these categories – in particular no careful historical analysis, as the “origin” terminology may appear to indicate.<sup>6</sup> Rather, classifying legal systems is simply based on whether, according to a book on foreign law,<sup>7</sup> the main codes of these legal systems follow a particular model – and, if there are no such codes, the country is seen as part of the English legal origin (with the exception of the Nordic countries). This leads to surprising results, for example, that Saudi Arabia is seen as part of the English legal origin. Thus, it has been shown elsewhere that about 80% of these classifications into legal origins are not self-evident<sup>8</sup> – while the authors of the “legal origin” studies provide no evidence for the classification of particular countries (and why there are only these five legal origins in the first place).

It is the aim of this paper to fill this gap, namely, to develop an evidence-based quantitative classification of the legal systems of the world. To set the scene, Section 2 outlines the main reasons to develop taxonomies of legal systems. Section 3 discusses the variables of this paper and presents descriptive statistics. Section 4 shows how tools of network analysis<sup>9</sup> can be used to classify countries, and applies this idea to a new dataset of 157 countries. With these network data, Section 5 examines the relevance of the “legal origins” classifications and Section 6 calculates factions and clusters of legal systems. Section 7 concludes.

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<sup>4</sup> <http://www.juriglobe.ca/eng/sys-juri/class-poli/droit-musulman.php>.

<sup>5</sup> Summarised in La Porta et al. 2008. See also 2. below.

<sup>6</sup> By contrast to the books by legal scholars on “legal traditions”, e.g., Glenn 2010; Derrett 1968.

<sup>7</sup> Reynolds and Flores 1989. See also [www.foreignlawguide.com](http://www.foreignlawguide.com).

<sup>8</sup> Siems 2007: 62-70. See also Garoupa and Pargendler 2014.

<sup>9</sup> Thus, in this paper, network analysis is seen as a method, not a particular theoretical idea. For the discussion in sociology see Mische 2011.

## 2. Reasons to develop taxonomies of legal systems

Taxonomies of countries simplify reality, but there are good reasons why such simplification can be a useful endeavour. From a general methodological perspective they can be related to Karl Popper's view that scientific knowledge grows by way of "conjectures and refutations".<sup>10</sup> Since taxonomies can never be a perfect representation of the complexities of the real world, they can be seen as, more or less refined, conjectures – and it is then also the task of subsequent researchers to critically scrutinise these conjectures and try to develop better ones.

More specifically, the taxonomies of legal systems have a descriptive, analytical and normative dimension. Legal scholars tend to highlight the descriptive value as legal classifications can facilitate the description and understanding of foreign laws: for example, a researcher who analyses legal systems that belong to the same legal family can focus on the remaining differences,<sup>11</sup> and an aspiring comparatist who tries to understand the law of a particular foreign country can, given its similarities to his or her own country, concentrate on the remaining differences.<sup>12</sup>

Researchers may also analyse how such legal classifications are related to non-legal ones. For example, in economic geography, a distinction is made between spatial, institutional, cultural, organisational and relational proximity.<sup>13</sup> Geographers are primarily interested in the spatial aspect and lawyers in the institutional one. But if one combines those taxonomies, it may be possible to say whether legal traditions are conditioned by spatial or other non-legal circumstances.

Financial economists have been particularly interested in the relationship between the way differences in legal rules may account for differences in financial development. For example, a number of influential studies by Djankov / La Porta et al. scrutinised the effect of country differences as related to investor protection. Most of these studies found that legal rules have indeed a quantifiable effect on financial development. Moreover, the quality of legal rules is said to vary systematically between "legal origins": in

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<sup>10</sup> Popper 1963. See also Glenn 2010: 1-3 (referring to Popper's "rational theory of tradition").

<sup>11</sup> Hertel 2009: 128. Similar Twining 2000: 152, 178.

<sup>12</sup> Bogdan 1994: 38.

<sup>13</sup> Cf. Coe et al. 2010: 147-8 (for distinctions in economic geography).

particular, it was found that the legal model of “English legal origin” (i.e., common law) countries is more conducive to financial development than that of other legal origins.<sup>14</sup>

These findings may also have a normative dimension. Given the alleged advantages of the English legal origin, it could be advisable for other countries to shift closer to the common law.<sup>15</sup> Yet, a study by Berkowitz et al. has challenged this view: it distinguishes between origin and transplant countries,<sup>16</sup> and identifies whether transplant countries transplanted laws from either their original or one of the other origin countries. It could then be shown that what matters to economic development is whether countries transplant laws from countries of the same legal origin.<sup>17</sup> Thus, overall, Berkowitz et al. also suggest that legal taxonomies can provide useful normative lessons.

### **3. Variables and descriptive statistics**

Classifying legal systems is not an easy endeavour. There is a degree of subjectivity since, to classify countries, means making a decision about some common aspects that matter, while disregarding others.<sup>18</sup> A further complication may be that most countries can be called “vertically divided legal systems” since different areas of law may have been influenced by different foreign legal models.<sup>19</sup> Thus, this factor can also lead to various classifications, depending on the area of law that is the focus of the researcher in question.

Yet, there is also some consensus in the literature on the criteria that form the bases of classifications of legal systems. The main idea is to use criteria that are good indicators for the entire legal system (as opposed to possible idiosyncrasies of a particular area of law) and that are relatively “permanent” and “determinant” (not merely “incidental” or “fungible”).<sup>20</sup> Common features of the legal family taxonomies are therefore the level

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<sup>14</sup> E.g., La Porta et al. 1998; Djankov et al. 2008. See also Armour et al. 2009; Siems and Deakin 2010 and 5., below.

<sup>15</sup> See, e.g., Siems 2014: 209 (for Rwanda’s shift from civil to common law).

<sup>16</sup> As “origin countries” they considered England, France, Germany, the four Scandinavian countries, as well as the US, Austria and Switzerland (given that “the development of their formal legal order was highly idiosyncratic”).

<sup>17</sup> Berkowitz et al. 2003a; Berkowitz et al. 2003b. Similar Lalenis et al. 2002 (for policy transfers).

<sup>18</sup> Peters and Schwenke 2000: 826.

<sup>19</sup> See Siems 2014: 89-92.

<sup>20</sup> Luts 2011: 41; Constantinesco 1983: 241.

of codification, differences in legal style and mentality, the effectiveness of the law and the law's underlying rationales.<sup>21</sup>

The variables of this paper aim to capture such common features. Since these features relate to the law in the books as well as the law in practice, the variables consider both of these elements. It may also be possible to choose non-legal variables, such as colonial origins<sup>22</sup> or geography, as far as they are regarded as good proxies for legal differences. Yet, the aim is here not simply to assume that such non-legal factors matter, but to construct a dataset that enables researchers to examine whether this is really the case. Thus, the following prefers variables that have at least some legal dimension.

On a practical level, the aim was to classify most countries of the world in order to provide future researchers with categories that can be used instead of the legal origin classifications. However, it was not possible to include all countries of the world. Due to lack of data availability, some smaller jurisdictions in Oceania and the Caribbean had to be excluded, as well as countries which do not take part in international surveys (e.g., North Korea). In total, therefore, the dataset covers 157 countries.

*Table 1: List of variables and descriptive statistics*

<i>Variables</i> <sup>23</sup>	<i>Sources</i> <sup>24</sup>	<i>Mean</i>	<i>Median</i>	<i>Std. deviation</i>
(1) English official language, or equivalent	CIA World Factbook (and other sources)	0.24	0	0.43
(2) Countries of Latin Notariat	International Union of Notaries	0.47	0	0.50
(3) Islam state religion	CIA World Factbook (and other sources)	0.11	0	0.32
(4) EU / EEA countries	European Union	0.19	0	0.39

<sup>21</sup> See, e.g., Husa 2012: 492-3; Vanderlinden 1995: 328 (identifying 14 criteria used in the comparative literature).

<sup>22</sup> Illustrated in Siems 2007: 76.

<sup>23</sup> If necessary, variables were scaled from 0 to 1.

<sup>24</sup> Internet references (data for 2013 unless indicated otherwise) – for (1) [www.eiu.com](http://www.eiu.com) (data for 2012); for (2), (3) and (5) [www.cia.gov/library/publications/the-world-factbook/](http://www.cia.gov/library/publications/the-world-factbook/) (and for the few gaps [www.wikipedia.org](http://www.wikipedia.org)); for (6) [www.concourts.net](http://www.concourts.net) (and own research for few gaps); for (7) and (8) [www.doingbusiness.org](http://www.doingbusiness.org) (enforcing contracts and employing workers); for (8) [www.govindicators.org](http://www.govindicators.org); for (9) [www.freedomhouse.org](http://www.freedomhouse.org); for (10) [www.amnesty.org](http://www.amnesty.org); for (11) [www.uinl.org](http://www.uinl.org).

(5) Literacy rate	CIA World Factbook (and other sources)	0.84	0.92	0.19
(6) Democracy index	Economist Intelligence Unit	0.50	0.53	0.25
(7) Rule of law	World Bank Governance Indicators	0.45	0.38	0.27
(8) Constitutional court	Concourts.net	0.37	0	0.48
(9) Civil liberties infringed	Freedom House	0.40	0.33	0.30
(10) Procedures of civil courts (in steps)	Doing Business Report	0.48	0.5	0.19
(11) Death penalty not abolished	Amnesty International	0.27	0	0.44
(12) Paid annual leave	Doing Business Report	0.65	0.67	0.18

The twelve variables (see Table 1) are based on the following rationales. The first four are dummy variables that aim to capture *legal mentalities and sources of law shared by a group of countries*. Variable (1) considers that in countries influenced by English law (i.e., typically, common law countries) courts and judges are said to be more important than in other parts of the world.<sup>25</sup> The main proxy used is whether English is the official language of a country since in these instances it is then also the language of the countries' highest courts.<sup>26</sup> Variable (2) refers to a typically civilian feature, namely, whether countries consider themselves as belonging to the Latin Notariat of Roman-law origins. Variable (3) on "Islam as state religion" indicates whether Sharia law is likely to play at least some role in those countries. Finally, in this section, variable (4) considers that the legal systems of the countries of the European Union (and of Iceland, Liechtenstein and Norway, as they belong to the European Economic Area) are based to a large extent on EU law. As this goes beyond the rules of other international and regional organisations, it was seen as appropriate to include a dummy variable for EU / EEA membership.

The next four variables code attributes related to the *general legal infrastructure* of countries. The first two consider that there are not only legal systems with "professional law" but also those with "traditional" and "political law".<sup>27</sup> Thus, variable (5) aims to capture countries where non-written laws are likely to play a significant role, and variable (6) identifies the extent to which in non-democratic countries law is mainly a political tool. Another question is whether countries adhere to the rule of law, as addressed

<sup>25</sup> See discussion in Siems 2014: 44-7.

<sup>26</sup> In addition, it includes Australia, the UK and the US which do not have an official language but where English is the primary de facto language.

<sup>27</sup> See the taxonomy by Mattei 1997.

in variable (7). It was also contemplated to include data on corruption; yet, the corresponding index by Transparency International is highly correlated with the rule of law index (0.95): thus, there is no need to include both variables. Finally, in this section, variable (8) codes whether countries have a separate constitutional court as this shapes the general structure of highest courts in a country.

The final four variables address *specific areas of law* – while, here too, the aim was to choose variables that indicate general themes. The extent of civil liberties violations, considered in variable (9), reflects the general relationship between the state and its citizens. Variable (10) on the number of procedures in a normal trial of a civil court aims to capture a general tendency of the law towards less or more procedural formalities. The abolishment of the death penalty (de iure or de facto) of variable (11) intends to identify the “harshness” of a country’s criminal law. Finally, to consider the social orientation of the law, possible proxies may have been data on tax revenue, size of the government, left/right orientation or the Gini coefficient.<sup>28</sup> Yet, preference was given to the more “legal” indicator about paid annual leave coded in variable (12).

Table 2: Correlations between the variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	1.00	-0.43	-0.15	-0.16	-0.08	0.10	0.05	-0.33	-0.03	-0.11	0.14	-0.27
(2)	-0.43	1.00	-0.18	0.26	0.05	0.22	0.07	0.31	-0.31	-0.10	-0.40	0.18
(3)	-0.15	-0.18	1.00	-0.18	-0.14	-0.30	-0.06	-0.15	0.36	0.32	0.42	0.10
(4)	-0.16	0.26	-0.18	1.00	0.40	0.55	0.62	0.20	-0.59	-0.39	-0.29	0.30
(5)	-0.08	0.05	-0.14	0.40	1.00	0.49	0.52	0.28	-0.45	-0.33	-0.12	-0.14
(6)	0.10	0.22	-0.30	0.55	0.49	1.00	0.77	0.01	-0.93	-0.51	-0.33	-0.10
(7)	0.05	0.07	-0.06	0.62	0.52	0.77	1.00	0.00	-0.74	-0.48	-0.16	0.05
(8)	-0.33	0.31	-0.15	0.20	0.28	0.01	0.00	1.00	-0.07	-0.10	-0.22	0.09
(9)	-0.03	-0.31	0.36	-0.59	-0.45	-0.93	-0.74	-0.07	1.00	0.48	0.43	0.02
(10)	-0.11	-0.10	0.32	-0.39	-0.33	-0.51	-0.48	-0.10	0.48	1.00	0.23	0.06
(11)	0.14	-0.40	0.42	-0.29	-0.12	-0.33	-0.16	-0.22	0.43	0.23	1.00	-0.20
(12)	-0.27	0.18	0.10	0.30	-0.14	-0.10	0.05	0.09	0.02	0.06	-0.20	1.00
Av.	0.17	0.23	0.21	0.36	0.27	0.39	0.32	0.16	0.40	0.28	0.27	0.14

Table 2 highlights the variables that have the highest correlation coefficients (|0.50| or higher). It can be seen that the relationships between democracy, EU/EEA membership, rule of law and civil liberties tend to be among those correlations. It is also interesting to

<sup>28</sup> Such indicators are produced, inter alia, by the World Bank (World Development Indicators, including data on tax revenue) and the Fraser Institute (Economic Freedom of the World, including data on size of the government).

consider some of the other correlations: for example, countries with English as the official language do not tend to have a constitutional court (-0.33) and do not tend to be part of the Latin Notariat (-0.43); those where Islam is the state religion tend to have retained the death penalty (0.42); EU countries tend to score high for paid annual leave (0.30); and countries with the death penalty also tend to infringe other civil liberties (0.43).

The final line of Table 2 indicates the average correlation of each of the twelve variables with the other eleven. The variables with the highest average correlations are the ones on democracy and civil liberties, and the ones with the lowest ones are on paid annual leave, English language, and constitutional courts. It can therefore be expected that the higher correlated variables are more strongly reflected in the networks, discussed in the subsequent sections.

#### **4. Network analysis: general presentation and analysis**

Network analysis requires relational data. For example, the research on “world systems” uses data such as trade flows in order to establish the power relationship between rich and poor countries.<sup>29</sup> By contrast, the data of Table 2 describe attributes of countries. However, these data can also be presented as relational ones. For example, the variable about EU/EEA membership is akin to a variable about membership in the same inter-governmental organisation used in the world systems literature.<sup>30</sup> More generally, the following paragraph will explain that it is possible to turn attributes into relations that show the difference between each pair of countries.<sup>31</sup> This is the type of information of interest for this paper: the world systems literature is mainly interested in power relations between countries, whereas the present paper aims to develop a difference-based taxonomy in accordance with the idea of legal families.

To elaborate, based on the variables of Table 2, it was calculated how different each variable in the law of any of the countries is to the same variable in the law of the other 156 countries. Subsequently, the absolute values of these differences were added to-

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<sup>29</sup> For a recent overview see Lloyd et al. 2009.

<sup>30</sup> E.g., Snyder and Kick 1979; Kick et al. 2011.

<sup>31</sup> Such an approach is also used in political science and international relations: e.g., Sommerer et al. 2008. For its application to law see already Siems 2010. For the idea to turn attributes into relations see also Hanneman and Riddle 2005: ch. 6; Knoke and Yang 2008: 7.

gether and divided by twelve.<sup>32</sup> The resulting adjacency matrix shows the average difference between each country pair: for example, in Table 3, below, it can be seen that Albania is closer to Armenia (average difference of 0.06) than to Algeria, Angola, Argentina and Australia (average differences of 0.26, 0.20, 0.12, 0.40).

*Table 3: Matrix of differences (extract)*

	<i>Albania</i>	<i>Algeria</i>	<i>Angola</i>	<i>Argentina</i>	<i>Armenia</i>	<i>..</i>
<i>Albania</i>						...
<i>Algeria</i>	0.26					...
<i>Angola</i>	0.20	0.27				...
<i>Argentina</i>	0.12	0.21	0.32			...
<i>Armenia</i>	0.06	0.23	0.16	0.18		...
<i>Australia</i>	0.40	0.49	0.42	0.30	0.46	...
<i>...</i>	...	...	...	...	...	...

The full matrix has information on  $(156*157)/2^{33} = 12,246$  country pairs. Figure 1, below, shows their distribution, and Table 4, below, lists the ten most similar and most different country pairs. It is suggested that these country pairs show the plausibility of the choice of variables as the most similar pairs are geographically close countries with a similar social and political structure (e.g., Sweden and Denmark), and, the most different pairs are countries that, intuitively, have very little in common (e.g., Pakistan and Luxembourg).

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<sup>32</sup> It is common in network analysis to create a single index from multiple relations. See generally Han-  
neman and Riddle 2005: ch. 16. For examples from the world systems research see, e.g., Kick et al. 2011;  
Lloyd et al. 2009.

<sup>33</sup> This is the result of the arithmetic sequence 1+2+3 ... 156.

Figure 1: Distribution of differences

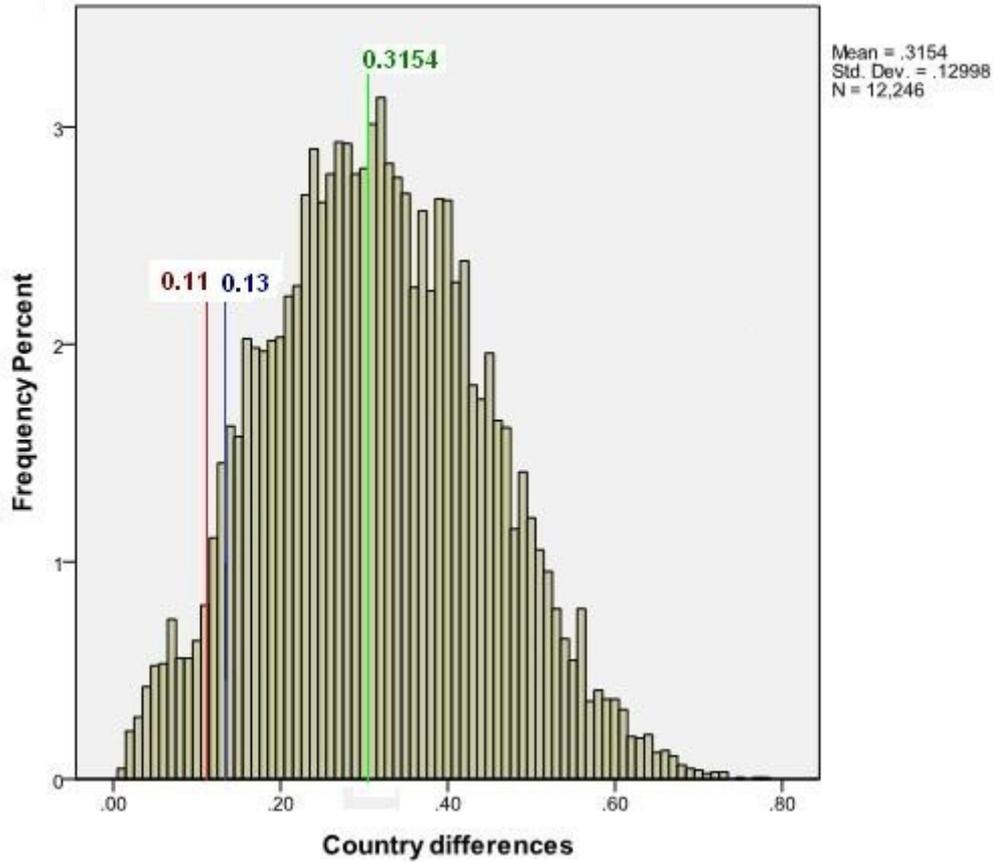


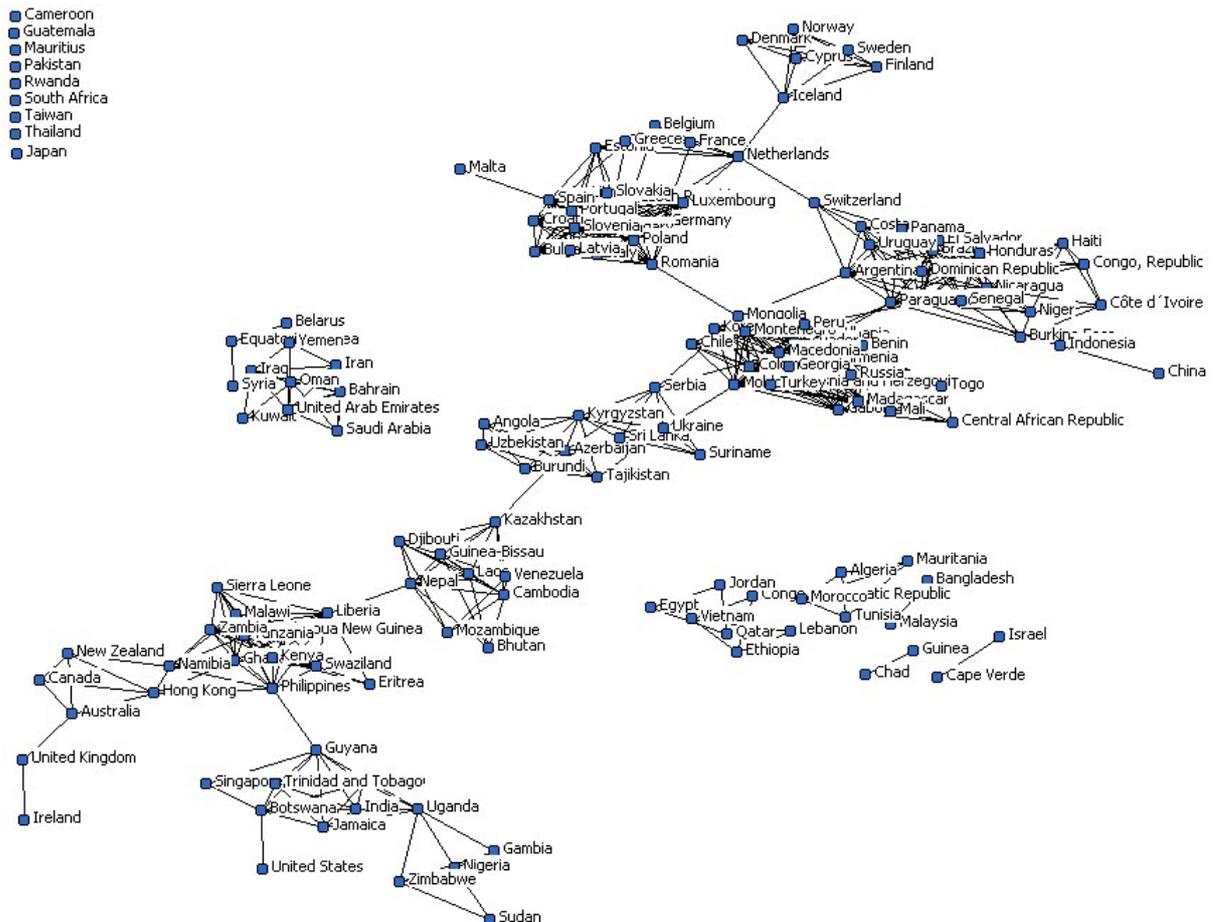
Table 4: Most similar and most different country pairs (with average difference)

<i>Most similar pairs</i>	<i>Most different pairs</i>
(1) Luxemburg – Austria (0.0067)	(1) Pakistan – Luxembourg (0.7758)
(2) Portugal – Slovenia (0.0082)	(2) Pakistan – Austria (0.7740)
(3) Croatia – Bulgaria (0.0112)	(3) Pakistan – Germany (0.7528)
(4) Poland – Lithuania (0.0131)	(4) Pakistan – Czech Republic (0.7340)
(5) Burundi – Angola (0.0143)	(4) Yemen – Malta (0.7290)
(6) Sweden – Denmark (0.0150)	(6) Sudan – Luxembourg (0.7276)
(7) Poland – Slovakia (0.0151)	(7) Sudan – Austria (0.7259)
(8) Macedonia – Albania (0.0165)	(8) Pakistan – Slovenia (0.7233)
(9) Sweden – Iceland (0.0168)	(9) Pakistan – Portugal (0.7215)
(10) Belgium – Netherlands (0.0176)	(10) Pakistan – Slovakia (0.7196)

The next step is to present the difference matrix graphically. For this purpose, the information about each of the pairs was entered into a network analysis program (UCINET) enabling us to represent only those “ties” (i.e., relationships between countries) that are below a particular threshold, i.e. to dichotomise the network data. In the present paper it was decided to use the average differences of 0.11, 0.13 and 0.3154 as cut-off points (see also Figure 1, above). The 0.11 graph (see Figure 2, below) is the clearest one as it only shows the closest ties. However, it is also interesting to include a few

more ties (0.13) or even half of them (0.3154) in order to get a fuller picture of the legal systems of the world. In addition, beyond the visual presentations of the network, most of the subsequent calculations (Tables 5 to 9, below) are not based on the somehow subjective choice of one or the other cut-off point.

Figure 2: Network of world's legal systems (0.11 cut-off point)



In Figure 2, as well as in the subsequent graphs, the network analysis program has shifted the position of nodes according to the strength of their relationships, i.e., countries whose laws are relatively similar are moved closer together.<sup>34</sup> Starting at the top of the main component, there is a group of some of the Nordic countries (plus Cyprus) which is then also connected to a group of continental European countries. Next to it, on the right hand side, are two dense groups of predominately Latin American and African countries. Going further down the network, there are two groups of, mainly, transition

<sup>34</sup> In this paper, this is based on the technique of “spring embedding”. See Hanneman and Riddle 2005: ch. 4. But see also Figure 6 in the Appendix, below.

economies, and then groups of common law countries. Finally, there are two smaller separate components of predominantly Muslim countries, two dyads (on the right hand side), and nine isolates (on the left hand side at the top).

*Table 5: Most “mainstream” and most “eccentric” countries*

<i>Average dif- ference</i>	<i>Countries</i>
0.24	Argentina, Bolivia, Paraguay
0.25	Cambodia, Dominican Republic, Israel, Kazakhstan, Mexico, Nepal, Panama
0.26	Albania, Bosnia and Herzegovina, Brazil, Cape Verde, El Salvador, Honduras, Macedonia, Mozambique, Nicaragua, Serbia, Sri Lanka, Turkey, Venezuela
....	....
0.38	Austria, Bahrain, Egypt, Iran, Oman, Singapore, Syria
0.39	Iraq, Kuwait, Luxembourg, Qatar, Saudi Arabia
0.40	Ireland, Malta, Sudan, United Arab Emirates, United Kingdom, United States, Yemen
0.42	Pakistan

According to the literature on legal origins, it may have been expected that the “origin countries” England (i.e., here the UK), France and Germany would be somewhere at the centre of the network. However, 2 this is not the case in Figure. Table 5 also shows that the UK is fairly “eccentric”, i.e. among the countries that have the highest average difference.<sup>35</sup> By contrast, many of the “most mainstream” countries are from Latin America and (other) countries in transition, possibly because those have legal institutions which have been shaped by various sources of influence and which provide an average level of protection, e.g., as regards civil liberties and rule of law.

The relevance of legal origins can also be examined at the aggregate level of the legal origins. This will be done in the next section.

## **5. Examining the relevance of legal origins**

According to work by financial economists, there are profound differences between English, French, Socialist, German and Nordic legal origin countries, explaining differences in financial development (see 1. and 2., above). To examine this claim, the graph

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<sup>35</sup> Network analysis also provides other tools that may be able to make such an assessment (e.g., calculation of degree or betweenness centrality, or a core-periphery analysis, see Hanneman and Riddle 2005: ch. 10). However, these tools work best for binary data; thus, the use of the average differences in the present paper.

in Figure 3 distinguishes the colour and shape of the nodes according to legal origins:<sup>36</sup> black circles are for English legal origin, blue squares for French legal origin, red triangles for Socialist legal origin, grey split squares for German legal origin, and pink upside down triangles for Nordic legal origin.

Figure 3: Network with legal origins (0.13 cut-off point)

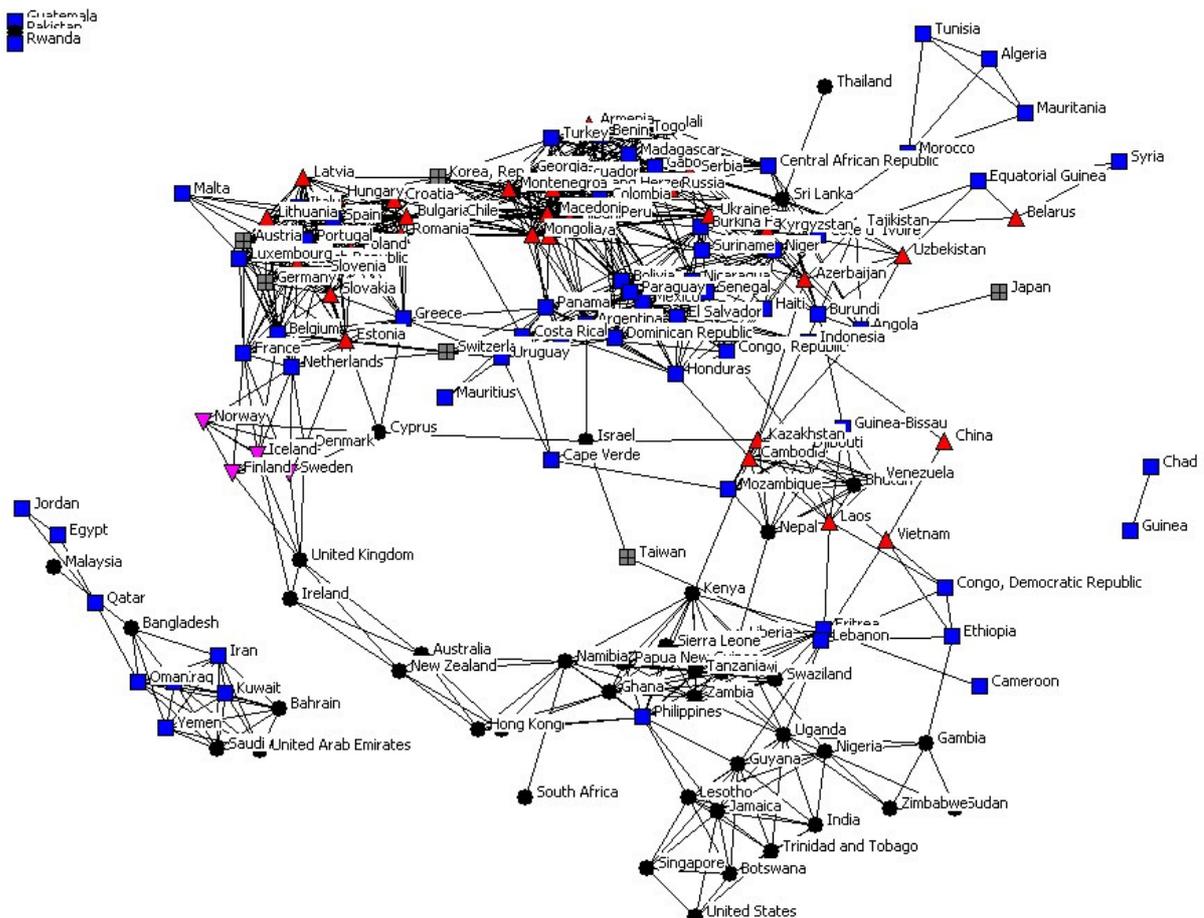


Figure 3 is based on a 0.13 cut-off point and has therefore more ties than Figure 2. This leads to some interesting changes to the graph. More countries are now part of the main component and there are now only three isolates. More specifically, for example, the group of Nordic countries is now connected to the UK and Ireland, and one of the groups of Muslim countries (see at the top right) is now connected to some of the countries in Africa and central Asia. There are also more ties between the continental European EU countries and the countries of Latin America, Eastern Europe and central Asia.

<sup>36</sup> Categories based on La Porta et al., dataset for “Government Ownership of Banks” (2002), available at [http://faculty.tuck.dartmouth.edu/images/uploads/faculty/rafael-laporta/Govt\\_Ownership\\_Banks.xls](http://faculty.tuck.dartmouth.edu/images/uploads/faculty/rafael-laporta/Govt_Ownership_Banks.xls)

Table 6: Density of legal origins

Countries	<i>n</i>	Average density (and standard deviation)	<i>z</i> -score (and <i>p</i> values) tested against average density for all countries
English legal origin	42	0.2472 (0.1108)	-5.1106 (0.0000)
French legal origin	72	0.2873 (0.1262)	-2.1135 (0.0346)
Socialist legal origin	32	0.2159 (0.1258)	-6.3426 (0.0000)
German legal origin	6	0.2270 (0.1157)	-2.0023 (0.0452)
Nordic legal origin	5	0.0274 (0.0088)	-42.2534 (0.0000)
All	157	0.3154 (0.1299)	

Figure 3 shows that the Nordic countries form a close group. There also seem to be some clustering of Socialist legal origin countries at the top, and of English legal origin countries at the bottom of the graph. Table 6 confirms these observations. It reports the “density” of the five legal origins which, for a valued network such as the present one, refers to “the total of all values divided by the number of possible ties. In this case the density gives the average value.”<sup>37</sup> As the average density of all of the legal origins is lower than the density of all countries, none of the legal origins is merely random. This difference can also be tested more formally, calculating the *z*-score for each of the legal origins.<sup>38</sup> It can be seen that there is strong evidence that the English, Socialist and Nordic legal origins are denser than the average, with weaker evidence for the French and German legal origins.

The observation that the Nordic countries are particularly close does not come as a surprise, as they are all developed countries with similar legal institutions. It is also plausible that English legal origin countries are denser than the countries of French and German legal origin since the former countries, but not most of the latter ones, tend to share a common legal language and culture.<sup>39</sup> The strong significance of socialist legal origin may be less expected, given that it may today be seen as one of the “weakening” legal traditions.<sup>40</sup> Thus, in order to gain a fuller understanding, Table 7 can be used to identify which variables drive the results.

<sup>37</sup> Definition at <http://www.analytictech.com/ucinet/help/g75bzo.htm>

<sup>38</sup> The UCINET function is Networks > Compare densities > Against theoretical parameter. This is based on a bootstrap method, see Hanneman and Riddle 2005: ch. 18.

<sup>39</sup> See already Siems 2008: 142-3.

<sup>40</sup> Cf. Husa 2004: 31 (distinguishing legal families as “strengthening/established” and “weakening/unestablished”).

Table 7: Means (and standard deviations) for legal origins

Variables	English legal origin (n: 42)	French legal origin (n: 72)	Socialist legal origin (n: 32)	German legal origin (n: 6)	Nordic legal origin (n: 5)	All countries (n: 157)
(1) English official or de facto language	0.74 (0.45)	0.08 (0.23)	0 (0)	0 (0)	0 (0)	0.24 (0.43)
(2) Countries of Latin Notariat	0 (0)	0.67 (0.47)	0.65 (0.48)	0.83 (0.41)	0 (0)	0.47 (0.50)
(3) Islam state religion	0.14 (0.35)	0.17 (0.38)	0 (0)	0 (0)	0 (0)	0.11 (0.32)
(4) EU / EEA countries	0.07 (0.26)	0.13 (0.33)	0.34 (0.48)	0.33 (0.52)	1 (0)	0.19 (0.39)
(5) Literacy rate	0.81 (0.17)	0.77 (0.20)	0.97 (0.60)	0.98 (0.01)	0.99 (0.01)	0.84 (0.19)
(6) Democracy index	0.52 (0.23)	0.44 (0.25)	0.46 (0.22)	0.81 (0.06)	0.96 (0.04)	0.50 (0.25)
(7) Rule of Law	0.49 (0.27)	0.37 (0.24)	0.42 (0.20)	0.85 (0.10)	0.98 (0.03)	0.45 (0.27)
(8) Constitutional court	0.07 (0.26)	0.36 (0.48)	0.81 (0.40)	0.50 (0.55)	0 (0)	0.37 (0.48)
(9) Civil liberties infringed	0.40 (0.29)	0.45 (0.30)	0.38 (0.31)	0.08 (0.09)	0 (0)	0.40 (0.30)
(10) Procedures of civil courts	0.48 (0.21)	0.53 (0.18)	0.44 (0.16)	0.32 (0.10)	0.48 (0.19)	0.48 (0.19)
(11) Death penalty not abolished	0.38 (0.51)	0.24 (0.43)	0.09 (0.30)	0.33 (0.52)	0 (0)	0.27 (0.44)
(12) Paid annual leave	0.56 (0.19)	0.69 (0.18)	0.64 (0.12)	0.63 (0.17)	0.83 (0.11)	0.65 (0.18)

Comparing the “all countries” column with the Nordic legal origin one, it can be seen why these countries are very close: they are quite different from the average, with small standard deviations, in all but one of the categories. With respect to English legal origin, the main identifying factors are English language, not being part of the Latin Notariat, no constitutional court and no death penalty. With respect to the socialist legal origin, the relevant factors are above average literacy, a tendency to have a constitutional court, English not being the official language and the death penalty not being abolished.

Overall, however, the current network data does not support the legal origins taxonomy. The legal origins do not explain many elements of Figure 3, for example, the group of Muslim countries at the left bottom, and the European countries at the left top. The fit of classifications can also be assessed more formally. In the present case, the resulting “cluster adequacy” indicators<sup>41</sup> are as follows: Eta -0.248, Q -0.048; Q-prime -

<sup>41</sup> See <http://www.analytictech.com/ucinet/help/hs3035.htm> (defined as “Eta is the correlation between the data matrix and an ideal structure matrix in which  $x(i,j)=1$  if  $i$  and  $j$  are in the same cluster and 0 otherwise. Newman and Girvan’s modularity Q is the fraction of edges that fall within the partition minus

0.060, and E-I 0.452. These indicators range from -1 to 1, similar to a correlation coefficient. For network data which show dissimilarities, as here, one can expect that the first three indicators are negative and that the final one – which refers to the relationship between external and internal ties – is positive: this is the case; however, all four indicators are closer to 0 than to -1 or 1: thus, this shows the limitations of the legal origins taxonomy.

## **6. Factions and clusters of legal systems**

This section aims to develop a new way to classify the legal systems of the world. Network analysis provides various tools to identify community structures.<sup>42</sup> The following focuses on factions and clusters. Both of these group measures can be directly applied to a network figure. In the present case a division into twelve factions<sup>43</sup> in Figure 4, below, is particularly revealing as it matches well with the visual shape of the network.

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the expected such fraction if the edges were distributed at random,  $Q$  has a maximum value of  $1-1/m$  where  $m$  is the number of clusters  $Q$ -prime is a normalized version of this. Krackhardt and Stern's E-I index is the number of external ties minus the number of internal ties divided by the total number of ties").

<sup>42</sup> See, e.g., Ferligoj et al. 2011; Knoke and Yang 2008: 77-91; Hanneman and Riddle 2005: chs. 11 and 13.

<sup>43</sup> For a technical definition see <http://www.analytictech.com/ucinet/help/17pgdo..htm>.



approach. In the world systems literature a split into equal-size groups may be justified by the theoretical premise that distinguishes between countries of the “core” and the “periphery” (and possibly, the “semi-periphery”), but there is no corresponding assumption in the current case. Moreover, today’s researchers regard CONCOR as technically outdated, preferring methods of “Tabu search”.<sup>45</sup>

One such method is to calculate “optimisation clusters”. This refers to a formal method that “optimises a cost function which measures the total distance or similarity within classes for a proximity matrix”.<sup>46</sup> The user has to determine in advance how many clusters shall be created. In the present case, this has been done for various numbers (not reported here), with the result that a division into four clusters (see Table 8) provides the best “fit” and “r-square”. In addition, if one tries to create more than four clusters, this usually only leads to additional clusters with one or two countries.

Table 8: Clusters of legal origins

Group assignments (most typical countries of cluster in <b>bold</b> ; least typical ones in <i>italics</i> )	
1. <i>The Global Anglosphere</i> (32 countries)	<i>Australia</i> , Botswana, Canada, Eritrea, Gambia, <b>Ghana</b> , <b>Guyana</b> , Hong Kong, India, Jamaica, Kenya, Lesotho, Liberia, <b>Malawi</b> , <i>Mauritius</i> , <b>Namibia</b> , New Zealand, Nigeria, Papua New Guinea, Philippines, <i>Rwanda</i> , Sierra Leone, Singapore, <i>South Africa</i> , <i>Sudan</i> , Swaziland, <b>Tanzania</b> , Trinidad and Tobago, Uganda, <i>United States</i> , <b>Zambia</b> , Zimbabwe
2. <i>The Modern European Legal Culture</i> (31 countries)	Austria, Belgium, Bulgaria, Croatia, <i>Cyprus</i> , <b>Czech Republic</b> , Denmark, Estonia, Finland, France, <b>Germany</b> , Greece, Hungary, Iceland, <i>Ireland</i> , Italy, <i>Japan</i> , Latvia, <b>Lithuania</b> , Luxembourg, <i>Malta</i> , Netherlands, Norway, <b>Poland</b> , <b>Portugal</b> , Romania, Slovakia, <b>Slovenia</b> , Spain, Sweden, <i>United Kingdom</i>  [associate members: Chile and Switzerland]
3. <i>The Rule by Law or Religion</i> (26 countries)	<b>Bahrain</b> , Bangladesh, Belarus, <i>Chad</i> , China, Congo Dem. Rep., Egypt, Equatorial Guinea, Ethiopia, <i>Guinea</i> , <b>Iran</b> , Iraq, Jordan, Kuwait, Lebanon, Malaysia, <b>Oman</b> , <i>Pakistan</i> , Qatar, <b>Saudi Arabia</b> , Syria, <i>Taiwan</i> , <i>Thailand</i> , <b>United Arab Emirates</b> , Vietnam, Yemen  [associate member: Cameroon]

<sup>45</sup> E.g., Hanneman and Riddle 2005: ch 13. See also Lloyd et al. 2009: 59 (“CONCOR was a top of the line technology in 1979, but has since been shown to be a less optimal strategy than some other approaches because of the fact that it is an iterative program that by design produces an equal number of groups”).

<sup>46</sup> Definition at <http://www.analytictech.com/ucinet/help/2cvtid.htm>. By contrast, hierarchical clustering would be presented in a dendrogram (for an example, using the La Porta et al. data see Graff 2008). Yet, for 157 countries (as here) such a dendrogram would not be informative.

<p>4. <i>The Weak Law in Transition</i> (68 countries)</p>	<p><b>Albania</b>, <i>Algeria</i>, Angola, <b>Argentina</b>, Armenia, Azerbaijan, Benin, <i>Bhutan</i>, <b>Bolivia</b>, <b>Bosnia and Herzegovina</b>, Brazil, Burkina Faso, Burundi, Cambodia, <i>Cameroon</i>, <i>Cape Verde</i>, Central African Republic, Chile, <b>Colombia</b>, Congo Rep., Costa Rica, Côte d’Ivoire, Djibouti, Dominican Republic, Ecuador, El Salvador, Gabon, Georgia, <i>Guatemala</i>, <i>Guinea-Bissau</i>, Haiti, <b>Honduras</b>, <i>Indonesia</i>, <i>Israel</i>, Kazakhstan, Korea Rep., Kyrgyzstan, Laos, <b>Macedonia</b>, <b>Madagascar</b>, Mali, <i>Mauritania</i>, <b>Mexico</b>, <b>Moldova</b>, Mongolia, Montenegro, <i>Morocco</i>, Mozambique, Nepal, Nicaragua, Niger, Panama, <b>Paraguay</b>, <b>Peru</b>, <b>Russia</b>, Senegal, Serbia, Sri Lanka, Suriname, <i>Switzerland</i>, <i>Tajikistan</i>, Togo, <i>Tunisia</i>, <b>Turkey</b>, Ukraine, Uruguay, <i>Uzbekistan</i>, Venezuela</p> <p>[associate member: Japan]</p>					
<p>Density table</p>						
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>		
1	<i>0.182</i>	0.437	0.354	0.336	<p>fit: -0.605 r-square = 0.366</p>	
2	0.437	<i>0.158</i>	0.517	0.327		
3	0.354	0.517	<i>0.214</i>	0.347		
4	0.336	0.327	0.347	<i>0.199</i>		

The four clusters of Table 8 have been given names that will be explained in the following. Table 8 also reports the density of the four clusters. It can be seen that the differences within the clusters (0.182, 0.158, 0.214, 0.199) are always lower than the differences to the other clusters – which is precisely the aim of cluster optimisation.

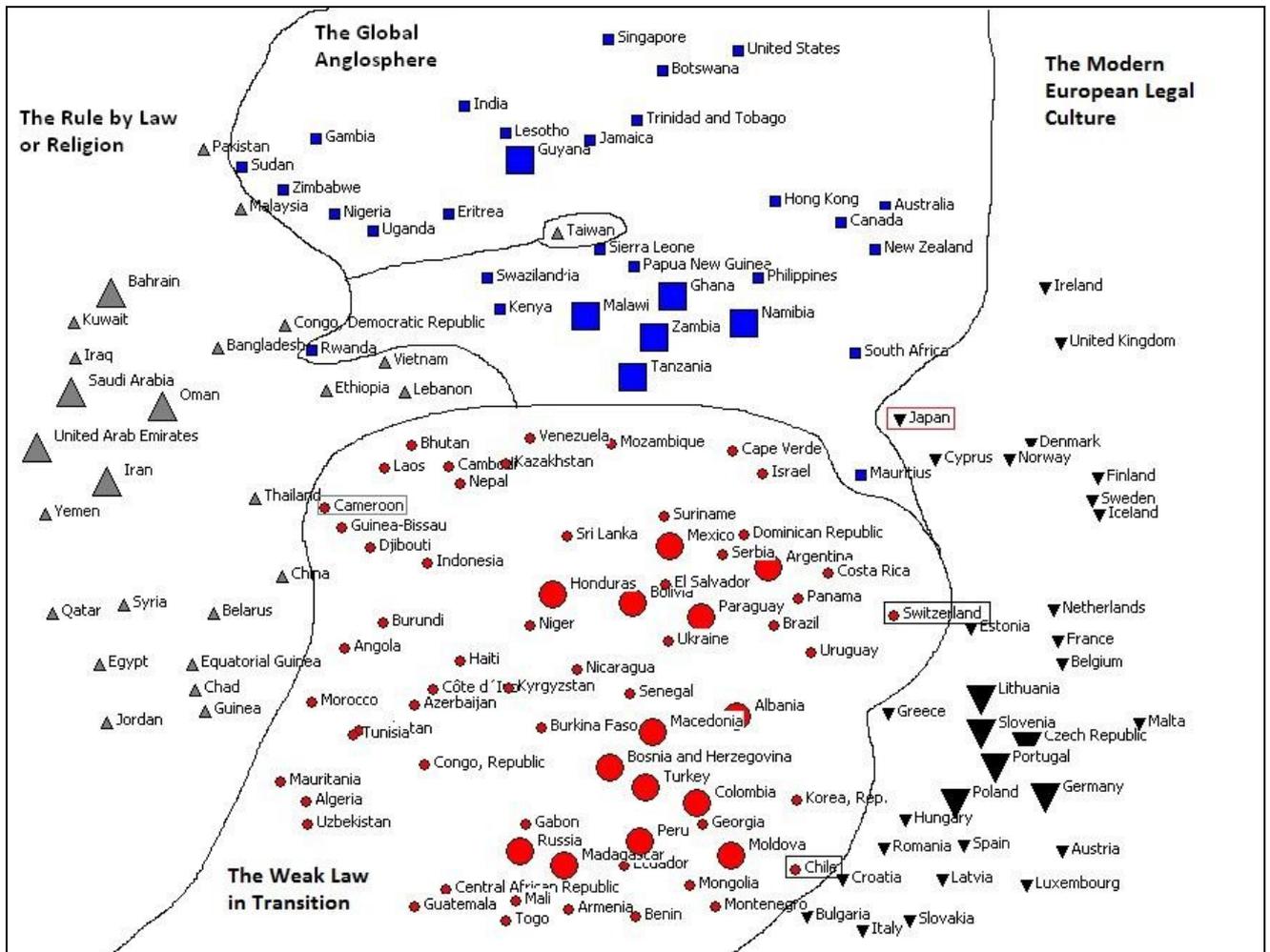
Potentially problematic is that the clusters pigeon-hole very diverse countries into the same groups. Specialised programs of cluster analysis can identify overlapping groups of nodes in networks,<sup>47</sup> but in the present case simpler calculations are also revealing. To start with, it was calculated which cluster members are the most typical ones (in bold), and the least typical ones (in italics).<sup>48</sup> This shows some nuances: for example, the UK and Ireland are among the least typical countries of the European cluster. It is also interesting to compare how different each country is from its own and the other three clusters. The result of this calculation is that four countries are actually closer to another cluster than their own ones: Chile and Switzerland are closer to cluster 2 than to their own 4, Japan is closer to 4 than to 2, and Cameroon is closer to 3 than to 4. Thus, these countries may be seen as “associate members” of the other respective clusters (see Table 8).

<sup>47</sup> See, e.g., CFinder, available at <http://cfinder.org/>.

<sup>48</sup> These are the 20% of the countries of each cluster that have the lowest and highest mean difference from the other members of this cluster. In the present paper this approach is preferable to the measures of centrality developed in network analysis. See note 35, above.

Another way to identify nuances is to present these clusters in a map of legal systems, akin to the cultural maps developed by Inglehart and Welzel.<sup>49</sup> Such mapping may start with the metric multidimensional scaling (MDS) of legal systems. Figure 6 of the Appendix is based on this form of presentation.<sup>50</sup> Yet, the problem is that in this Figure many of the individual countries are not identifiable. Thus, in the following, a different procedure was applied.

Figure 5: Map of legal systems (0.3154 cut-off point)



In order to incorporate most of the information, the network of Figure 5 was constructed with the cut-off point of the average difference between the country pairs (0.3154, see

<sup>49</sup> Inglehart and Welzel 2010. Legal scholars have also referred to the idea of mapping countries (e.g., Twining 1999; Bavinck and Woodman 2009; Varga 2010; Siems 2014: 72), yet, without producing actual graphic representation.

<sup>50</sup> The following UCINET function was used: Tools > Scaling/Composition > Metric MDS.

Figure 1, above). After instructing the network analysis program to shift the countries according to similarities and dissimilarities, the lines between the countries were removed. This was done since these lines (showing half of the country relationships) almost fully blackened the figure. Next, the nodes were coloured and shaped according to the four clusters of Table 8, with the most typical countries of each cluster displayed with larger nodes. Finally, in order to illustrate the groups, lines were drawn between the four clusters. In general, this was straight-forward, but see the “enclave” of Taiwan. In addition, the Figure highlights the aforementioned four countries which can be regarded as associate members of another cluster.

In substance, Figure 5 shows, first, a group of countries which used to be English colonies and still have English as one of the official languages. law countries. Yet, this group does not include all countries that are usually seen as part of the common law. Thus it is called the “Global Anglosphere” since, apparently, some of the common law countries have joined the other groups. Second, the European cluster consists of European countries plus one non-European one (Japan). In this cluster there are countries which, according to the legal origin terminology, may be either English, Nordic, German or French legal origin. Thus, it can be seen that in the modern European legal culture these categories are largely obsolete.<sup>51</sup> Third, the cluster on the left hand side is mainly one of some, not all, Muslim countries. It also includes countries such as Belarus and China where law is often an instrument of the government; thus, here the name “Rule by Law or Religion”. Fourth, the final cluster is the one most difficult to name. Here, we have many countries from Latin America but also some from central Asia and Africa. Thus, in order to gain a fuller understanding, it is helpful to consider the variables which are the determinant ones.

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<sup>51</sup> This is controversial in the general comparative law literature. For the negative view see Legrand 1996.

Table 9: Means (and standard deviations) for clusters

Variables	The Global Anglosphere (32)	The Modern European Legal Culture (31)	The Rule by Law or Religion (26)	The Weak Law in Transition (68)	All coun- tries (n: 157)
(1) English official or de facto language	1 (0)	0.1 (0.30)	0.04 (0.20)	0.01 (0.12)	0.24 (0.43)
(2) Countries of Latin Notariat	0.03 (0.18)	0.74 (0.44)	0.12 (0.33)	0.68 (0.47)	0.47 (0.50)
(3) Islam state religion	0 (0)	0 (0)	0.54 (0.51)	0.06 (0.24)	0.11 (0.32)
(4) EU / EEA countries	0 (0)	0.97 (0.18)	0 (0)	0 (0)	0.19 (0.39)
(5) Literacy rate	0.80 (0.16)	0.99 (0.15)	0.78 (0.19)	0.80 (0.21)	0.84 (0.19)
(6) Democracy index	0.51 (0.23)	0.78 (0.11)	0.25 (0.19)	0.43 (0.20)	0.50 (0.25)
(7) Rule of Law	0.46 (0.27)	0.79 (0.16)	0.36 (0.21)	0.33 (0.18)	0.45 (0.27)
(8) Constitutional court	0.06 (0.25)	0.55 (0.51)	0.27 (0.45)	0.47 (0.50)	0.37 (0.48)
(9) Civil liberties infringed	0.39 (0.28)	0.38 (0.07)	0.72 (0.19)	0.44 (0.24)	0.40 (0.30)
(10) Procedures of civil courts	0.45 (0.20)	0.33 (0.16)	0.61 (0.20)	0.52 (0.14)	0.48 (0.19)
(11) Death penalty not abolished	0.41 (0.50)	0.03 (0.18)	1 (0)	0.03 (0.17)	0.27 (0.44)
(12) Paid annual leave	0.54 (0.20)	0.75 (0.11)	0.64 (0.22)	0.65 (0.15)	0.65 (0.18)

Table 9 confirms that the variables that matter for the first cluster are related to the common law nature, namely being English-speaking and not part of the Latin Notariat. The second cluster covers all EU/EEA countries. Those perform particularly well in the categories democracy and rule of law, but also have relatively fast civil courts and a high level of paid annual leave. The third cluster is of countries with low scores on democracy and rule of law, many civil rights infringement and retention of the death penalty. This includes many, but not only, countries where Islam is the state religion. In some respects the final category is similar to the third one, for instance, with a below average score for rule of law. However, these countries have abolished the death penalty and score around average for democracy and infringements of civil liberties. Thus, to find a broad description, these countries may be seen as countries with a relatively weak law that may be in transition to one of the other clusters.

## 7. Conclusion

It may be suggested that in today's world all legal systems are mixtures between various sources of influence.<sup>52</sup> Yet, this should not discourage us to develop a taxonomy of the world's legal systems. Network analysis is a particularly useful tool. Since a network indicates similarities between country pairs, it may be able to show how a legal system has been influenced by two or more other countries. Moreover, even when we identify categories such as factions and clusters, this does not deny possible ambiguities. Identifying community structures in networks often includes a matter of judgment. In Figure 5, it could also be seen that some of the countries are close to the borders of their respective cluster, thus indicating a mixed nature of their legal systems.

It was the main aim of this paper to analyse a new dataset of 157 legal systems with tools of network analysis. This has enabled us to identify four clusters of legal systems, called the "Global Anglosphere", the "Modern European Legal Culture", the "Rule by Law or Religion", and the "Weak Law in Transition". It is suggested that these clusters, as well as the other results of this paper can also be linked to the main reasons to develop taxonomies of legal systems in the first place (see 2. above):

First, at a descriptive level, the findings of this paper are helpful in order to identify the main dividing lines of the legal systems of the world. To be sure, this also acknowledges the limitation that, as one goes deeper into a comparative analysis, it may be necessary to go beyond the initial taxonomy.<sup>53</sup>

Second, analytically, the network data presented here may be linked to further data. The current paper was based on the idea that attributes can be transformed into relations showing differences and similarities between countries. Thus, future research could try to identify how these data are related to explicit data on legal relations, for example, cross-citations between courts,<sup>54</sup> or more general data on information and communication networks.<sup>55</sup> Moreover, in line with the "law and finance" research, it could be scrutinised how the legal networks and clusters are related to economic and other data

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<sup>52</sup> See the discussion in Siems 2014: 85-93.

<sup>53</sup> See generally Mattei et al. 2009: 260; Zweigert and Kötz 1998: 72.

<sup>54</sup> For such data see Gelter and Siems 2012 and 2013. The relationship may be thought of as akin to that of a gravity model.

<sup>55</sup> For the distinction between technological, social, biological and information networks see, e.g., Kolaczyk 2009: 3-10.

(though causal relationships may be difficult to establish given the problem of law's endogeneity). It may also be explored what explains the network data of the current paper, for example, whether and how the colonial background of countries may play a role.<sup>56</sup>

Third, there may be normative lessons that can be drawn from the data and analysis of this paper. For example, the fact that the network shows a clear cluster of the European countries from different legal origins indicates that harmonisation of legal rules in the European Union is less problematic than it is sometimes assumed. And more generally, it may be said that the networks and clusters show which legal systems are compatible, say, in which country relationships it may be acceptable to use legal transplants with a low risk of rejection.

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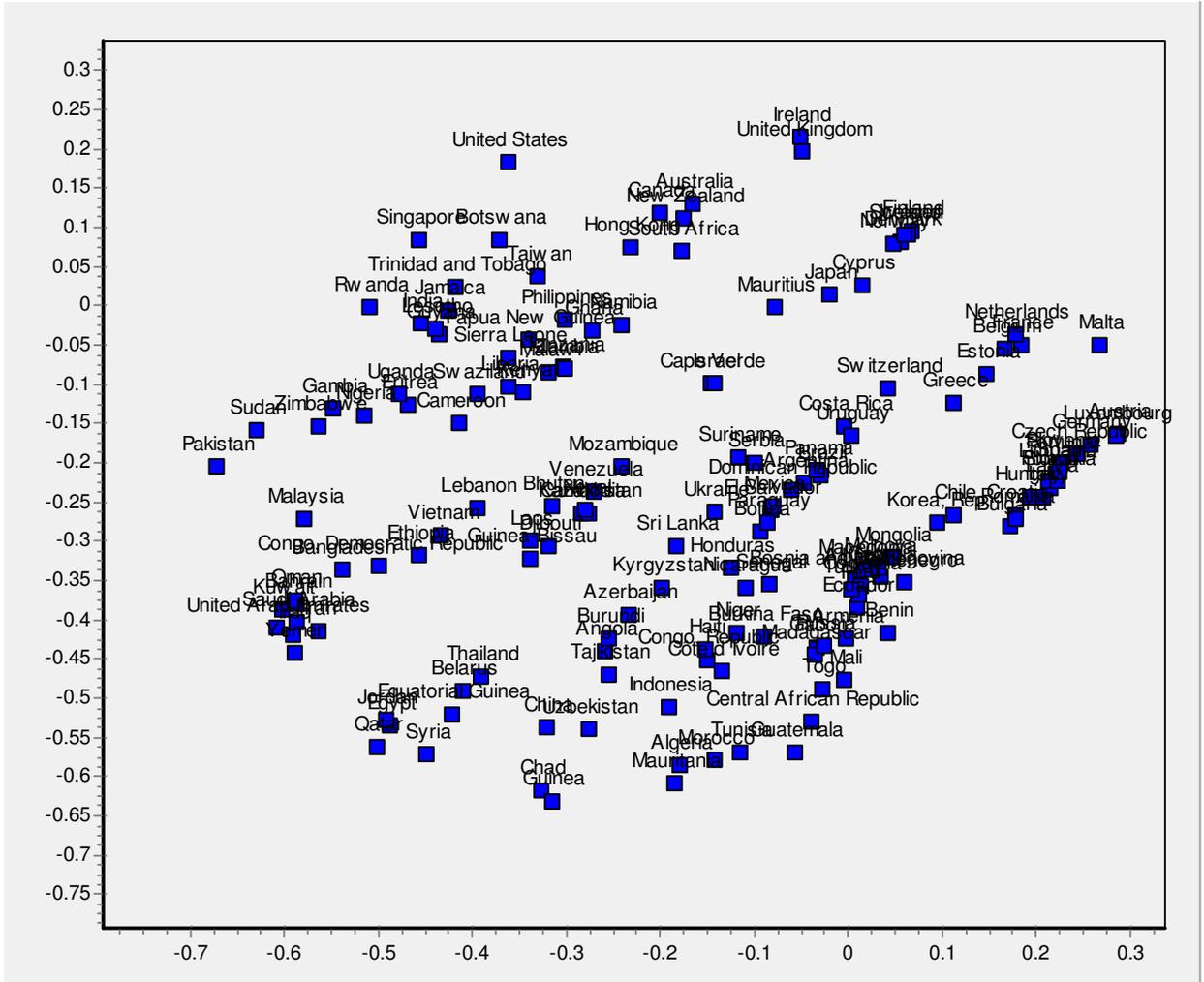
<sup>56</sup> This may be seen as an "affiliation network" (i.e., information about an event shared by certain participants that indicates the presence of particular ties; see Borgatti and Halgin 2011).

## Appendix

Table 10: Two, four and eight blockgroups based on CONCOR

(1.1.1) Albania, Armenia, Benin, Bosnia and Herzegovina, Central African Republic, Colombia, Ecuador, Gabon, Georgia, Guatemala, Korea, Rep., Kyrgyzstan, Macedonia, Madagascar, Mali, Moldova, Mongolia, Montenegro, Peru, Russia, Serbia, Sri Lanka, Suriname, Togo, Turkey, Ukraine	(1.1.2) Argentina, Bolivia, Brazil, Burkina Faso, Congo Rep., Côte d'Ivoire, Dominican Republic, El Salvador, Haiti, Honduras, Mexico, Nicaragua, Niger, Panama, Paraguay, Senegal, Tunisia	(1.2.1) Australia, Cape Verde, Cyprus, Denmark, Finland, Iceland, Ireland, Israel, Mauritius, New Zealand, Norway, South Africa, Sweden, United Kingdom	(1.2.2) Austria, Belgium, Bulgaria, Chile, Costa Rica, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Switzerland, Uruguay
(2.1.1) Algeria, Angola, Azerbaijan, Bhutan, Burundi, Cambodia, Djibouti, Guinea, Guinea-Bissau, Indonesia, Kazakhstan, Laos, Mauritania, Morocco, Nepal, Tajikistan, Uzbekistan, Venezuela	(2.1.2) Bahrain, Bangladesh, Belarus, Chad, China, Congo Dem. Rep., Egypt, Equatorial Guinea, Ethiopia, Iran, Iraq, Jordan, Kuwait, Lebanon, Malaysia, Oman, Qatar, Saudi Arabia, Syria, Thailand, United Arab Emirates, Vietnam, Yemen	(2.2.1) Botswana, Gambia, Guyana, India, Jamaica, Lesotho, Nigeria, Pakistan, Singapore, Sudan, Taiwan, Trinidad and Tobago, Uganda, United States, Zimbabwe	(2.2.2) Cameroon, Canada, Eritrea, Ghana, Hong Kong, Kenya, Liberia, Malawi, Mozambique, Namibia, Papua New Guinea, Philippines, Rwanda, Sierra Leone, Swaziland, Tanzania, Zambia

Figure 6: Metric MDS of legal systems



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