

# Language, Legal Origins, and Culture before the Courts: Cross-Citations between Supreme Courts in Europe

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Working Paper

30 April 2010

“Legal communication  
has two principal components:  
words and citations”  
(Shapiro 1991, 1453)

*Abstract: How often and in which circumstances do courts from different jurisdictions cite each other? In this paper we present new data on cross-citations between the supreme courts of ten European countries. It is based on decisions of these supreme courts from 2000 to 2007. In total we have searched 636,172 decisions and found 1,430 instances in which these courts have cited the supreme courts of the other nine countries. Whether such citations take place and in what quantity depends on the particular legal culture and its relationship to others. We use regression analysis in order to interpret the cross-citations between supreme courts. We find that language skills, membership in the same legal family, cultural factors, economic indicators, and the population size of the cited country all matter for which countries are cited. In the terms of the New Institutional Economics we are therefore able to confirm a link between the social and cultural foundations of institutions (i.e., the first level of Williamson’s classification) and the way how formal institutions, like the legal system, operate.*

**Keywords:** cross-citations, supreme courts, legal origins, legal culture, comparative law, comparative civil procedure.

**JEL Classification:** A12, A13, B52, C21, C24, K00, K41, P48

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## 1. Introduction

Should courts consider cases from other jurisdictions? The use of foreign law precedent by the US Supreme Court has sparked considerable controversy in the United States. The court itself is divided on whether it is legitimate to rely on foreign law in the interpretation of the US Constitution,<sup>1</sup> and the occasional reference to foreign sources by some judges has been the subject of congressional hearings and debates in the Blogosphere as well as in legal scholarship (see e.g. McGinnis, 2006; Zaring, 2006; Markesinis 2006; Peoples, 2008). Justice Kennedy has actually been called “the most dangerous man in America” because of his endorsement of foreign law in *Roper v. Simmons* (for an overview of reactions to the case, see Benvenuto, 2006). While the debate concerning constitutional interpretation is very controversial, there seems to be little concern about the state courts’ practice of routinely citing each other’s case law as “persuasive authority” without much further ado. As we show in this paper, in Europe citations between different countries occur frequently. At least for some Supreme Courts in Europe it is very common to refer to the case law of other countries high courts (Baudenbacher, 2003; Lord Bingham 2010), though other studies claim that courts look across the border only rarely (Markesinis & Fedtke, 2005 and 2006; Canivet et al., 2004; Drobniġ & Van Erp, 1999; specifically for Germany Drobniġ, 1986, Kötġ 2000; for Italy Smorto, 2010).

In this paper and within the larger research project from which it has developed, we study the dialogue between different European supreme courts quantitatively. Our goal

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<sup>1</sup> *Roper v. Simmons*, 125 S. Ct. 1183 (2005).

is to uncover transnational citations patterns by identifying citation networks and to describe which voices are the loudest in the conversation that is going on between the high courts, and for what reasons they are. Our study has broader implications for comparative law and economics, as scholars in these fields have in recent years increasingly attempted to identify common patterns in the law – and its economic consequences – based on factors common to different legal systems, such as legal origin<sup>2</sup> (e.g. Djankov et al. 2008), language (Siems 2007) or culture (Licht et al. 2005).<sup>3</sup> While “legal origin” is frequently traced to the transplantation of a legal system during the colonial period (La Porta et al., 2008), Spamann (2009) has recently argued that the *continued* diffusion of legal ideas from former colonial powers to former colonies through channels such as development aid or student migration plays a role for the continued significance of purported legal origins. These channels do not seem play a significant role within the developed legal systems of Europe; however, it is possible that continuous ties within a particular legal family serve to maintain the effects of legal origins even there. Citations between courts might be such a channel, or a proxy for other connections that might tie legal systems together as a legal family.

This paper tries to identify the factors that influence cross citations, including legal origin, language, and culture. While constitutional interpretation – the focus of the domestic American debate – might be another rewarding field, we focus on the highest courts that decide private law and criminal cases. Using legal databases in Austria, Belgium

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<sup>2</sup> The most common categories are common law, French civil law, German civil law and Scandinavian civil law.

<sup>3</sup> The topic of our research is also closely related to the New Institutional Economics (NIE). According to Williamson (2000) the first level of institutions encompasses traditions, ethics, social norms, religion and language. The structure of courts and the role of legal rules follow at the next levels, namely the basic institutional environment and the institutions of governance. Thus, in terms of the NIE, our research will contribute to the question of whether similarities between countries in the first institutional level translate into the following levels.

England and Wales, France, Germany, Ireland, Italy, the Netherlands, Spain, and Switzerland, we have hand-collected a dataset of transnational citations between the highest courts within the regular court systems of these countries. Section 2 describes our search methodology and findings. Section 3 provides descriptive statistics. Section 4 explores possible reasons for differences in cross-citations and explains the controlling variables we used in our study. Section 5 presents the results of our regression analysis. Section 6 concludes.

## **2. Search methodology and general considerations**

### **2.1. Population**

Table 1 presents the list of countries and courts that we have examined, the databases that we have used, and the subject matter jurisdiction of the ten supreme courts. It is also indicated how many decisions the supreme courts have published between 2000 and 2007 and how this translates into the number of decisions per 1,000 inhabitants.

[Table 1 about here]

#### **2.1.1. Choice of countries**

The main aim of our research is to identify whether there are differences in the cross-citations between supreme courts in Europe. Since we could not cover all European countries, we had to choose a sample of countries. First, our choice had to reflect the claim that there may be differences between English, German and French legal origin

countries (see 1. above). We have therefore included two English legal origin countries (England<sup>4</sup> and Ireland), three German legal origin countries (Germany, Austria, Switzerland), four French legal origin countries (France, Belgium, Italy, and Spain) plus the Netherlands, which is some studies classify as French and others as German legal origin.<sup>5</sup>

Secondly, an alternative explanation would be that it is not primarily legal origins but language skills that determine the quantity of cross-citations. It may not be easy to test this hypothesis because the categories of English-speaking countries, countries with Germanic languages and countries with Romance languages are similar to the legal origin categories. However, they are not identical. Belgium and Switzerland are interesting cases since we can distinguish between the different language groups. And it may also matter whether two countries really have a common language (such as English or German) or just a similar language (such as German and Dutch, or Italian and Spanish).

Thirdly, the size of a country is likely to influence cross-citations: smaller countries may often consider the jurisprudence of their larger neighboring countries but it is less likely that the larger country returns the favor. In our sample we have therefore five of the larger European countries (Germany, France, Italy, Spain, England) and five smaller ones (Austria, Belgium, Ireland, Netherlands, Switzerland).

Finally, our choice of countries was influenced by pragmatic considerations. Since we aimed to consider the full population of the supreme-court decisions from 2000 to 2007, we had to choose countries where we could get access to such a database (even if this

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<sup>4</sup> In the following the term “England” is always to be read as referring to “England and Wales”.

<sup>5</sup> See, on the one hand, La Porta et al. 1998: 1131 and, on the other, Armour et al. 2009b: 1475.

was not possible in all cases<sup>6</sup>). The omission of the supreme courts of the Eastern European countries seems justifiable, given that their legal systems underwent considerable change during the past 20 years, while all of the countries in our sample have had developed “Western” legal systems for many decades, which therefore had time to mature. We also excluded the Nordic countries since these legal systems can be regarded as being part of a separate legal family that is different both from both the common law and the other Continental European ones (see Zweigert & Kötz 1998: 276-285).

### 2.1.2. Choice of courts

This paper is interested in the main courts of last resort in matters of civil and criminal law. In the civil law jurisdictions it was relatively straight-forward to identify these courts (see Table 1). Two clarifications are, however, necessary. On the one hand, we did not consider the constitutional courts as the main supreme courts in these matters. Although human rights can have an impact on civil and criminal proceedings, in normal cases these matters will not be decided by the constitutional courts.<sup>7</sup> On the other hand, the supreme courts identified in Table 1 may also be competent for matters other than civil and criminal law. Since it would be difficult to use search terms that would exclude these cases *ex ante*, our general results consider all cases which the ten supreme courts have delivered. However, in the analysis of these cases we also identify the subject matter in which a foreign court has been cited (see 3.2 below).

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<sup>6</sup> See notes 62-63, below, for the Dutch Hoge Raad.

<sup>7</sup> Other than the United States, most European countries have separate court systems for administrative law. Administrative courts decide about appeals against decisions of regulatory authorities. Neither the administrative courts nor the ordinary courts can review laws for the constitutionality. Under the “Austrian system” developed by Hans Kelsen for the Austrian constitution of 1920 and adopted across the Continent after World War II, there is a separate constitutional court to which regular courts can submit constitutional questions and to which individuals can appeal under certain circumstances. See Tushnet (2006: 1244-6).

The English equivalent to the supreme courts of the Civil Law countries is the Court of Appeal. The Court of Appeal is responsible for appeals in civil and criminal matters. Although these matters may then be appealed to the Supreme Court of the United Kingdom (until October 2009: the Appellate Committee of the House of Lords), this does not transform the Supreme Court to the *main* court of last resort in matters of civil and criminal law. Only in rare cases will it decide about these issues. Thus, it is more appropriate to equate the Supreme Court with a constitutional court than with the supreme courts of Civil Law countries. This can also be illustrated by the number of judges and decisions of these two types of courts: the constitutional courts and the UK Supreme Court have a relatively small number of judges (typically between 10 and 20) and they may deliver less than 100 judgments per year,<sup>8</sup> whereas the main supreme courts in matters of civil and criminal law typically have more than 40 judges,<sup>9</sup> deciding several hundreds (or even thousands) of cases per year (see Table 1).

A similar reasoning applies to the highest courts of the Republic of Ireland. The Supreme Court of Ireland is the equivalent to the UK Supreme Court, with only nine judges and less than 100 judgments per year,<sup>10</sup> whereas the High Court of Ireland is similar to the Court of Appeal of England and Wales, and thus also similar to the supreme courts of Civil Law countries. Two caveats are, however, necessary: on the one hand, the High Court of Ireland is the court of first instance for issues such as

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<sup>8</sup> See <http://www.bailii.org/uk/cases/UKHL/2007/>.

<sup>9</sup> For instance, in the UK 44 judges (see <http://www.hmcourts-service.gov.uk/cms/1287.htm>), in the Netherlands 40 judges (<http://www.rechtspraak.nl/Gerechten/HogeRaad/Over+de+Hoge+Raad/Organisatie/Raad.htm>), in Austria 57 judges (see <http://www.ogh.gv.at/ogh/index.php?nav=8>), and in Germany more than 100 judges (<http://www.bundesgerichtshof.de/bgh/richter.php>).

<sup>10</sup> See <http://www.bailii.org/ie/cases/IESC/2007/>.

defamation jury trials and severe crimes.<sup>11</sup> On the other hand, it does not decide about appeals in matters of criminal law (which is the jurisdiction of the Court of Criminal Appeal). Yet, this deviation from the usual powers of a supreme court does not have a severe impact on our data. Since the instances in which the High Court of Ireland decides as a court of first instance typically do not lead to a written judgment, these cases do not appear in the number of decisions reported in Table 1 and analyzed in this paper.<sup>12</sup> Moreover, it makes little difference that we did not consider the Court of Criminal Appeal since this court only delivers very few judgments per year.<sup>13</sup>

### 2.1.3. Subject matter jurisdiction

Table 1 also summarizes the subject matter jurisdiction of each of the ten courts. Three different types of supreme courts can be distinguished (similar Blank et al., 2004: 24). First, some of the supreme courts decide about (almost) all areas of law. This is most clearly the case for the Court of Appeal of England and Wales.<sup>14</sup> Similarly, the High Court of Ireland, the Swiss *Bundesgericht/Tribunal fédéral/Tribunale federale*, the Italian *Corte di Cassazione* and the Spanish *Tribunal Supremo* have a very wide range of powers, though there are specialized courts for criminal appeals in Ireland (see 2.1.2, above), for insurance matters in Switzerland (the *Eidgenössische Versicherungsgericht*

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<sup>11</sup> In the latter case the High Court is called Central Criminal Court.

<sup>12</sup> This can be seen by comparing these figures with the total number of proceedings. For instance, Bailii (<http://www.bailii.org/ie/cases/IEHC/>) reports 451 decisions for 2005, whereas [http://highcourtsearch.courts.ie/hcslive/terms\\_conditions.processAction](http://highcourtsearch.courts.ie/hcslive/terms_conditions.processAction) reports 10,321 listed cases (categories: 5802 in P; 2049 in S; 1064 in JR; 708 in R; 422 in CA; 101 in MCA; 70 in EXT; 54 in IA; 41 in FJ; 5 in PAP; 4 in FTE and 1 in PIR), very few of which are likely to carry a written judgment.

<sup>13</sup> For instance, in total 30 in 2007; see <http://www.bailii.org/ie/cases/IECCA/2007/>.

<sup>14</sup> This is not excluded by the Tribunal Service, established in 2006 (see <http://www.tribunals.gov.uk/>), since these decisions can be appealed to the Court of Appeal on a point of law.

[until 2007]),<sup>15</sup> and for constitutional matters in Italy and Spain (the *Corte costituzionale* and the *Tribunal Constitucional*).

Second, the supreme courts of Austria, Belgium, France and the Netherlands also have relatively wide powers; however, at least administrative law is excluded. Again, the best way to describe this is by identifying the additional supreme courts of these jurisdictions. All of these countries have specialized appeal courts for administrative matters (*Verwaltungsgerichtshof* in Austria, *Conseil d'État/Raad van State* in Belgium, *Conseil d'État* in France, and *Afdeling bestuursrechtspraak van de Raad van State*, *Centrale Raad van Beroep* and *College van Beroep voor het Bedrijfsleven* in the Netherlands). Austria, Belgium and France (but not the Netherlands) also have a constitutional court (*Verfassungsgerichtshof* in Austria; *Cour constitutionnelle/Grondwettelijk Hof* in Belgium and *Conseil Constitutionnel* in France).

Third, the German *Bundesgerichtshof* is the highest court in matters of civil and criminal law, which also includes civil and criminal procedure. In contrast to the other nine countries, Germany has, however, five special supreme courts for constitutional matters (*Bundesverfassungsgericht*), administrative law (*Bundesverwaltungsgericht*), employment and labor law (*Bundesarbeitsgericht*), social security law (*Bundessozialgericht*), and tax law (*Bundesfinanzhof*).<sup>16</sup>

These differences in subject matter jurisdiction have to be taken into account in the interpretation of our results. Moreover, we have identified the precise area of law of each decision that cites one of the other supreme courts (see also 2.2 below). In a separate

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<sup>15</sup> To avoid a distortion of the data we have also not included decisions on insurance matters for 2007.

<sup>16</sup> See Art. 95 of the German Basic Law (*Grundgesetz*).

paper we paper will therefore be able to explain and analyze the relationship between cross-citations and different areas of law in detail.

#### **2.1.4. The total number of decisions**

Table 1 shows that not only the absolute number of cases but also the decisions per capita are very disparate in the ten countries of this study. These differences are not easy to explain. Partly, the reason may be variations in the subject matter jurisdiction of the supreme courts (see 2.1.3 above). For instance, the broad scope of powers of the supreme courts of Switzerland, Italy and Spain may be reflected in the fact that they decide ten times more decisions per capita than the German Supreme Court (see Table 1).<sup>17</sup>

However, many further reasons may also be decisive for the number of supreme court decisions in a particular country. For instance, one could compare the appeal requirements and procedures of the different supreme courts: is there a special admission procedure for appeal (and if yes, is the appeal allowed by the lower court or the supreme court itself)? Are appeals to the supreme court possible for small claims? How expensive is a normal appeal in terms of court and lawyer fees? Which issues can be re-examined in an appeal? Are appeals decided quickly and reliably? How often are appeals successful? How are appeal decisions made: are there written interlocutory rulings, for instance, on the admission of the appeal (and if yes, are such rulings published in the court's database)? Do all judgments have to be delivered in writing, and are summary decisions allowed? Is it possible (and common) that parties waive their right to a written judgments, or that they settle claims in the appeal stage?

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<sup>17</sup> In the Swiss database one can also search for the decisions in matters of civil and criminal law: these are 10,266 decisions for 2000-2007, which reduces the decisions per 1,000 persons from 3,70 to 1,38.

The quantity of supreme court decisions also depends on the number of decisions of the lower courts. Here too similar factors play a role, such as the admissibility of an action, court and lawyer fees, the speediness of trials, and the possibility of a settlement, as well as the availability of legal aid and class actions.<sup>18</sup> Moreover, a variety of circumstances are decisive for the number of trials in the first place: is the society harmonious or individualistic? Is it common to solve conflicts by arbitration, mediation, or other informal forms of dispute resolution? Is there a high level of crime in the society? Is the country an influential business centre? And, importantly, how does the substantive law affect the number of trials: for example, can parties use self-help to enforce contracts? Does the law provide many protections to the weaker party of a contract (consumer, employee, tenant etc.)? Is there a strict criminal and tort law? Is there a strong protection of property rights etc.?

It would be the topic of a separate empirical project to examine all of these factors in detail in order to explain the differences between the quantities of supreme court decisions per capita. Presumably, this would lead to a distinction between different legal origins. It is usually said that in England court and lawyer fees are higher than in continental Europe (Zweigert & Kötz, 1998: 206; but see also Hodges et al., 2009). Moreover, English law offers less protection to the weaker party, for instance employees, than most continental European countries (Deakin et al., 2007). It may also matter that in France judgments tend to be very short, with the result that more appeals may be allowed than in the English-speaking world (Bell, 2006: 47, 104, 302). Overall, it is therefore plausible that, according to Table 1, the supreme courts of the two Common

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<sup>18</sup> For empirical data on these issues see European Commission for the Efficiency of Justice (CEPEJ) (2008).

Law countries of our study (England and Ireland) deliver considerably less decisions per capita than the four French Civil Law countries (France, Belgium, Italy and Spain).

## 2.2. Search methodology

In order to locate citations to foreign courts covered by our study, we compiled an extensive list of search terms. Since the goal of the search was to identify all citations, it would not have sufficed to identify the one “correct” translation of the name of the cited court in the language of the citing court. We found that courts use a variety of translations and abbreviation to refer to foreign courts. Thus, we attempted to be as comprehensive as possible in order to avoid missing citations that are relevant to our study and included all citations that seemed linguistically plausible, even if they seemed wrong or inaccurate to us. We also used the name of the court in the original language as a search term in other countries, for instance, *Bundesgerichtshof* for the German Federal Supreme Court. Furthermore, where relevant, we also searched for commonly used abbreviations of the official reports.<sup>19</sup>

We did not expand our list of keywords to include the names of specialized supreme courts (see 2.1.3 above), nor did we search in the database sections of these courts. This creates some imbalance between countries with or without these specialized supreme courts. However, this only concerns the fringe fields where such courts exist but not decisions (and citations) in civil and criminal law which are the core interest of

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<sup>19</sup> For instance, for the German Federal Supreme Court we have used the following search terms: Bundesgerichtshof, BGH, BGHZ, BGHSt, Federaal Gerechthof, Federale Gerechthof, Federale rechter in Duitsland, Duitse Hooggerechthof, hoogste Duitse rechter, Duitse hoogste rechter, Cour fédérale, Cour fédérale de justice, Cour de justice fédérale de l’Allemagne, Cour de cassation allemande, Cour de cassation de l’Allemagne, corte di cassazione tedesca, corte di cassazione della Germania, corte federale suprema, corte suprema federale, corte federale tedesca, corte federale della Germania, Tribunal Supremo de la República Federal Alemania, Tribunal Supremo Federal, Tribunal Supremo de Alemania, German federal supreme court, German supreme court, supreme court of Germany. We also included citations to the court’s pre-1945 predecessor, the *Reichsgericht*, in our sample.

our study (see 2.1.2 above). With respect to our actual search results, the effects of this imbalance are minute.<sup>20</sup> Moreover, as explained later (see 5.1), our regressions include dummy variables for the citing countries.

We conducted full-text searches in databases covering the case law for the period from 2000 to 2007. In all countries, we first looked at the actual decisions. Where they were available, we also included opinions by the reporting judge or the *avocat général* (general advocate) to account for national divergences in citation style. Given that we included 10 jurisdictions in our search, we searched for citation to 9 foreign courts in each jurisdiction, bringing the total number of permutations to  $10 \times 9 = 90$ .

As a first step, we selected the databases to use, which are listed in Table 1. In Austria, Belgium, France, Ireland, the Netherlands, Spain and Switzerland we were able to use freely accessible sites provided by the respective court or government, while in Germany, Italy, and the United Kingdom we had to use commercial databases in order to get the full-text functionality that would allow us to search in the text of the opinions.

For France, the Netherlands and Belgium we also included the opinions of the advocate generals where available. In France, we also looked at the opinions of the reporting judge (*conseiller rapporteur*) where they were available online.<sup>21</sup> The purpose of these documents is to prepare the necessary research and analysis for the court in order to allow it to issue a decision that will take all applicable authorities into consideration. Inclusion of these documents was necessary in order to allow us to provide functional equivalence to other countries. Judicial style varies greatly between them, which has of

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<sup>20</sup> For instance, out of the 1430 citations (see 3.1 below) we only have 17 cases on tax law and 6 on employment/labor law.

<sup>21</sup> A French correspondent told us that it would be possible to obtain hardcopies of all opinions at the courthouse. Identifying cross-citations in tens of thousands of documents would not have been feasible for us.

course a great impact on the findings. While, for example, common law judges or the courts in German-speaking countries often write comparatively long opinions, French decisions tend to be short in written in an idiosyncratic formulaic style (see also Andenas & Vogenauer, 2010). The legal justification of a decision, including citations, that in other systems would be found in the decisions themselves, will therefore often appear only in the opinions of the reporting judge or advocate general (see also Bell 2006, 75). In other words, only all of these documents together will provide an analysis comparable to the one found, for instance, in an opinion of an English court.

Other than in Belgium or the Netherlands, where the general advocate's statements are included in the same database as the judicial opinions, in France they are not included in the government-operated Legifrance database.<sup>22</sup> A small selection is available at the *Cour de cassation's* website,<sup>23</sup> where we used the Google search function to locate citations. We were therefore unable to provide complete coverage of citations by the highest court of France.

We checked all citations and classified them according to (a) the reason why foreign courts have been cited: history/jurisdiction, international/EU law, or (pure) comparative law (see 3.1 below), and (b) the respective area of law (see 2.1.3 above). We excluded false positives. For example, when the German Federal Supreme Court cites an "OGH", it could either be referring to the Austrian Supreme Court, or to the Supreme Court for the British Zone of Occupation in Germany that sat in Cologne from 1948 to 1950.

A special problem arose for the citations from the High Court of Ireland to the Court of Appeal of England and Wales. Unfortunately, these citations cannot be identified by

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<sup>22</sup> <http://www.legifrance.gouv.fr>

<sup>23</sup> <http://www.courdecassation.fr>

search terms because the High Court often cites the Court of Appeal by using the names of the parties and the journal in which the decision is published, but it does not reveal whether it is really a decision of the Court of Appeal - and not that of another English court. Thus, we had to use a sample of cases. We examined 120 random High Court decisions, checking precisely which UK courts (if any) have been cited. The result (23 citations to the Court of Appeal) could then infer how many of all High Court decisions are likely to have cited the Court of Appeal.

While we reviewed all citations, we included them irrespective of how they are used by the particular court. The type of use also varies greatly between different legal cultures;<sup>24</sup> for example, in English or Irish courts, relevant prior cases are frequently cited and often analyzed in detail, with a careful analysis of the facts in each case, given the doctrine of *stare decisis*. While courts in the German-speaking countries often write lengthy opinions as well, their focus is on doctrinal analysis. Academic writing on issues where the law is not yet settled is often dissected, and courts sometimes give their blessing to a particular academic's theories. Court decisions are also cited frequently; however, the citation usually neglects the particular fact pattern underlying and merely provides a reference to the statement about the law made in the prior decision, similar to how the courts would cite an academic commentator's opinion. Some citations are made "in passing" (e.g. in the form of "see also..."), where it would not be too unusual to encounter a list of several citations without any detailed analysis of any of them.<sup>25</sup> For

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<sup>24</sup> See e.g. Zweigert & Kötz, 1998, 71-72; Siems, 2010: 161.

<sup>25</sup> This appears to be particularly common in the German-speaking countries. In his comparative study of the use of academic writing by the courts, Hein Kötz observes that many citations are made whose purpose it is "to 'pad' the judgment by having a law clerk, in support of a fairly evident proposition, unearth all the authors who take the same view" (Kötz, 1990, p. 194). Some cross-citations are clearly made for

purposes of our study, we included all citations, regardless how it is ultimately used as a rhetorical point.<sup>26</sup>

There were some special cases where one could find arguments in favor or against including the citation in our database:

First, courts (particular the English and Irish courts) sometimes cite foreign cases without providing an unambiguous reference to a particular case, or even by referring to the jurisprudence of a particular foreign court in general. We decided to include all of these citations (as long as the reference could be attributed to a particular court), given that they nevertheless illustrate a foreign influence.

Second, occasionally a court will cite several foreign decisions, or even several foreign courts in one opinion. We have included such cases in the database for each time for each foreign court that was cited. When one foreign court was cited several times, we sometimes had to make a judgment whether which of the two cites would be more relevant for categorizing the citation as belonging to a particular field of law. These cases are in fact relatively rare. We found 17 such cases with citations to multiple countries in Austria, and one in Switzerland.

Third, in a few cases, citations occur in verbatim quotations from academic articles (i.e. doctrinal scholarship that provides an interpretation of the law). We included these in the database as well, given that they equally demonstrate influence of foreign law. We did the same in cases where the citation occurred in the context of a preliminary reference decision by the ECJ (more on this below in section 3.1).

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the same purpose, particularly among the numerous citations by the Austrian Supreme Court to the German Federal Supreme Court.

<sup>26</sup> Weighing citations by their significance within the decision would have been theoretically possible, but it would have been very difficult to assign court decisions to the appropriate categories in an objectively.

Fourth, in rare cases the Austrian and Dutch supreme courts use the same boilerplate text in decisions addressing similar legal issues. We counted each case separately, since the citing court apparently considered the foreign citation important enough to use it again. Moreover, it would be difficult to draw a line between very similar and identical phrases and sentences.

### **3. Descriptive statistics**

#### **3.1. Why are foreign courts cited?**

We have identified three reasons why foreign courts may be cited (see Table 2): (a) case history and jurisdiction an issues; (b) an underlying European or international legal basis; and (c) purely comparative reasons.<sup>27</sup>

Citations of type (a) are the ones a court usually cannot avoid. Such citations are made in two situations. First, a prior decision by a foreign court might be part of the fact pattern the led to the case pending by the citing court. For example, in a custody dispute a foreign court may already have issued a decision; or the court could simply mention that one of the parties had been order by a foreign court to take a particular action before the currently pending case arose. Second, a court would have to cite a foreign court if the latter had previously decided about jurisdictional issues in the same case.

Citations of this type are not exactly what we were looking for in this study. To some extent they may illustrate economic and social interaction between two countries, but they have no bearing on a possible transnational dialogue between the courts, or the

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<sup>27</sup> For similar classifications see Smits 2006; Örüçü, 2007; Siems, 2010.

influence of foreign legal arguments. The total numbers are therefore reported in Table 2, but we do not include them in our regression analysis.

Citations of type (b) are made when a foreign court had to deal with the same legal source as the citing court, such as an EU directive or an international treaty such as the UNCITRAL Convention on the Sale of Goods. While in the case of an EU instrument, the ECJ has binding authority on interpretation (Treaty on the Functioning of the European Union, art. 267), it does not in the second case. Foreign courts that had to decide on an issue of the respective piece of international legislation might provide persuasive authority, very much like an opinion about the UCC from one US state might be before another state's courts.

Citations of type (c) are the most interesting ones, because courts are not compelled to make them at all. These kinds of citations are simply made for comparative reasons, without there being an underlying harmonizing legislative instrument.<sup>28</sup> True, there are some cases where laws from one country were enacted in another one without many changes. For example, much of the German commercial and corporate law was introduced in Austria in 1938 with some modifications, and not repealed after 1945 (e.g., Siems, 2004). While (West) German legislation in these fields continued to influence Austrian legislation, the laws have diverged in many respects since then, and the Austrian courts were by no means required to follow German precedent. Other than in category (b), there is no international instrument that harmonizes these laws in a common legal framework. Even in special cases like this, we have therefore included

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<sup>28</sup> Reasons for this kind of citations may include that the law of the citing state appears to have a gap, or that the court has to address a major social question that has not been addressed within the domestic legal system yet (see e.g. Canivet 2006: 1391-1395). For instance, in the course of our search we found several cases addressing issues such as "wrongful life" or how to deal with a comatose person. However, quantitatively these cases are only a small minority.

citations in category (c). In fact, in our sample most Austrian citations to German court decisions are not in the fields where German legislation was influential, but in civil law, where comparative citations were completely “unforced.” The obvious reason is that the number of civil law decisions is much larger than that in commercial and corporate law. Table 2 shows that in total we have found 1,430 instances in which the supreme court of another country in our sample has been cited. 75% of these citations have been made for purely comparative reasons, 18% can be related to European or international law, and the remaining 7% fall under the category history and jurisdiction.

[Table 2 about here]

It is also possible to identify differences between the propensities to cite foreign supreme courts. The two courts that are most activist in terms of foreign citations, the High Court of Ireland and the Austrian Supreme Court, have a very high proportion of comparative citations. These data are driven by citations to the German Federal Supreme Court by the Austrian court, and to the Court of Appeal of England and Wales by the Irish one (see also 5.2.1 below). Switzerland has the highest numbers of cases in the “history and jurisdiction” category. Most of these cases refer to special problems of immigration law and international criminal procedure, which would not arise for the other nine countries since all of them (but not Switzerland) belong to the EU. England has a high number of citations due to EU or international law, but only very few comparative citations. A possible explanation is that eight of the other nine countries are civil law jurisdictions,

and that the Court of Appeal of England only takes decisions from these countries into account if this is “obvious” because of some international or European dimension.

Furthermore, it may be striking that the supreme courts of France, Italy and Spain have only cited twenty or less decisions of the other supreme courts. Thus, these courts do not use foreign law as a justification for a judicial decision. However, this does not necessarily mean that in these jurisdictions foreign court decisions are regarded as irrelevant. The low number of citations may simply reflect differences in citation style between the ten courts. Moreover, there may be other ways in which foreign developments are taken into account. For instance, the annual report of the French *Cour de Cassation* regularly considers developments in other jurisdictions.<sup>29</sup>

These unobserved differences are also a problem when we will try to identify why particular cross-citations take place. Our regressions address it as follows: in some of the models we use dummy variables for the citing courts, and in others we focus not on the absolute number of citations but the citations per all foreign citations of this particular court (for details see 5 below).

### **3.2. Which courts are cited most often?**

This paper is interested in how often the ten supreme courts are cited by the other nine supreme courts. Tables 3 and 4 present the core univariate statistics of these 90 observations. For the purpose of our regression analysis, our dataset was arranged in the form of relationship between two countries, i.e. each observation describes how often a specific court was cited by a specific other court.

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<sup>29</sup> See, e.g., the 2008 Report (available at [http://www.courdecassation.fr/IMG/pdf/Cassation\\_2008.pdf](http://www.courdecassation.fr/IMG/pdf/Cassation_2008.pdf)), at pp. 449-463. More generally on the international activities of the Cour de Cassation see [http://www.courdecassation.fr/activite\\_internationale\\_5/](http://www.courdecassation.fr/activite_internationale_5/).

Table 4 shows that there are considerable differences in “popularity”: the supreme courts of Germany and England are cited fifty times more often than the ones of Spain, Italy and Ireland. However, there is also a lot of variation, as evidenced by the high standard deviations.

[Tables 3 and 4 about here]

In a companion paper (Gelter & Siems, 2010) we will provide detailed matrices on the cross-citations between these ten supreme courts. We also visualize the cross-citations with network pictures, and use cluster analysis in order to identify groups of countries. The preliminary result is that Austria and Germany, Belgium and the Netherlands, and England and Ireland are part of the same hierarchical cluster. Switzerland joins Austria and Germany, and France joins Belgium and the Netherlands in the next step. Subsequently, these six countries form a cluster. Italy and Spain are outsiders since they neither cite nor are not cited by the other supreme courts.

For the purposes of the present paper it is sufficient to visualize the cross-citations between supreme courts in a simple hand-made picture (Figure 1). The strength of the lines is determined by the cross-citation in question. The direction of the arrows denotes the influence a legal system has on another one, for instance, the strong arrow from the ENG to IRL means that the High Court of Ireland has often cited the Court of Appeal of England and Wales.

[Figure 1 about here]

## **4. Possible explanations for differences in cross-citations**

Judicial openness to foreign influence could be driven by a number of indicators. The variables we use in our analysis broadly fall into four categories: (a) population size; (b) language; (c) legal origin; (d) geographic and cultural proximity.

[Tables 5 and 6 about here]

### **4.1. Size of the cited country**

First, it seems plausible that the courts of larger countries are more frequently cited than those of smaller countries. Larger countries generally often exert a dominant cultural influence over others, particularly ones that are culturally relatively similar. The influence is usually unidirectional, or at least asymmetric in favor of the larger country. For example, Canadians often watch US television channels, which are readily available to them as part of the basic cable package, while Americans rarely watch Canadian TV. The same applies to the relationship between Ireland and the UK, Belgium and France, and Austria and Germany.

Similarly, lawyers, judges, and legal scholars in the smaller country in such an asymmetric relationship often are aware of current legal developments in the larger one, while jurists from the larger country remain ignorant about developments in the smaller one. Judges in the smaller country may therefore feel inclined to refer to foreign law if the cite suits their needs. Furthermore, it seems reasonable to believe that new legal

problems will first arise in the larger country and therefore reach the respective supreme court first.<sup>30</sup>

Our data seem to bear out this intuition very strongly, given that Ireland and Austria, two countries that are the junior partner in such a relationship, are the two countries with clearly the largest number of cross-citations (Ireland cited England 452 times, Austria cited Germany 464 times from 2000-2007). In the regression analysis, we test this hypothesis with two variables, namely the total population of the cited country in millions (*pop\_cited\_mill*), and the ratio between the population of the cited to the citing country (*pop\_ed\_by\_ing*).

## 4.2. Language

Language is another explanatory factor for cross-fertilization of legal ideas (Siems, 2007, 72-73). Judges will obviously only cite cases they can read and understand. We test this hypothesis with two variables. First, we use *same\_lang* as a dummy variable that equals one when the main language of the citing and the cited country are the same one. In order to define what we mean by main language, we used a 20% cutoff. Unfortunately, there are ambiguous cases in our sample, namely Belgium and Switzerland. In Belgium, neither Dutch nor French clearly dominates (60% of the population speaks Dutch, 39% speaks French). All cases are available in both languages. Both languages are counted as main languages of Belgium in our analysis.

In Switzerland, German is the majority language, but there are sizable French- and Italian-speaking minorities and a tiny Romansh-speaking one. Our cutoff includes

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<sup>30</sup> While Table 1 shows that the total number of supreme court cases is not necessarily proportionate to the population of the larger country, new legal issues – where cross-citations are likely to happen – are still likely to reach the respective supreme court.

German and French, but does not include Italian, which is spoken by about 7% of the population. Cases of the Swiss *Bundesgericht/Tribunal fédérale* are usually available only in one of the three biggest languages. The classification of French as a main language is justified by the significance of the French language in Swiss legal culture. Legal journals are often bilingual in German and French, and French cases are overrepresented among the cases by the Swiss Federal Tribunal (which is located in the French-speaking city of Lausanne): While French speakers only account for only a little more than 20% of the Swiss population, 34.70% of all cases are in French. Italian does not play a comparable role – the percentage of cases is almost identical to the percentage of the Italian-speaking population –, and there is not even an Italian-speaking law faculty in Switzerland.<sup>31</sup> There are no supreme court cases in Romansh. The second language variable we use – *perc\_lang* – is more nuanced and measures the percentage of the population of the citing country that speaks the language of the cited country, either as first language or as a second or third language.<sup>32</sup> While judges enjoy a higher level of education than the average of the population, knowledge of languages in general is likely to correlate with that of judges, for which no data are available. Again, we had to make a judgment call how to deal with Belgium and Switzerland. In the Belgian case, we decided to use the higher percentage of people knowing either Dutch or French, since all cases are available in both languages. For a judge deciding whether to read a Belgian decision, it is only necessary to be able to read one of the two languages. By contrast, in Switzerland each decision is available only in one language.

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<sup>31</sup> The *Università della Svizzera italiana* in Lugano does not have a law faculty.

<sup>32</sup> For the nine EU countries of our sample this is based on Eurobarometer (2006: 152-154). For Switzerland we used the data collected by the Institut für Sprachwissenschaft at the University of Bern, see [http://www.isw.unibe.ch/content/forschung/archiv\\_projekte/sprachkompetenzen/index\\_ger.html](http://www.isw.unibe.ch/content/forschung/archiv_projekte/sprachkompetenzen/index_ger.html).

A judge seeking to cite a particular decision would therefore need to know that particular language (or have it translated or explained by a speaker of that language). In order to determine what percentage of each other country spoke the fictitious “Swiss” language, we added the percentages of the population speaking French, Italian and German after weighting each of them with the percentage of cases issued in the respective language by the Swiss Federal Tribunal.

### **4.3. Shared legal traditions**

Our third group of control variables relates to legal origin, a concept that has attracted considerable attention in the comparative law and economics literature during the last decade. Traditional comparatists have long classified European-derived legal systems into those deriving from the English “common law” on the one hand, and “civil law”, which is said to be derived from Roman law on the other. The second group is often subdivided into a French, German, and Scandinavian subgroups (Zweigert & Kötz, 1998).

Following the pioneering work of a group of scholars known as LLSV (La Porta et al., 1998), economists have empirically traced back various economic and social outcomes to the classification of countries to those four groups (La Porta et al., 2008, provide an overview). However, it is not completely clear whether these purported consequences can be directly be traced to differences in the legal system, or rather other aspects of social control that were transplanted throughout the world by conquerors and colonists. Furthermore, it is an enigma why they seem to persist in spite of very different social and economic circumstances to which different countries are subject (see Armour et al., 2009a). One possibility is that high court judges are relatively slow to adapt to

developments going on elsewhere in society, given that they typically received their education several decades before being promoted to the respective supreme court. Spamann (2009) suggests that legal ideas continue to diffuse from former colonial powers to former colonies through channels such as development aid or student migration, which may play a role in the continued significance of purported legal origins. These factors are arguably less relevant in developed Europe, but there may be others that tie origins groups together. While he focuses primarily on citation in treatises, citations between high courts might provide such a channel of diffusion between countries belonging to the same “legal origins” group, given that solutions judges have found in a similar legal system are likely to be more amenable to the recipient systems than others. Judges might also find it easier to understand these decisions, given similarities in judicial style and legal education.<sup>33</sup>

Following the classification used by most traditional comparatists and economists in the “law and finance” line of work, our study covers two jurisdictions of the common law group (England and Wales, Ireland), three of the German civil law group (Austria, Germany, Switzerland), and five of the French civil law group (Belgium, France, Italy, the Netherlands, Spain). We use a variable *same\_orig\_LLSV* to account for intra-group citations. In a recent paper, Armour et al. (2009b) raise doubts whether the classification of the Netherlands as part of the French group is warranted: it is true that Dutch law used to be influenced by the Napoleonic codes; however, it has gradually moved away from France and closer to German law. We use *same\_orig\_ADMS* as a dummy variable to test legal origins under this alternative classification where the Netherlands are part of

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<sup>33</sup> For a more detailed discussion of possible reasons, see Spamann (2009, 45-52).

the German civil law group. As described below in section 5, this variable seems to work better in our regressions, which might be read as indicating a closer integration into the German group as far as contemporary legal developments are concerned.

#### 4.4. Culture

The fourth group of variables relates to geographical and cultural distance between countries. With respect to geography, one would ideally require data about the distances between the mean centers of population for all countries, which we have been unable to obtain. As a crude proxy for geographical vicinity, we have used a dummy variable called *neighbors*, which equals one when the citing and cited country share a land border.

A more important factor is likely to be cultural proximity. A citation to a decision from a culturally close country is likely to be more valuable, since an opinion will typically be more acceptable to the population and legal profession of the citing country if it is in line with its values. Licht et al. (2005) provide data showing that culture may play a role for the law; according to their data, countries with similar values tend to provide similar levels of investor protection.

We use two separate variables to measure the cultural distance between two countries, based on the cultural value studies by Hofstede (1980) and Schwartz (e.g. Schwartz, 1999; Licht et al., 2005; see also Schwartz 2007). Each of these authors conducted a qualitative survey among similar situated individuals in each particular country and, on the basis of these responses, created indices for various cultural dimensions in which

these countries differ.<sup>34</sup> The indices compiled by both authors are widely used to measure how a certain aspect of a country's culture might affect a certain economic or legal outcome, for instance, investor protection (Licht et al., 2005) and foreign investors' property rights (Lehavi & Licht, 2010). Since we are interested in cultural differences between countries, we calculated an indicator of the cultural difference for each combination of citing and cited country on the basis of Schwartz' and Hofstede's indices. For that purpose, we took the absolute value of the difference between the values on each cultural dimension in the Hofstede and Schwartz indices and summed them up (*Hofstede\_diff* and *Schwartz\_diff*). Two countries with a low "distance value" could be considered culturally close to each other according to the data collected by these two scholars.<sup>35</sup>

#### 4.5. Economic and other indicators

Finally, we have included three further indicators in our regression analysis, namely the cited country's rank in the Doing Business report (*rank\_cited*),<sup>36</sup> Djankov et al.'s (2003) composite corruption index (*not\_corrupt\_cited*),<sup>37</sup> and the natural logarithm of the GDP per capita of the cited country in 1999 (*ln\_GDPpc\_cited*). The idea here is that the hospitability of a particular country for business, a strong economy and a judiciary with

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<sup>34</sup> Hofstede's cultural dimensions are power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation. Schwartz' cultural dimensions are embeddedness, hierarchy, mastery, affective autonomy, intellectual autonomy, egalitarianism, and harmony.

<sup>35</sup> The first versions of Schwartz' dataset did not cover Belgium. Therefore, we calculated hypothetical values for this country by weighing the values for the Netherlands and France with a factor of 60% and 40% respectively (mirroring the approximate size of the Flemish and Walloon population). The regressions of sections 5.2.1, 5.2.2 and 5.3 rely on this approach. Recently, we have received an updated version of Schwartz' dataset which includes Belgium. We have already used this data in sections 5.2.2 and 5.3.2, and will also re-calculate the other regressions in due course.

<sup>36</sup> Despite concerns about the validity of these data. See references in Siems and Deakin (2010).

<sup>37</sup> For a critical comment see Kern (2007: 83-4).

relatively little corruption might make the country's legal system appear to be a model that should be emulated.

There are other potentially relevant factors that we have not included in our quantitative analysis: we already mentioned the citation style in general, which differ strongly between legal systems and are highly idiosyncratic on the country level, and differences in the jurisdiction between the high courts (see above 2.1.3). Furthermore, the availability of translated versions of foreign decisions or the existence of law clerks and other support staff could increase the probability of making a cross-citation. A larger problem for our study is the possibility that some courts may be not able to cite foreign law (or even anything else beside the applicable codes and statutes) openly, either due to a legal prohibition or to a social constraint. This seems to be the case particularly in France and Italy (Alpa, 2005, 102; Markesinis & Fedtke, 2005, 26-30).<sup>38</sup> Finally, it may matter who the judges of the ten supreme courts are because training, appointment and promotion of judges differ widely between European countries (see Bell 2006, 13-24; Guarnieri & Pederzoli 2001: 18-44). Our regressions will use mechanisms to control for these factors of the citing country.<sup>39</sup>

[Table 7 about here]

Table 7 is a correlation matrix showing the correlation between our independent variables. Generally, we do not have any correlations higher than 0.90, which indicates that there are no acute problems of multicollinearity.

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<sup>38</sup> In Italy, DISPOSIZIONI PER L'ATTUAZIONE DEL CODICE DI PROCEDURE CIVILE art. 118 explicitly prohibits any citation of "legal authors" in court decisions.

<sup>39</sup> For details see 5.1 below.

## 5. Regression results

### 5.1. General considerations

The following regressions distinguish between two types of dependent variables. The first regressions (see 5.2 below) use the absolute numbers of citations of one country to another one as dependent variables (i.e. in total ninety relationships). Since the absolute number of citations depends on various characteristics of the citing court, such as ease of appeal and citation style (see 2.2, 3.1, and 4.5 above), we also include dummy variables for nine of the citing courts (with Switzerland as the reference category). Secondly, we use the citations per all foreign citations of this court (see 5.3 below). Thus, here too, we examine ninety relationships; however, the use of proportions already takes care of unobserved differences between citing courts, making it obsolete to use country dummies.

The main difference is that in the first type the relationships with high absolute numbers of citations play a greater role than in the second type where all observations are scaled between one and zero. In favor of the first type one could say that our data are more reliable for courts with many cross-citations. In favor of the second type it can be argued that the absolute numbers of cross-citations are influenced by so many unobserved factors that it is preferable to treat each citing court equally. Since there is no a priori reason why either of these two types should be preferable, we report both types of regressions.

Other types of regressions are also conceivable but we have decided against them. For instance, one might suggest using the ratio of citations per all cases of a particular court as dependent variable. However, it is not clear to what extent the number of cross-

citations is affected by the total number of decisions. One might suspect that cross-citations typically occur in the most important cases, in which there will be an appeal to the respective supreme court in every country. Thus, theoretically, the total number of decisions need not affect the number of cross-citations at all. Moreover, there is the problem that there are many factors that determine whether courts cite foreign courts at all. Thus, when one uses proportions, it is preferable to examine the citations per all cross-citations of this particular court (see 5.3 below).

Another suggestion would be to use a two-stage estimation procedure. Helpman et al. (2008) use such a method for trade flows since it could predict positive as well as zero trade flows across pairs of countries. Our dataset could be regarded as similar because we have a number of observations with zero citations (see 5.2.1 below). However, there is no apparent reason why our zero citations may need to be explained differently from the positive citations. Moreover, we will test explicitly whether and to what extent our results would be different without the zero citations (see 5.2.2 below).

## **5.2. Regressions with absolute numbers of citations**

### **5.2.1. OLS Regressions**

We started with an OLS regression with the absolute number of citations of one country to a specific other country as dependent variable. Independent variables are the ones described in the previous part (see 4 above) and the dummy variables for the citing courts (see 5.1 above).

[Table 8 about here]

The main results (Table 8) of the regressions are as follows: Many of the independent variables are significant; the regression supports the population, language and culture theories, but only to a lesser extent the legal origins and economic theories. Among the population variables, the ratio of population between cited and citing country (*pop\_ed\_by\_ing*) provides a slightly better fit than the population of the cited country as such (*pop\_cited\_mill*), while the percentage of speakers of the language of the cited country (*perc\_lang*) is slightly better than the dummy variable for two countries sharing the same main language (*same\_lang*). While legal origins according to LLSV (*same\_orig\_LLSV*) is significant in one reported specification, legal origins according to Armour et al. (*same\_orig\_ADSM*) is more strongly significant. However, it is greatly weakened by the inclusion of cultural variables and loses its significance except in one specification. Among the geographical cultural variables, only the cultural distance according to Schwartz (*Schwartz\_diff*) is significant (in fact quite strongly in some specifications). Among the economic variables, only the Doing Business rank (*rank\_cited*) is weakly significant.

[Figure 2 about here]

However, a problem with these regressions is that two of the 90 observations dominate the results. Austria has cited Germany, and Ireland has cited England more than 450 times, whereas the other observations have single or at best low double digit numbers. The distorting effect of these two observations can also be shown by Figure 2, which plots the regression standardized residual and the regression standardized predicted

value. Even more importantly, there is a clear negative relationship between the values of the residual and the predicted values in Figure 2, indicating heteroscedasticity.

A semilogarithmic regression can tackle some of these issues. Here, we use the natural logarithm of the absolute number of citations to a specific country.<sup>40</sup> This reduces the effect of the two outliers and it may also improve the relationship between residuals and predicted values. With respect to the independent variables, we also tried the natural logarithm of the population of the cited country. However, this did not improve the model. Table 9 is therefore based on a semilogarithmic regression model.

[Table 9 about here]

We can observe the following differences from the linear OLS regression (Table 9): the population of the cited country (*pop\_cited\_mill*) does better than ratio of populations (*pop\_ed\_by\_ing*), while the same main language variable (*same\_lang*) provides a better fit than the percentage of speakers of the cited country's language (*perc\_lang*). While legal origins according to LLSV (*same\_orig\_LLSV*) is not significant, the variable using Armour et al.'s classification (*same\_orig\_ADSM*) is more strongly significant than in the linear OLS model and even survives the inclusion of cultural and economic indicators. This time, the dummy variable for a shared border (*neighbors*) variable holds up, while the cultural distance according to Schwartz (*Schwartz\_diff*) is not as significant as in the previous set of regressions. All of the economic indicators are significant when included separately.

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<sup>40</sup> To be precise, the natural logarithm of the absolute number + 1 since we did not want to lose the observations with zero cross-citations.

[Figure 3 about here]

Figure 3 plots the regression standardized residual and the regression standardized predicted value: the points are more evenly dispersed than in Figure 2 and the two outliers play a lesser role. However Figure 3 too shows that between -2 and 0 of the standardized predicted value we have a clear negative relationship between the values of the residual and the predicted values, possibly leading to heteroscedasticity.<sup>41</sup> One way to tackle this problem would be to modify our semilogarithmic regression model. However, given the nature of our dataset, another type of regression is preferable.

### 5.2.2. Negative Binomial Regression

Our dataset on cross-citations counts how often courts have cited particular foreign supreme courts. Such count data point towards Poisson or negative binomial regression models.<sup>42</sup> In particular, such types of non-linear regressions are necessary when the dependent variable tends to take very low values (or even zeros). This is case here, as illustrated by Figure 4.

[Figure 4 about here]

Poisson is the default option. However, negative binomial is preferred in cases of "overdispersion", i.e. when the variance is larger than the mean (see, e.g., Coxe et al.,

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<sup>41</sup> White's test statistic for heteroscedasticity is 23.60 (p-value 0.13). Thus, we (just) do not reject the null hypothesis of homoscedasticity. However, White's test tends to have a low power, and works best for large samples.

<sup>42</sup> For an applied comparison between Semilog, Poisson and negative binomial regressions see Hellerstein (1991).

2009: 131-2). This can be checked by way of the Pearson chi-square statistic, which should be close to 1 in both Poisson and negative binomial regressions. In the present case, a comparison of the Pearson chi-square statistic has led us to the result that we should use negative binomial because a Poisson distribution would be subject to overdispersion.<sup>43</sup>

[Table 10 about here]

Table 10 summarizes the initial results of our negative binomial regressions. According to model (12) the number of cross-citations depends positively on the population of the cited country, similarities in language, language skill, legal origin (based on Armour et al.), culture (based on Schwartz), and a low level of corruption. The logarithm of GDP was found to be significant in model (11), however, the significance disappears when the corruption variable is added to the regression model (not displayed here). Interestingly, including both language variables improves the model. Thus, it seems to be the case that, on the one hand, language skills matter but, on the other, a common native language has an additional positive impact on cross-citations.

[Figures 5 and 6 about here]

Are these regressions reliable? In Figures 5 and 6 we have examined the standardized residuals of regression (12). Figure 5 is an improvement to Figures 2 and 4 but for the

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<sup>43</sup> In model (12) of Table 10 the Pearson chi-square statistic of a negative binomial regression is 0.723 whereas it is 2.322 for a Poisson regression.

values between -2 and 0 there is still a negative relationship between the values of the residual and the predicted values. The histogram of the residuals in Figure 6 resembles a normal distribution. However, there is also some skewness and kurtosis, and formal tests lead to a rejection of normality.<sup>44</sup> Possible explanations for this problem are the two outliers (see 5.2.1 above) and the high number of zero citations (see Figure 4). For that reason we have also run regressions without these observations.

[Table 11 about here]

Model (13), Table 11, is a modification of model (12), Table 10, but it omits the two outliers. The coefficients are very similar in both models. Unfortunately, this is also the case for the diagnostic scatterplot and the histogram (not displayed here), with the same problems as in Figures 5 and 6. In models (14) and (15) we have omitted the zero citations. Model (14) is the equivalent to model (12); however, two of the variables (*same\_lang*, *same\_orig\_ADMS*) lose their statistical significance. Without the same language variable the variable on legal origins becomes significant again – thus, here we prefer model (15) with just one language variable (*perc\_lang*).

[Figures 7 and 8 about here]

The diagnostic figures of model (15) look better than the previous ones. In Figure 7 we only have a slight downward trend. Figure 8 is closer to the normal distribution than

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<sup>44</sup> Kolmogorov-Smirnov statistic: 0.129 (significance: 0.001); Shapiro-Wilk statistic: 0.963 (significance: 0.012).

Figure 6, and we do not reject the null hypothesis of normality.<sup>45</sup> We can therefore confirm that the population of the cited country, language skills, legal origin (though only weakly) and a low level of corruption have a positive effect on the number of cross-citations.

In the next two specifications of Table 11 we examined whether the model could be improved by using factor dummies for both the citing and the cited court, dropping the specific variables about the cited country (*pop\_cited\_mill*, *rank\_cited*, *not\_corrupt*, *ln\_GDPpc\_cited*). Models (16) and (17) are modification of models (12) and (14). It can be seen that the language variables become less significant; however, the general results are very similar to the former models. Since the Pseudo R<sup>2</sup>s only improve slightly, we can also conclude that the specific country variables of the former models capture the main effects of the cited countries.

Then, we considered that the differences between the citing courts can go beyond that of the other independent variables. In model (18) we have build a model with two-way interactions between the citing-courts factor and four of the other independent variables.<sup>46</sup> Since this (and the intercept) already reduced the degrees of freedom from 90 to 49, no further variables have been added (nor was it possible to drop zeros or outliers). It can be seen that interactions between the citing-courts factor and population, culture and language skills (but not legal origins) remain statistically significant.<sup>47</sup>

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<sup>45</sup> Kolmogorov-Smirnov statistic: 0.065 (significance: 0.2); Shapiro-Wilk statistic: 0.973 (significance: 0.312).

<sup>46</sup> This is equivalent to buidling four nested terms with each of these four independent variables being nested within the citing-court factor.

<sup>47</sup> Note also that the Chi2 and R2 statistics are very similar to model (8), which is the model in which we did not include the interaction between the citing-courts factor and the other four independent variables.

Finally, we used another approach to tackle the potential problem that the strong similarities between Germany and Austria on the one hand, and England and Ireland on the other may dominate our results. In model (19) we treated both of these jurisdictions as one country each (politically of course highly contentious), thus reducing the number of observations to 56. It confirms all of the result of the equivalent model (10). Then, model (20) omits the zero citations: population, language and lack of corruption remain significant, but, surprisingly, a regression that also includes legal origin and culture leads to insignificant results (not displayed here). However, this final model should be treated with caution since we only use 34 of our 90 original observations.

### **5.3. Regressions with relative frequency of citations**

#### **5.3.1. Tobit Regression and GLM Regression with logit model**

There is another way to tackle the problem of a dependent variable with many very low and some very high observations. If we use not the absolute number of foreign citations but the percentage of all decisions of the court in question that cite foreign decisions, we scale the data between 0 and 1. Moreover, this approach has the advantage that we do not need to use country dummies as independent variables because the percentage figures already take control of general differences in citation style between countries.

(At least) two types of regression can be used if one has percentages (or proportions) as dependent variables: a two-limit Tobit model or a Generalized Linear Model (GLM) with a logit model.<sup>48</sup>

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<sup>48</sup> For a comparison between these and further methods see Kieschnick and McCullough (2003).

[Table 12 about here]

Table 12 uses Tobit.<sup>49</sup> It confirms the result of the previous sections. Population, language skills, cultural proximity (measured according to Schwartz), and legal origins (following ADSM, not LLSV) matter. Here, the level of corruption, doing business rank and GDP are significant as well.

Another model was developed by Papke and Wooldridge (1996). They suggest a Generalized Linear Model (GLM) with a binomial distribution function, a logit link function, and robust estimators. The binomial distribution function is used because the number of citations per all foreign citations of this particular court can be thought of as a probability of success in a sequence of experiments. The logit link function considers that proportions can only be between 0 and 1.

[Table 13 about here]

Table 13 shows the main results. As in the previous regressions, we have gradually added more variables. The best fit is provided by models (7) and (10). Thus, according to this type of GLM regression, we would say that the percentage of cross-citations depends on the population of the cited country, similarities in language (or language skills), legal origin (based on Armour et al.) and culture (based on Schwartz).

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<sup>49</sup> Based on Tobin (1958), as developed by Rossett and Nelson (1975) and Long (1997), To be precise, we have used the Gaussian Model of Tobit since it provided a better fit than the Logistic one.

### 5.3.2. Dirifit regression

Tobit and GLM logit seem to work well; however, we also need to consider another technique. The background is that proportions or percentages can be “compositional data”. Such data are quantitative descriptions of the parts of some whole – typically, proportions adding to one (the seminal work is Aitchison (1986)). For example, a geologist may analyze the composition of ten rocks, distinguishing between ten different types of materials. In such a case conventional regression techniques are problematic since they would ignore the fact that the proportions have to add to one (also called “unit sum constraint”). A possible method to tackle this problem is the use of a Dirichlet distribution model, first proposed by Connor and Mosimann (1969). Buis et al. (2006/2010) have developed a Stata module, called Dirifit, based on this method.

In the present case we also have compositional data since we examine the percentage of all decisions of the court in question that cite foreign decisions (see 5.1 and 5.3.1 above). Thus, the ten citing compare to rocks in the above example, and the ten cited courts to the materials of which these rocks consist. With Dirifit we were able to subsequently analyse whether characteristics of the citing countries (e.g., their native languages, legal origins) have an impact on the composition in terms of the cited countries. Due to some limitations in the Dirifit module, we had to make some minor modifications to our data. First, since Dirifit does not allow more than 10 zeros in the dependent variables, we added replaced the zeros by 0.0000001.<sup>50</sup> Second, since self-citations are not included in our dataset, the presence of a citation of a column of the citing court among the cited courts is inherently problematic. In order to ensure that self-

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<sup>50</sup> For other ways to tackle the problem of zero values in compositional data see Fry et al. (2000); Palarea-Albaladejo and Martin-Fernandez (2008).

citations did not affect the regression, we replaced these with the average value of 0.1 and multiplied all other proportions by 0.9 to make sure that all proportions for each citing court continued to add up to 1.

A further problem was that compositional data work best if one has a high number of observations but only a relatively small number of possible components. Regrettably, that is not the case with our dataset: we only have ten observations (the ten citing courts) but also have to account for ten components (the ten cited courts). In contrast to the previous regressions, it was therefore not feasible to include various types of explanatory variables (legal origin, language, culture etc.) in the same regression since this would quickly exhaust the degrees of freedom. Given the lower number of observations, we also had to expect lower rates of significance for the individual explanatory variables than in the previous regressions.

The dependent variables used in this model are summarized in Table 14. The results of this analysis of “outgoing” citations are shown in Table 15.

[Tables 14 and 15 about here]

The explanatory variables in these models obviously can only refer to the citing country. We used the logarithm of the population, language dummy variables indicating whether English, French or German is one of the country’s main languages (*lang\_e*, *lang\_f*, and *lang\_g*), variables indicating what percentage of the citing country’s population speaks each of these languages (*perc\_e*, *perc\_f*, *perc\_g*), variables indicating to which legal tradition the citing country belongs according to Armour et al. (*orig\_e*, *orig\_f*, *orig\_g*),

and the different components of Schwartz' cultural index for the citing country (*Embeddedness, Hierarchy, Mastery, Intellectual Autonomy, Egalitarianism, Harmony*).

A number of our explanatory variables are related to the cited and not the citing countries (see 4, above). Therefore we have also used a second form of compositional data in which the cited countries are our "rocks" consisting of the ten citing countries. Here, we had to consider that the reason for using percentages was to control for unobserved characteristics of the citing courts (see 5.1 and 5.3.1). Thus, in this alternative we did not simply transform the absolute number of citations per cited court into proportions (e.g., Germany was cited 459 times by the Austrian supreme court and 58 times by the Dutch one) but took the percentages of each citing court for the cited country (e.g., Germany was cited in 94% of the Austrian foreign-citing cases, and in 48% of the Dutch ones), added them up and took the proportions from the total. As controlling variables, we tried the logarithm of the population of the cited country (*ln\_pop\_cited*), language dummies for English, German, and French as the main languages of the cited country, the legal family variables and the culture variables for the cited countries. The results are shown in Table 16.

[Table 16 about here]

Dirifit largely confirms the results of the other regressions. While the population variables are not significant in these regressions, the language variables often are. In the analysis of outgoing citations, almost all significant coefficients have the sign that would be expected. A notable exception is Germany, which is not surprising given that Germany is

also often cited by courts from non-German-speaking countries such as the Netherlands, Spain and Italy. Similarly, where legal origins are significant, the signs are as expected.

#### 5.4. Summary and interpretation

[Table 17 about here]

Table 17 summarizes the results of our regressions. The plain OLS regression deviates in some respects (e.g., *pop\_cited\_mill*; *same\_orig\_ADMS*) from the other types of regression. However, as explained (see 5.2.1 above), this type of regression is not sound. The results of the following four types of regressions are relatively similar. As predicted, the population of the citing country, language skills, legal origins, cultural and economic factors all seem to matter for which courts are likely to be cited. The final type of regression (*dirifit*) also confirms the relevance of language skills, legal origins and cultural factors.

Population likely matters because larger countries tend to be culturally dominant. Language skills obviously matter because being able to understand a decision is a precondition to citing it in a meaningful way. However, our analysis does not enable us to determine whether two courts necessarily have to share the same national language to exert an influence over each other, or whether the secondary knowledge of a language suffices.

Belonging to one “legal origins” groups seems to matter as well; we can therefore identify judicial citations as another channel that enables legal families to persist by means of

mutual influence, even in the developed European jurisdiction, where courts within one family are more likely to cite each other than others, given that arguments developed in related carry more credibility and provide a better fit to the receptive system. Legal families therefore seem to be more than merely the historical origins from which a country initially received the core elements of its legal system. This is illustrated by the case of the Netherlands. Our analysis supports the assertion by Armour et al. (2009b) that the Netherlands should be more properly classified as a member of the German than the French group although the original source was the French model. The continued influence of German law is illustrated by judicial citation patterns.

Cultural factors matter primarily when we use the Schwartz Value Survey data, but not when we use Hofstede's older data, which may to some extent be out of date. Courts seem to be more inclined to cite courts from a jurisdiction that is culturally closer, even when controlling for language and legal origin. In fact, the effects of culture seem more persistent than those of membership in the same legal family. Finally, according to our preliminary data, even economic indicators such as GDP, the "Doing Business" rank and the level of corruption seem to matter for judicial citations, though here we also observe some differences between the different types of regressions.

## **6. Conclusion**

Our study has shown that citation of foreign law by supreme courts is a very widespread phenomenon in Europe, which, in sharp contrast to the US, has not yet received much attention by the general public; indeed, in some countries it is so common that it is seen as a self-evident part of the legal culture. This paper has provided evidence for the core

areas of private law and criminal law in ten European countries for the period from 2000 to 2007. In total we have searched 636,172 decisions. A number of key terms were used in order to search for citations to foreign supreme courts of these ten countries. The first main result is that we found 1,430 instances in which these courts have cited the supreme courts of the other nine countries. The majority (1,077) of these citations have been made for purely comparative reasons.

Then, we undertook regression analysis in order to understand the differences between the cross-citations. Whether such citations take place and in what quantity depends on the particular legal culture and its relationship to others. Austria and Ireland, which stand in an asymmetric relationship with Germany and the UK respectively, seem to be particularly receptive to foreign influence on their legal systems. But even controlling for these outliers, we have been able to identify that the population of the citing country, language skills, legal origins, cultural factors and economic all matter for which courts are likely to be cited.

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## Appendix A: Countries and courts

Table 1: Countries and courts

Country	Population 2004 <sup>51</sup>	Name of supreme court	Database used	Subject matter jurisdiction of court	Total number of reported decisions 2000-2007	Decisions per 1,000 inhabitants
Austria	8,174,762	Oberster Gerichtshof	RIS <sup>52</sup>	Civil law (including employment and social law), criminal law	28,868	3.53
Belgium	10,348,276	Cour de cassation, Hof van Cassatie	Court website <sup>53</sup>	Civil law (including employment, law), criminal law	24,053 <sup>54</sup>	2.42
England and Wales	53,057,000	Court of Appeal	Westlaw <sup>55</sup>	All areas of law	25,855	0.49
France	60,424,213	Cour de cassation	Legifrance <sup>56</sup> and court website <sup>57</sup>	Civil law (including employment, law), criminal law	107,396	1.78
Germany	82,424,609	Bundesgerichtshof	Beck Online <sup>58</sup>	Civil Law (excluding employment and social security law), and Criminal Law	22,950	0.28

<sup>51</sup> Sources: CIA Factbook, <https://www.cia.gov/library/publications/the-world-factbook/>, 2004 data available at [http://www.nationmaster.com/graph/peo\\_pop\\_cia\\_fac-people-population-cia-factbook&date=2004](http://www.nationmaster.com/graph/peo_pop_cia_fac-people-population-cia-factbook&date=2004). For England and Wales: National Statistics website, available at <http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=9544>.

<sup>52</sup> <http://www.ris.bka.gv.at> (public law database of the Federal Chancellery).

<sup>53</sup> <http://jure.juridat.just.fgov.be/?lang=fr>. Source for the number of decisions: Rapport Annuel 2007, available at [http://www.cass.be/cass/cass\\_fr/p6.htm](http://www.cass.be/cass/cass_fr/p6.htm), at pp. 220-221.

<sup>54</sup> 14,113 in Dutch and 9,940 in French.

<sup>55</sup> <http://www.westlaw.co.uk> (Law Reports and Official Transcripts).

<sup>56</sup> <http://www.legifrance.gouv.fr>.

<sup>57</sup> <http://www.courdecassation.fr/> (for selected opinions of the *avocat general*).

<sup>58</sup> <http://www.beck-online.de>.

<b>Ireland</b>	3,969,558	High Court	Bailii <sup>59</sup> and Court website <sup>60</sup>	All areas of law (but not criminal appeals)	2,357	0.59
<b>Italy</b>	58,057,477	Corte di cassazione, Corte Suprema di Cassazione	De Jure <sup>61</sup>	All areas of law (with the exception of constitutional matters)	196,876	3.39
<b>Netherlands</b>	16,318,199	Hoge Raad	Court website <sup>62</sup>	Civil, criminal and tax law	9,073 [36,020] <sup>63</sup>	0.56 [2,20]
<b>Spain</b>	40,280,780	Tribunal Supremo	Court website <sup>64</sup>	All areas of law (with the exception of constitutional matters)	190,174	4.72
<b>Switzerland</b>	7,450,867	Bundesgericht	Court website <sup>65</sup>	All areas of law	27,570 <sup>66</sup>	3.70

<sup>59</sup> <http://www.bailii.org/ie/cases/IEHC/>.

<sup>60</sup> <http://www.courts.ie/Judgments.nsf/advancedsearch?openform&l=en>.

<sup>61</sup> <http://dejure.giuffre.it/> (commercial database used with University of Bologna subscription).

<sup>62</sup> [http://zoeken.rechtspraak.nl/default.aspx?searchtype=kenmerken&instantie\\_uz=Hoge%20Raad](http://zoeken.rechtspraak.nl/default.aspx?searchtype=kenmerken&instantie_uz=Hoge%20Raad). This database reports the most important decisions; see <http://www.rechtspraak.nl/Over+deze+site/>

<sup>63</sup> Number of decisions according to the annual reports; see Jaarverslagen, available at <http://www.rechtspraak.nl/Gerechten/HogeRaad/Over+de+Hoge+Raad/Publicaties/> (number civil law decisions 2000-2007: 478, 489, 488, 490, 466, 452 463 475; criminal law: 2901, 3.066, 3.271, 3.003, 2.870, 3447, 3137, 3076; tax law: 797, 797, 789, 1.058, 1.083, 1084, 978, 863).

<sup>64</sup> <http://www.poderjudicial.es/jurisprudencia/>.

<sup>65</sup> <http://www.bger.ch/index/jurisdiction/jurisdiction-inherit-template/jurisdiction-recht/jurisdiction-recht-urteile2000.htm> and <http://www.polyreg.ch/d/informationen/bge.html>.

<sup>66</sup> 16,019 in German, 9,567 in French, and 1,984 in Italian.

## Appendix B: Descriptive statistics

**Table 2: Number of cross-citations per type of citation**

<i>Citing Court</i>	<i>History &amp; Jurisdiction</i>	<i>International &amp; European</i>	<i>Pure comparative</i>	<i>Total</i>
<b>Austria</b>	14	57	436	507
<b>Belgium</b>	4	14	45	63
<b>England</b>	9	51	9	69
<b>France</b>	11	2	5	18
<b>Germany</b>	5	16	25	46
<b>Ireland</b>	1	47	416	463
<b>Italy</b>	5	10	5	20
<b>Netherlands</b>	14	47	73	134
<b>Spain</b>	1	12	4	17
<b>Switzerland</b>	29	5	59	93
<b>Total</b>	<b>93</b>	<b>261</b>	<b>1077</b>	<b>1430</b>

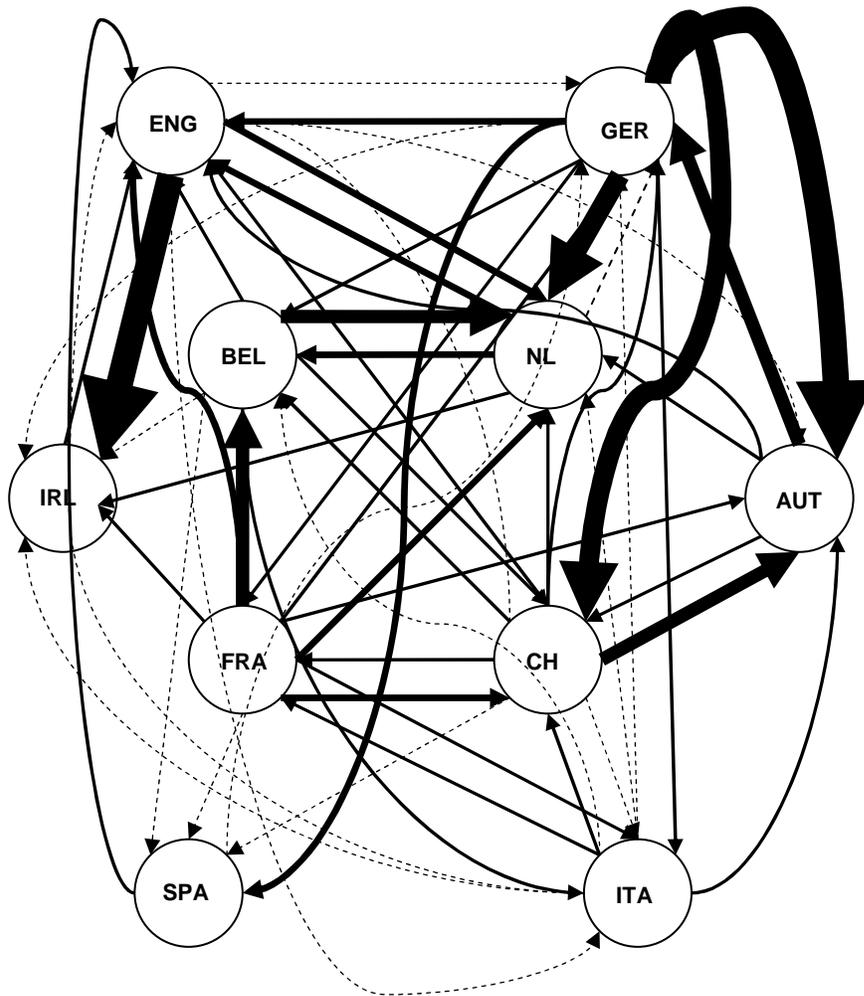
**Table 3: Statistics of the relationships between the ten countries**

	<i>Citations of the other nine foreign supreme courts</i>
<b>Mean of citations</b>	14.88
<b>Stand Dev</b>	67.57
<b>Minimum number of citations</b>	0
<b>Maximum number of citations</b>	464
<b>Number of relationships</b>	90

**Table 4: Number of cross-citations per cited court**

	<i>Austria</i>	<i>Belgium</i>	<i>England</i>	<i>France</i>	<i>Germany</i>	<i>Ireland</i>	<i>Italy</i>	<i>Netherl.</i>	<i>Spain</i>	<i>Switzerl.</i>
<b>Mean</b>	4.67	4.00	52.00	12.11	67.22	1.11	0.67	3.00	0.22	3.67
<b>Std.Dev</b>	10.46	7.51	141.47	11.77	141.57	3.14	0.94	4.47	0.63	6.58
<b>Min.</b>	0	0	0	1	1	0	0	0	0	0
<b>Max.</b>	34	25	452	41	464	10	3	12	2	21
<b>N. Obs</b>	9	9	9	9	9	9	9	9	9	9

**Figure 1: Influence on the basis of being cited by other courts**



*Abbreviations:* AUT (Austria), BEL (Belgium), CH (Switzerland), ENG (England and Wales), FRA (France), GER (Germany), IRL (Ireland), ITA (Italy), NL (Netherlands), SPA (Spain)

## Appendix C: Independent variables

**Table 5: Description of variables**

Variable	Description	Source
<b>Pop_cited_mill</b>	Population of the country of the cited court in 2004.	See Table 1
<b>Pop_ed_by_ing</b>	Population of the cited country divided by the population of the citing country in 2004.	See Table 1
<b>same_lang</b>	Equals 1 if more than 20% of the population speaks this language as a native language, 0 otherwise	Eurobarometer (2006)
<b>perc_lang</b>	Percentage of the population of the citing country that speaks the cited country's language. Regarding Switzerland and Belgium, see supra section 4.	Eurobarometer (2006)
<b>same_orig_LLSV</b>	Legal origins according to LLSV.	La Porta et al. (1998)
<b>same_orig_ADMS</b>	Legal origins according to ADMS.	Armour et al. (2009b)
<b>neighbors</b>	Equals 1 if citing and cited country share a land border.	
<b>Hofstede_diff</b>	Cumulative difference between the citing and cited countries' values on the Hofstede cultural index.	<a href="http://www.geert-hofstede.com/">http://www.geert-hofstede.com/</a>
<b>Schwartz_diff</b>	Cumulative difference between the citing and cited countries' values on the Schwartz cultural index.	Schwartz Value Survey: <a href="http://isdc.huji.ac.il/26-12-05e.shtml">http://isdc.huji.ac.il/26-12-05e.shtml</a>
<b>rank_cited</b>	Rank of the cited country in the Doing Business Report of 2006	<a href="http://www.doingbusiness.org">http://www.doingbusiness.org</a>
<b>Not_corrupt_cited</b>	Corruption index 0 to 10 (10 if not corrupt)	Djankov et al. (2003)
<b>In_GDPpc_cited</b>	Natural logarithm of the GDP of the cited country in 1999.	Djankov et al. (2003)
<b>court_A to court_S</b>	Dummy variable for the citing country (A=Austria; B=Belgium; E=England and Wales; F=France, G=Germany; I=Ireland; J=Italy, N=Netherlands; S=Spain. Switzerland is the omitted category.	

**Table 6: Summary statistics independent variables**

<b>Variable</b>	<b>Mean</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Std. Dev</b>
pop_cited_mill	34.05	28.30	3.97	82.42	26.93
pop_ed_by_ing	2.75	1.00	0.05	20.76	3.96
Same_lang	0.18	0.00	0.00	1.00	0.38
Perc_lang	0.31	0.15	0.00	1.00	0.32
Same_orig_LLSV	0.31	0.00	0.00	1.00	0.47
same_origin_ADMS	0.29	0.00	0.00	1.00	0.46
Neighbors	0.31	0.00	0.00	1.00	0.46
Hofstede_diff	79.69	80.00	13.00	135.00	32.39
Schwartz_diff	1.99	1.94	0.63	4.07	0.92
rank_cited	27.40	21.50	9.00	70.00	17.43
Not_corrupt_cited	8.65	8.87	6.13	10.00	1.11
Ln_GNP_per_capi	10.08	10.11	9.60	10.56	0.23

**Table 7: Correlation matrix**

		<i>pop_cited_mill</i>	<i>pop_ed_by_ing</i>	<i>Same_lang</i>	<i>perc_lang</i>	<i>same_orig_LLSV</i>	<i>same_orig_ADMS</i>	<i>neighbors</i>	<i>Hofstede_diff</i>	<i>Schwartz_diff</i>	<i>rank_cited</i>	<i>Not_corrupt_cited</i>	<i>Ln_GNP_per_capita_cited</i>
<b>pop_cited_mill</b>	<b>Pearson Correlation</b>	1.000	.571**	-.118	.197	.037	.020	.152	-.166	.132	.357**	-.316**	-.258*
	<b>Sig. (2-tailed)</b>		.000	.269	.063	.728	.850	.152	.117	.215	.001	.002	.014
<b>pop_ed_by_ing</b>	<b>Pearson Correlation</b>	.571**	1.000	.084	.225*	-.013	-.013	.010	-.116	.019	.204	-.181	-.147
	<b>Sig. (2-tailed)</b>	.000		.432	.033	.905	.905	.929	.278	.861	.054	.088	.165
<b>same_lang</b>	<b>Pearson Correlation</b>	-.118	.084	1.000	.634**	.441**	.345**	.441**	-.297**	-.448**	-.138	.232*	.300**
	<b>Sig. (2-tailed)</b>	.269	.432		.000	.000	.001	.000	.004	.000	.194	.028	.004
<b>perc_lang</b>	<b>Pearson Correlation</b>	.197	.225*	.634**	1.000	.278**	.255*	.334**	-.241*	-.102	.127	-.097	.156
	<b>Sig. (2-tailed)</b>	.063	.033	.000		.008	.015	.001	.022	.340	.234	.365	.141
<b>same_orig_LLSV</b>	<b>Pearson Correlation</b>	.037	-.013	.441**	.278**	1.000	.631**	.378**	-.388**	-.166	.184	-.089	-.096
	<b>Sig. (2-tailed)</b>	.728	.905	.000	.008		.000	.000	.000	.118	.083	.405	.366
<b>same_orig_ADMS</b>	<b>Pearson Correlation</b>	.020	-.013	.345**	.255*	.631**	1.000	.313**	-.457**	-.210*	.098	-.014	.024
	<b>Sig. (2-tailed)</b>	.850	.905	.001	.015	.000		.003	.000	.046	.356	.893	.821
<b>neighbors</b>	<b>Pearson Correlation</b>	.152	.010	.441**	.334**	.378**	.313**	1.000	-.315**	-.197	.169	.102	.216*
	<b>Sig. (2-tailed)</b>	.152	.929	.000	.001	.000	.003		.002	.062	.112	.338	.040
<b>Hofstede_diff</b>	<b>Pearson Correlation</b>	-.166	-.116	-.297**	-.241*	-.388**	-.457**	-.315**	1.000	-.077	-.056	.072	-.139
	<b>Sig. (2-tailed)</b>	.117	.278	.004	.022	.000	.000	.002		.468	.603	.499	.193
<b>Schwartz_diff</b>	<b>Pearson Correlation</b>	.132	.019	-.448**	-.102	-.166	-.210*	-.197	-.077	1.000	.246*	-.235*	-.023
	<b>Sig. (2-tailed)</b>			.000	.234	.118	.083	.002	.002		.001	.002	.001

	<b>Sig. (2-tailed)</b>	.215	.861	.000	.340	.118	.046	.062	.468		.019	.026	.833
<b>rank_cited</b>	<b>Pearson Correlation</b>	.357**	.204	-.138	.127	.184	.098	.169	-.056	.246*	1.000	-.698**	-.296**
	<b>Sig. (2-tailed)</b>	.001	.054	.194	.234	.083	.356	.112	.603	.019		.000	.005
<b>Not_corrupt_cited</b>	<b>Pearson Correlation</b>	-.316**	-.181	.232*	-.097	-.089	-.014	.102	.072	-.235*	-.698**	1.000	.721**
	<b>Sig. (2-tailed)</b>	.002	.088	.028	.365	.405	.893	.338	.499	.026	.000		.000
<b>Ln_GNP_per_capita_cited</b>	<b>Pearson Correlation</b>	-.258*	-.147	.300**	.156	-.096	.024	.216*	-.139	-.023	-.296**	.721**	1.000
	<b>Sig. (2-tailed)</b>	.014	.165	.004	.141	.366	.821	.040	.193	.833	.005	.000	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## Appendix D: Regression results

**Table 8: OLS Regression**

**N=90**

**Dependent variable: number\_cites**

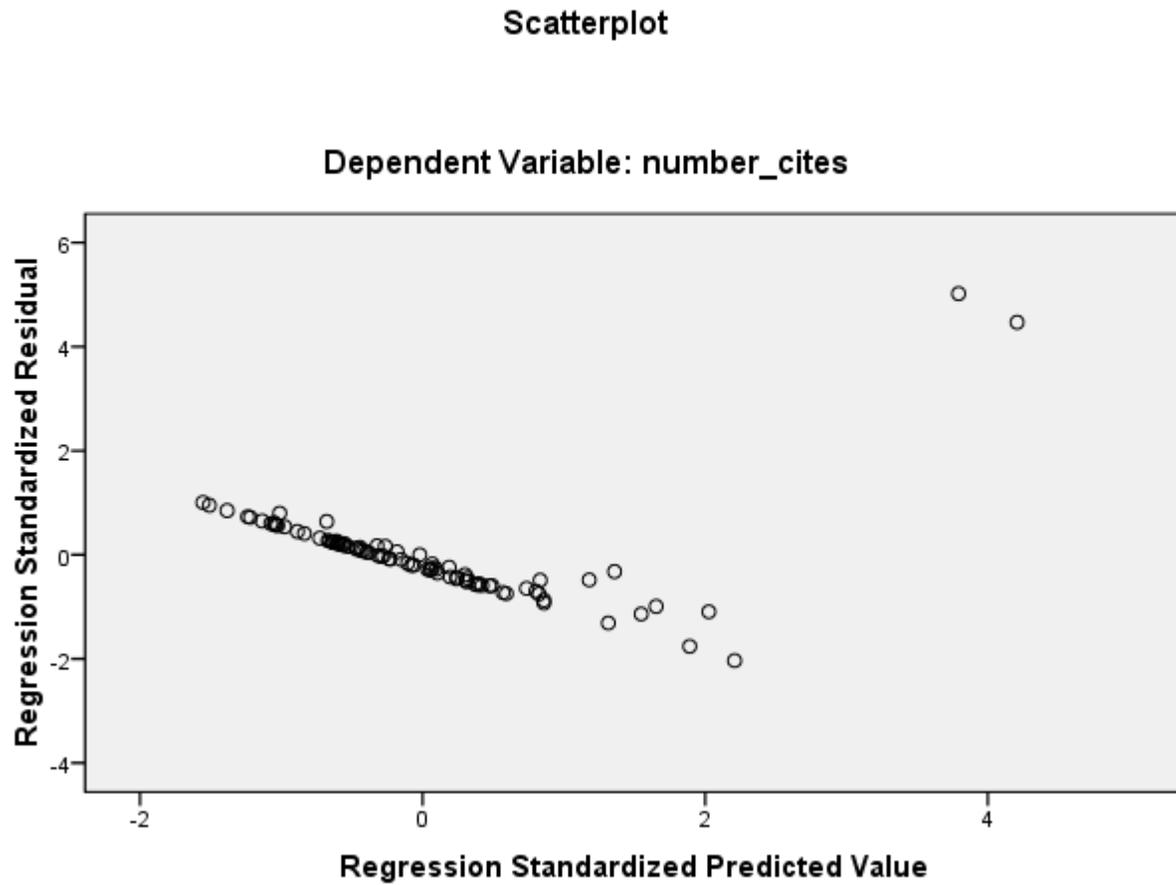
INDEPENDENT VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(Intercept)	-12.902	-27.600	-68.017***	-59.961**	-70.543***	-8.160	-25.404	190.613	-23.039	-75.333	-7.319	-11.715
pop_cited_mill	.541**											.629**
pop_ed_by_ing		6.989***	4.677**	6.502***	4.808**	-8.160**	5.182**	5.811**	6.114***	5.601**	5.146**	
same_lang				64.258***								
perc_lang			78.149***		79.914***	87.276***	85.149***	91.043***	85.803***	84.727***	85.580***	88.577***
same_orig_LLSV			28.758*	18.659								
same_orig_ADMS					31.509**	20.303	22.717	27.511*	27.462*	23.618	22.679	28.371*
neighbors						-12.900						
Hofstede_dif						-1.145						
Schwartz_diff						-23.927***	-22.292***	-15.965*	-16.525*	-20.019**	-22.310***	-18.150**
rank_cited								-0.800	-0.737*			-0.829**
not_corrupt_cited								.643		5.059		
ln_GDPpc_cited								-21.933			-1.805	
court_A	47.710	50.809	68.348**	66.943**	65.560**	58.490**	55.367**	59.610**	57.632**	55.831**	55.509**	54.498**
court_B	-.381	9.381	11.891	13.755	15.476	4.283	2.876	9.250	7.746	4.154	2.952	-1.436
court_E	2.296	30.060	52.405*	53.500*	54.178*	64.567**	65.545**	70.330**	68.967**	65.918**	65.630**	47.399*
court_F	-3.150	24.779	32.331	34.817	36.587	48.834	41.466	43.936	43.109	42.498	41.511	20.197
court_G	1.950	29.724	37.331	43.828	35.084	25.295	24.459	33.024	32.181	27.073	24.447	8.720
court_I	44.124	13.210	55.010*	40.945	55.603*	54.185*	57.422*	58.359*	54.058*	54.402*	57.831*	82.469***
court_J	-2.404	25.489	46.832	49.820	51.395*	78.156**	76.342**	72.378**	70.990**	73.696**	76.521**	49.689*
court_N	6.755	25.506	18.041	45.582	18.380	11.594	8.250	13.458	13.106	10.542	8.221	-4.062
court_S	-3.361	23.590	45.371	48.061	49.892	42.095	41.819	51.392*	47.985	43.111	42.043	25.200
R <sup>2</sup>	.128	.166	.339	.338	.347	.414	.408	.440	.436	.413	.408	.431
Adjusted R <sup>2</sup>	.018	.060	.236	.234	.245	.295	.306	.317	.331	.304	.297	.325
F-statistic	1.161	1.573	3.285***	3.271***	3.407***	3.487***	4.023***	3.585***	4.149***	3.774***	3.687***	4.054***

\*\*\* significant at the 1% level

\*\* significant at the 5% level

\* significant at the 10% level

Figure 2: Diagnostic scatterplot OLS Regression, model (9)



**Table 9: Semilogarithmic OLS Regression**

**N=90**

**Dependent variable: ln (number\_cites + 1)**

INDEPENDENT VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(Intercept)	.426	.286	-.832**	-.613	-.829**	-.874**	-.894***	-1.082**	-.237	-.155	-3.212***	-12.385***
pop_cited_mill	.018***		.023***	.013***	.022***	.022***	.020***	.023***	.023***	.025***	.026***	.025***
pop_ed_by_ing		.161***										
same_lang			2.446***		2.291***	2.224***	2.014***	2.260***	1.967***	1.940***	1.790***	1.608***
perc_lang				2.239***								
same_orig_LLSV					.248							
same_orig_ADMS						.487**	.436**	.557**	.469**	.559***	.560***	.524**
Neighbors							.431*					
Hofstede_dif								.002				
Schwartz_diff									-.260*	-.175	-.168	-.340***
rank_cited										-.013**		
not_corrupt_cited											.319***	
ln_GDPpc_cited												1.234***
court_A	.349	.420	.893**	.789	.886**	.844**	.844**	.769*	.653	.669*	.611	.477
court_B	-.093	.131	.181	.163	.136	.156	.180	.102	-.033	.016	-.037	-.182
court_E	.581	1.195*	1.420***	1.304**	1.421***	1.451***	1.553***	1.424***	1.482***	1.479***	1.387***	1.356***
court_F	-.553	.060	.018	.022	-.047	-.035	-.187	-.081	-.066	-.103	-.127	-.185
court_G	-.069	.528	.513	.324	.502	.459	.350	.479	.253	.315	.258	.090
court_I	.116	-.596	.930**	.838	.933**	.964**	1.075***	.950**	.918**	.922**	.810**	.743*
court_J	-.445	.169	.668	.525	.569	.566	.511	.579	.701*	.547	.417	.542
court_N	.774	1.201*	1.593***	.738	1.541***	1.519***	1.495***	1.441***	1.305***	1.330***	1.295***	1.090***
court_S	-.568	.035	.536	.405	.438	.435	.479	.384	.185	.208	.075	-.139
R <sup>2</sup>	.238	.225	.646	.443	.651	.668	.681	.670	.684	.705	.737	.716
Adjust R <sup>2</sup>	.141	.127	.596	.364	.596	.616	.626	.613	.630	.650	.688	.664
F-statistic	2.465**	2.290**	12.936***	5.635***	11.962***	12.907***	12.453***	11.858***	12.660***	12.801***	15.005***	13.539***

\*\*\* significant at the 1% level

\*\* significant at the 5% level

\* significant at the 10% level

Figure 3: Diagnostic scatterplot semilogarithmic OLS Regression, model (11)

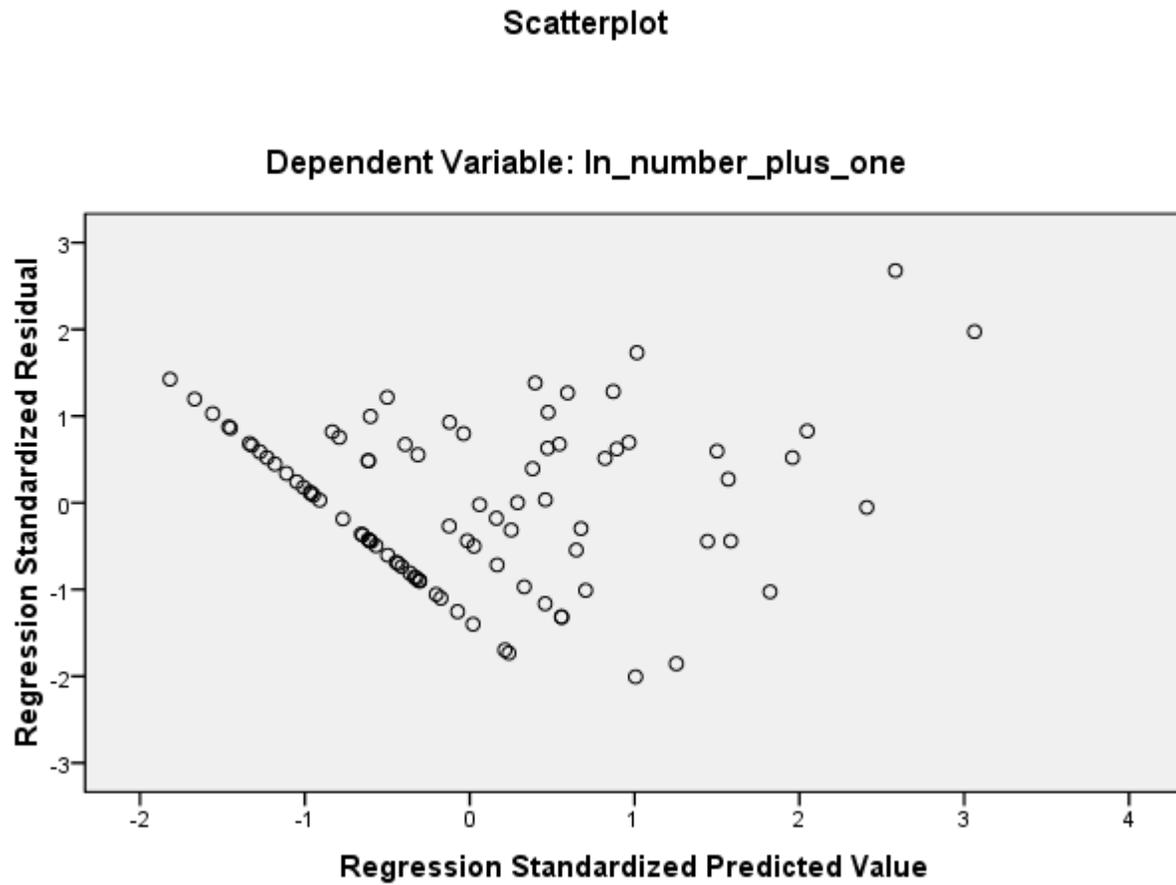
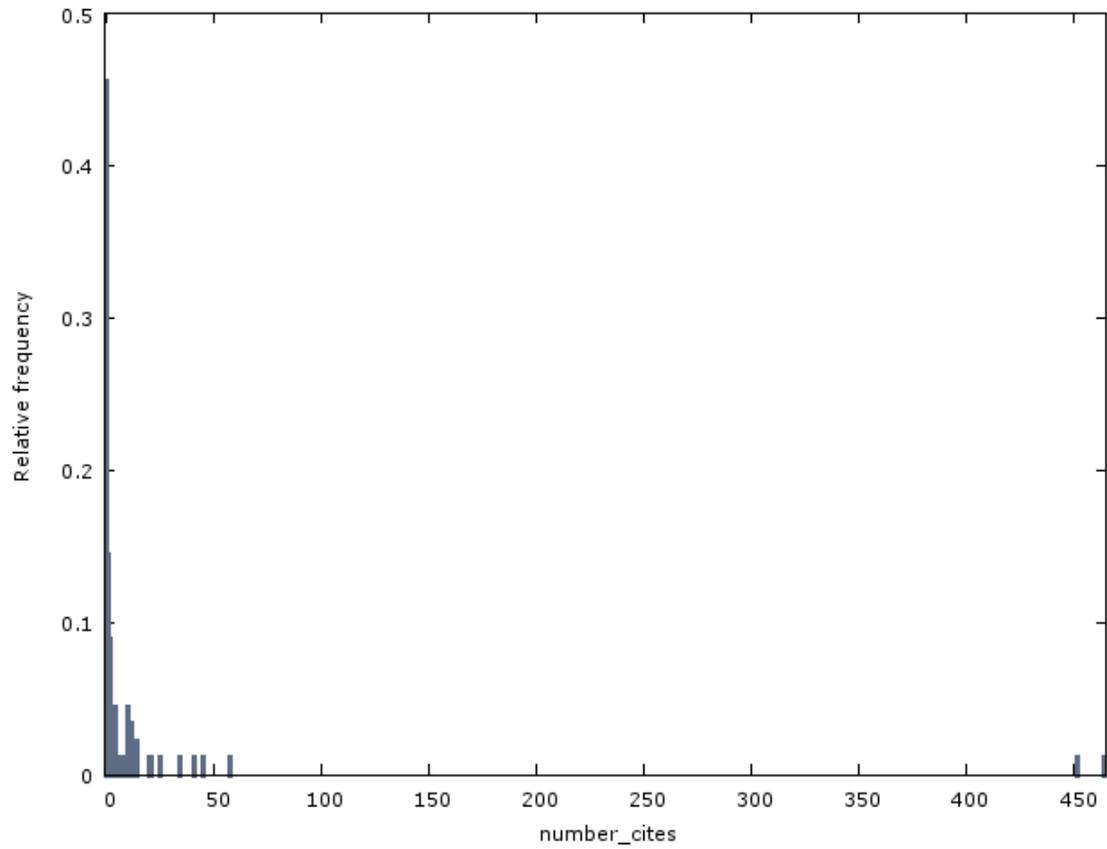


Figure 4: Histogram number of cross-citations



**Table 10: Negative Binomial Regression (1)**

**N=90**

**Dependent variable: number\_cites by citing court**

INDEPENDENT VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(Intercept)	-3.209***	-1.396**	-2.721***	-3.256***	-3.438***	-3.799***	-3.996***	-1.692*	-1.503*	-7.526***	-29.99***	-8.492***
pop_cited_mill	0.041***		0.028***	0.041***	0.041***	0.039***	0.043***	0.039***	0.041***	0.045***	0.044***	0.042***
pop_ed_by_ing		0.322***										
same_lang	3.790***	3.135***		3.499***	3.237***	2.979***	3.301***	2.825***	2.746***	2.631***	2.556***	1.434**
perc_lang			4.345***									1.944**
same_orig_LLSV				0.357								
same_orig_ADMS					0.994***	0.938***	1.165***	0.851**	0.908***	0.901**	0.727**	0.728**
neighbors						0.624						
Hofstede_diff							0.06					
Schwartz_diff								-1.100***	-1.022**	-0.954**	-1.288***	-1.191***
rank_cited									-0.015			
not_corrupt_cited										0.627***		0.765***
ln_GDPpc_cited											2.815***	
citing_courts	#***	#***	#***	#***	#***	#***	#***	#***	#***	#***	#***	#***
cited_courts												
Chi <sup>2</sup>	309***	280***	276***	310***	317***	319***	317***	325***	327***	339***	335***	344***
Log Likelihood	-180	-196	-197	-181	-177	-176	-177	-173	-172	-166	-168	-164
Pseudo R <sup>2</sup>	0.46	0.42	0.41	0.46	0.47	0.48	0.47	0.48	0.49	0.51	0.50	0.51

\*\*\* significant at the 1% level      \*\* significant at the 5% level      \* significant at the 10% level

# significance denotes Wald Chi2 test of factor (individual parameter estimates not displayed)

Figure 5: Diagnostic scatterplot negative binomial regression, model (12)

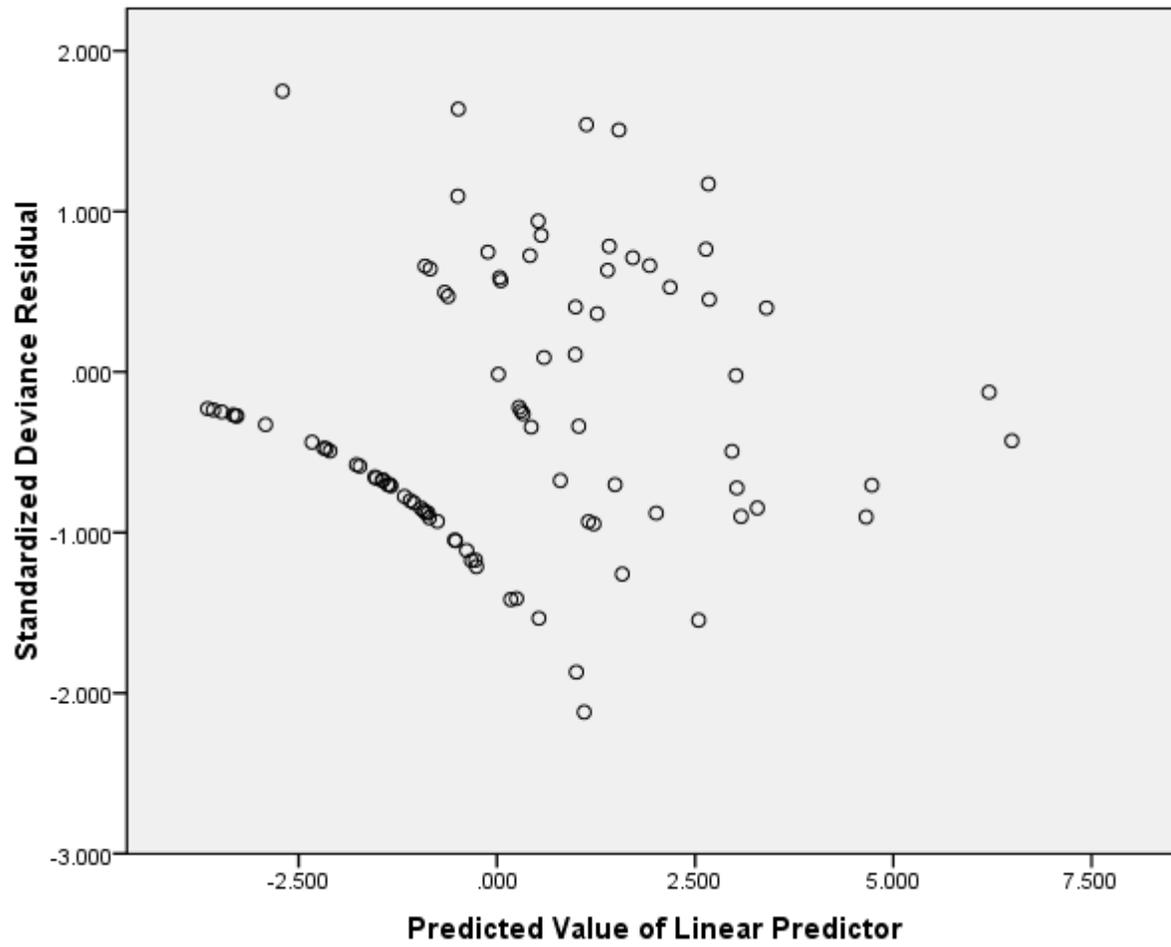
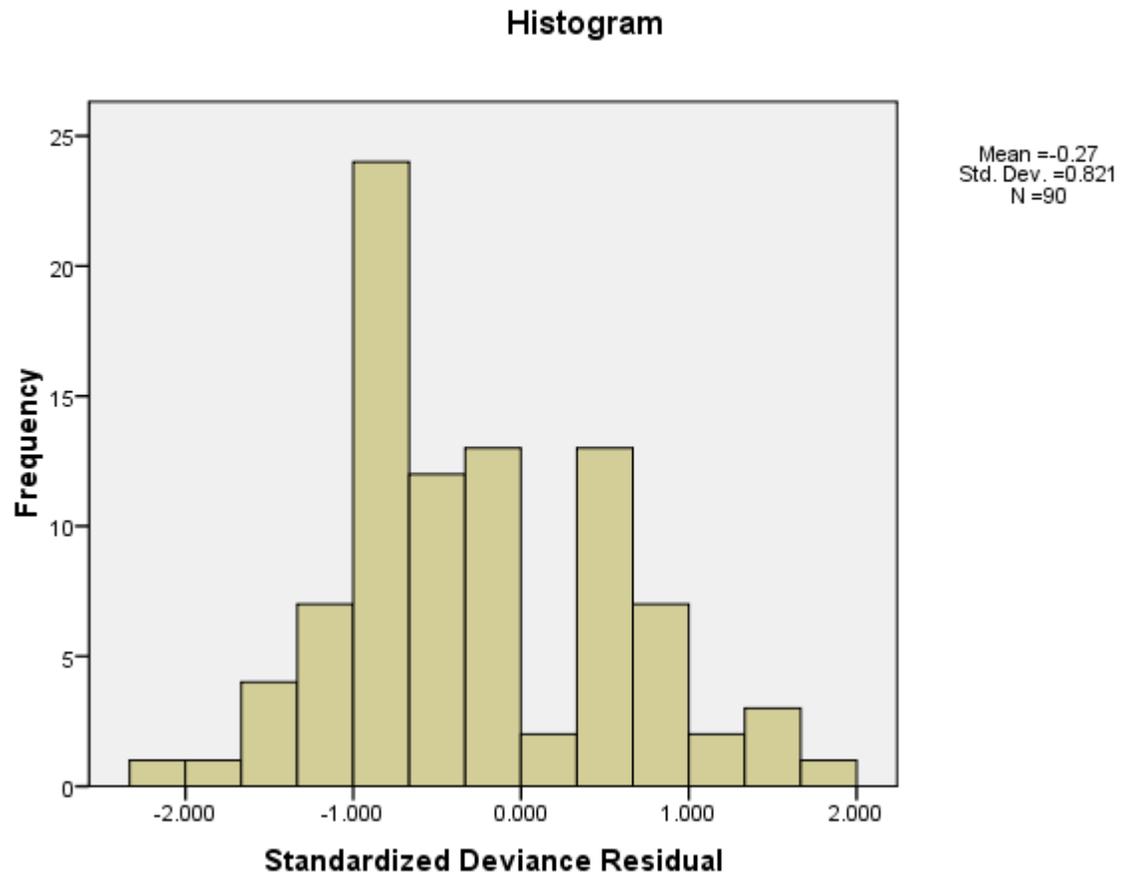


Figure 6: Histogram of residuals negative binomial regression, model (12)



**Table 11: Negative Binomial Regression (2)**

**Dependent variable: number\_cites by citing court**

INDEPENDENT VARIABLE	(13) (without outliers)	(14) (without zeros)	(15) (without zeros)	(16)	(17) (without zeros)	(18) (see note)	(19) (8 “countries”)	(20) (8 “countries”; without zeros)
(Intercept)	-8.647***	-4.591*	-4.644*	1.080	1.433		-9.492***	-7.976***
pop_cited_mill	0.043***	0.030***	0.027***			#**	0.036***	0.0256***
pop_ed_by_ing								
same_lang	1.425**	0.775		2.261**	1.429			
perc_lang	2.077**	1.976*	2.759***	0.911	1.091	#***	3.079***	2.540***
same_orig_LLSV								
same_orig_ADMS	0.752**	0.668	0.690*	0.980**	0.844*	#	0.776*	
neighbors								
Hofstede_diff								
Schwartz_diff	-1.260***	-1.150**	-1.365***	-1.033**	-1.077*	#**	-1.304**	
rank_cited								
not_corrupt_cited	0.780***	0.463**	0.521**				0.332***	0.741***
ln_GDPpc_cited								
citing_court	#***	#***	#***	#***	#***		#***	#
cited_court				#***	#***			
Chi <sup>2</sup>	171***	140***	139***	351***	142***	329***	98***	31***
Log Likelihood	-149	-145	-145	-160	-144	-171	-115	-100
Pseudo R <sup>2</sup>	0.36	0.33	0.33	0.52	0.33	0.49	0.30	0.14
N	88	50	50	90	50	90	56	34

\*\*\* significant at the 1% level      \*\* significant at the 5% level      \* significant at the 10% level

# significance denotes Wald Chi2 test of factor (individual parameter estimates not displayed)

Note: model (18) uses two-way interactions between *citing\_court* on the one hand and *same\_orig\_ADMS*, *Schwartz\_diff*, *perc\_lang*, and *citing\_court* on the other.

Figure 7: Diagnostic scatterplot negative binomial regression, model (15)

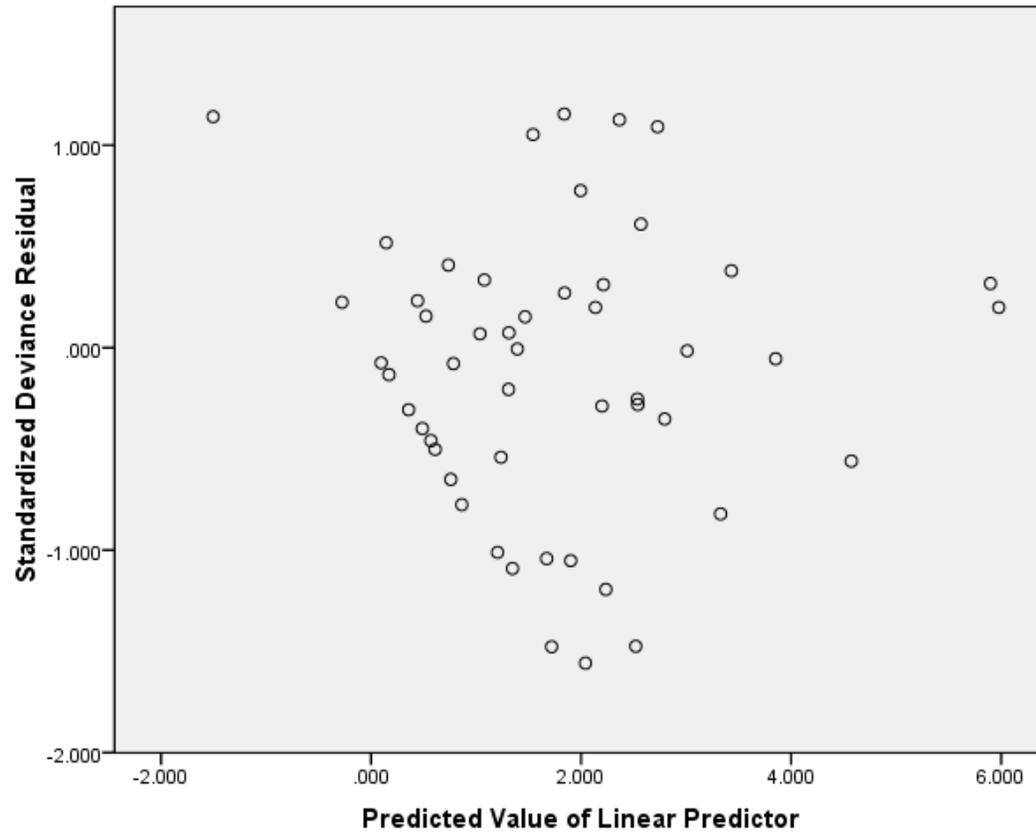
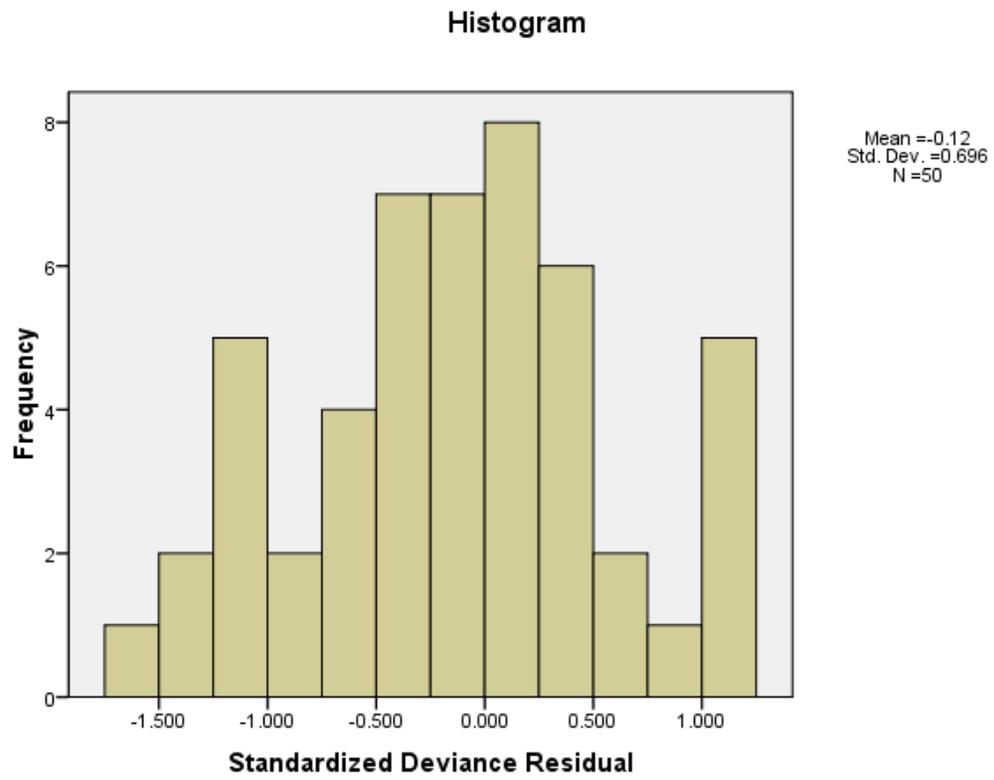


Figure 8: Histogram of residuals negative binomial regression, model (15)



**Table 12: Tobit Regression (Gaussian)**

**N=90**

**Dependent variable: perc\_cites**

INDEPENDENT VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(Intercept)	-.198***	-.075	-.312***	-.315***	-.325***	-.348***	-.361	-.337**	-.132	-.104	-1.011***	-4.262***
pop_cited_mill	.005***		.006***	.005***	.006***	.006***	.005***	.005***	.005***	.006***	.006***	.006***
pop_ed_by_ing		.021**										
same_lang			.481***		.440***	.409***						
perc_lang				.453***			.317***	.354***	.304***	.309***	.321***	.252***
same_orig_LLSV					.074							
same_orig_ADMS						.173***	.204***	.226***	.199***	.210***	.209***	.201***
neighbors							.104					
Hofstede_diff								.000				
Schwartz_diff									-.110***	-.090***	-.075**	-.104***
rank_cited										-.003*		
not_corrupt_cited											.090***	
ln_GDPpc_cited												.407***
Chi <sup>2</sup>	15.52***	5.02**	56.8***	35.22***	58.06***	64.96***	49.46***	47.2***	57.92***	60.94***	69.16***	66.74***
Log Likelihood	-37.38	-42.63	-16.74	-27.53	-16.11	-12.66	-20.41	-21.54	-16.18	-14.67	-10.56	-11.77
Pseudo R <sup>2</sup>	0.17	0.06	0.63	0.39	0.64	0.71	0.54	0.52	0.64	0.68	0.77	0.74

\*\*\* significant at the 1% level

\*\* significant at the 5% level

\* significant at the 10% level

**Table 13: GLM Regression with logit model**

**N=90**

**Dependent variable: number\_cites of cites\_total**

INDEPENDENT VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(Intercept)	-4.461***	-2.890***	-7.508***	-7.087***	-7.293***	-7.890***	-5.351***	-6.377**	5.388	-4.593***	-4.273***	-4.289***
pop_cited_mill	0.049**		0.034***	0.062***	0.060***	0.062***	0.055***	0.056**	0.054***	0.037***	0.037***	0.038***
pop_ed_by_ing		0.116*										
same_lang				4.833***	3.496***	3.652***	2.830***	2.780***	3.054***			
perc_lang			6.325***							3.525***	3.703***	3.444***
same_orig_LLSV												
same_orig_ADMS					1.924***	2.051***	1.698***	1.673***	1.801***	1.655***	1.706***	1.598***
neighbors											-0.681	
Hofstede_diff						0.005						
Schwartz_diff							-0.823*	-0.817	-0.685	-1.203***	-1.307***	-1.040***
rank_cited												-0.20
not_corrupt_cited								0.115				
ln_GDPpc_cited									-1.090			
Chi <sup>2</sup>	1,503***	590***	4,432***	4,954***	5,188***	5,194***	5,263***	5,266***	5,280***	5,281***	5,322***	5,314***
Log Likelihood	-2,447	-2,903	-983	-722	-606	-603	-568	-567	-559	-559	-539	-542
Pseudo R <sup>2</sup>	0.235	0.093	0.693	0.774	0.811	0.812	0.822	0.823	0.825	0.825	0.832	0.830

\*\*\* significant at the 1% level

\*\* significant at the 5% level

\* significant at the 10% level

**Table 14: Independent variables in the Dirichlet regressions**

<b>Variable</b>	<b>Description</b>	<b>Source</b>
<b>In_pop_citing</b>	Natural logarithm of the population of the country of the citing court in 2004.	See Table 1
<b>In_pop_cited</b>	Natural logarithm of the population of the country of the cited court in 2004.	See Table 1
<b>lang_e</b>	Equals 1 if more than 20% of the population of the country of the citing court (analysis of outgoing citations) or the cited court (analysis of incoming citations) speaks English as a native language, 0 otherwise	Eurobarometer (2006)
<b>lang_g</b>	Equals 1 if more than 20% of the population of the country of the citing court (analysis of outgoing citations) or the cited court (analysis of incoming citations) speaks German as a native language, 0 otherwise	Eurobarometer (2006)
<b>lang_f</b>	Equals 1 if more than 20% of the population of the country of the citing court (analysis of outgoing citations) or the cited court (analysis of incoming citations) speaks French as a native language, 0 otherwise	Eurobarometer (2006)
<b>perc_e</b>	Percentage of the population of the citing country that speaks English.	Eurobarometer (2006)
<b>perc_g</b>	Percentage of the population of the citing country that speaks German.	Eurobarometer (2006)
<b>perc_f</b>	Percentage of the population of the citing country that speaks French.	Eurobarometer (2006)
<b>orig_e</b>	Jurisdiction of the citing court is classified as belonging to the English common law tradition.	Armour et al. (2009b)
<b>orig_g</b>	Jurisdiction of the citing court is classified as belonging to the German civil law tradition.	Armour et al. (2009b)
<b>orig_f</b>	Jurisdiction of the citing court is classified as belonging to the French civil law tradition.	Armour et al. (2009b)
<b>Embeddedness Hierarchy Mastery Intellectual Auton. Egalitarianism Harmony</b>	Individual dimensions of culture on the Schwartz Value Index for the country of the citing court (analysis of outgoing citations) or the country of the cited court (analysis of incoming citations),	Schwartz Value Survey: <a href="http://isdc.huji.ac.il/26-12-05e.shtml">http://isdc.huji.ac.il/26-12-05e.shtml</a>

**Table 15: Dirichlet regression of outgoing citations (dependent variables: percentages citations to country)**

**N=10**

**Marginal effect<sup>67</sup> obtained with dirifit**

INDEPENDENT VARIABLES	Austria	Belgium	England	France	Germany	Ireland	Italy	Netherlands	Spain	Switzerland
(Model 1)										
ln_pop_citing	-1.90E-03	1.40E-03	-3.97E-02	2.37E-02	5.17E-02	-4.60E-03	1.47E-02	-1.82E-02	3.80E-03	-9.20E-03
Summary statistics	Wald Chi2 (9): 5.43; Log Likelihood: 527.81765									
(Model 2)										
lang_e	-0.008	-0.078*	0.432***	-0.129	-0.403***	0.153*	-0.026*	0.092	-0.001	-0.031
lang_g	0.238***	-0.173***	0.088	-0.171**	-0.045	-0.003	0.002	0.013	-0.006	0.057
lang_f	-0.038	0.043	-0.010	0.081	-0.134	-0.002	-0.024	0.023	-0.006	0.067
Summary statistics	Wald Chi2 (27): 85.00***; Log Likelihood: 555.26									
(Model 3)										
perc_e	0.026	-0.022	0.322***	-9.80E-04	-0.636***	0.097***	-0.017	0.217***	0.007	0.006
perc_g	0.146***	-0.194***	-0.009	-0.181	0.172	-0.048*	0.022	-1.80E-05	-0.016	0.109**
perc_f	-0.056	0.098	-0.089	0.090	-0.108	-0.022	-0.031	0.043	-0.017	0.092
Summary statistics	Wald Chi <sup>2</sup> (27): 81.26***; Log Likelihood: 556.56									
(Model 4)										
orig_e	0.005	-0.078**	0.489***	-0.174***	-0.383***	0.126	-0.023	0.076	-0.003	-0.036
orig_g	0.155*	-0.171***	0.122	-0.204***	-0.006	-0.004	0.003	0.023	-0.008	0.086
Summary statistics	Wald Chi <sup>2</sup> (18): 72.16***; Log Likelihood: 552.81									
(Model 5)										
orig_e	-0.056**	0.102	0.150*	0.006	-0.373***	0.197*	-0.022	0.051	0.012	-0.070***
orig_f	-0.113***	0.221**	-0.104***	0.188	-0.074	-0.003	-0.010	-0.033	0.004	-0.076***
Summary statistics	Wald Chi <sup>2</sup> (18): 72.16***; Log Likelihood: 552.81									
(Model 6)										
Embeddedness	-0.250	0.080	0.191*	0.444	0.055	0.092	0.224**	-0.449***	0.024	-0.409**
Hierarchy	0.174**	0.120	-0.094*	0.501	-0.923**	0.060	-0.014	0.170**	0.071	-0.065
Mastery	0.700**	-0.256	0.206	-0.938	0.585	0.041	-0.347	0.315	0.101	-0.408
Intellectual Auton.	0.006	0.051	0.077	-1.18***	1.533***	-0.053	-0.049	-0.279***	-0.016	-0.089
Egalitarianism	-0.167	0.970**	-0.152	0.308	-0.863	-0.095	-0.376**	0.442**	0.036	-0.102
Harmony	0.313***	-0.485**	-0.185***	0.572	-0.224	0.039	0.105	-0.043	0.046	-0.138
Summary statistics	Wald Chi <sup>2</sup> (54): 175.29***; Log Likelihood: 574.53									

\*\*\* significant at the 1% level

\*\* significant at the 5% level

\* significant at the 10% level

<sup>67</sup> For dummy variables discrete change from 0 to 1.

**Table 16: Dirichlet regression of incoming citations (dependent variables: percentages citations from country)**

**N=10**

**Marginal effect<sup>68</sup> obtained with dirifit**

INDEPENDENT VARIABLES	Austria	Belgium	England	France	Germany	Ireland	Italy	Nether-lands	Spain	Switzer-land
(Model 1)										
ln_pop_cited	0.014	-0.007	-0.044	0.009	0.016	-0.009	0.017	0.006	0.012	-0.012
Summary statistics	Wald Chi <sup>2</sup> (9): 2.66; Log Likelihood: 588.49									
(Model 2)										
lang_e	-0.012	-0.040	0.071	-0.039	-0.078	0.278*	-0.041	-0.089	-0.038	-0.014
lang_f	-0.020	0.077	-0.145*	0.107	-0.090	-6.30E-04	0.021	0.005	0.006	0.039
lang_g	0.125	-0.017	-0.149*	-9.50E-04	0.078	-0.045	-0.044	0.004	-0.034	0.083
Summary statistics	Wald Chi <sup>2</sup> (27): 37.89*; Log Likelihood: 602.44									
(Model 3)										
Ln_pop_cited	0.020	-0.001	-0.113**	0.019	-0.002	0.009	0.029	0.016	0.015	0.008
lang_e	0.012	-0.037	-0.057	-0.041	-0.069	0.310	-0.043	-0.056	-0.035	0.015
lang_f	-0.012	0.084	-0.217	0.113	-0.09	0.007	0.027	0.027	0.009	0.052
lang_g	0.127	-0.020	-0.217	0.005	0.097	-0.038	-0.036	0.016	-0.027	0.092
Summary statistics	Wald Chi <sup>2</sup> (36): 44.49; Log Likelihood: 605.98									
(Model 4)										
Embeddedness	0.599	-0.815**	-0.677***	0.589*	0.898*	0.392	0.292	-0.545	-0.190	-0.542
Hierarchy	-0.039	-0.102	0.981***	-0.081	-0.767**	0.19	-1.90E-05	-0.269	0.101	-0.014
Mastery	0.151	-0.084	2.164***	-1.201	0.480	0.262	-1.077	-0.209	-0.353	-0.133
Intellectual Auton.	0.257	0.033	0.133	-0.363	1.006**	-0.257	-0.429*	0.003	-0.338*	-0.0440
Egalitarianism	-1.16**	0.878	3.446***	-0.575	-1.871***	-0.17	-0.431	0.087	0.030	-0.230
Harmony	0.500*	-0.582**	-0.232	0.359	0.189	-0.224	0.199	-0.248	0.120	-0.082
Summary statistics	Wald Chi <sup>2</sup> (54): 110.82***; Log Likelihood: 618.91									

\*\*\* significant at the 1% level

\*\* significant at the 5% level

\* significant at the 10% level

<sup>68</sup> For dummy variables discrete change from 0 to 1.

**Table 17: Summary of regression results**

INDEPENDENT VARIABLE	Type of regression					
	OLS	OLS Semilog	Negative Binomial	Tobit	GLM	Dirifit
(Intercept)	***	***	***	***	***	
pop_cited_mill	**	***	***	***	***	
pop_ed_by_ing	***	***	***	**	*	
same_lang	***	***	**	***	***	max ***
perc_lang	***	***	**	***	***	max ***
same_orig_LLSV						
same_orig_ADMS	*	***	**	***	***	max ***
neighbors		*				
Hofstede_diff						
Schwartz_diff	***	***	***	***	***	max ***
rank_cited	**	*		*		
not_corrupt_cited		***	***	***		
ln_GDPpc_cited		***	***	***		

\*\*\* significant at the 1% level

\*\* significant at the 5% level

\* significant at the 10% level