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Market standards in financial contracting: The Euro's effect on debt securities ☆

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ABSTRACT

The introduction of the Euro ushered in a rise to dominance of English contract law in European debt securities. Corporate issuers in the Euro zone chose English law significantly more often than a control group from other European countries. The Euro effect on choice of law is particularly strong for debt securities in local markets that, arguably, were most affected by the Euro. The Euro effect is not explained by differences in the suitability of English law compared to other laws, a change in issuer composition or debt securities types, and the greater market share of British and American underwriters. We argue that increased standardization benefits (network effects) from a boost in cross-border investment provide the best account of why English law conquered the European debt securities market.

1. Introduction

Conventional theory predicts that financial contracting aims at minimizing agency costs. An example is the analysis of covenants in loan contracts and indentures (e.g., Smith and Warner, 1979; Gârleanu and Zwiebel, 2009; Nikolaev, 2010; Miller and Reisel, 2012). We consider standardization as another, more mundane force shaping financial contracts. Our study focuses on corporate debt securities and a prominent contract feature, the choice of applicable contract law. We find that by

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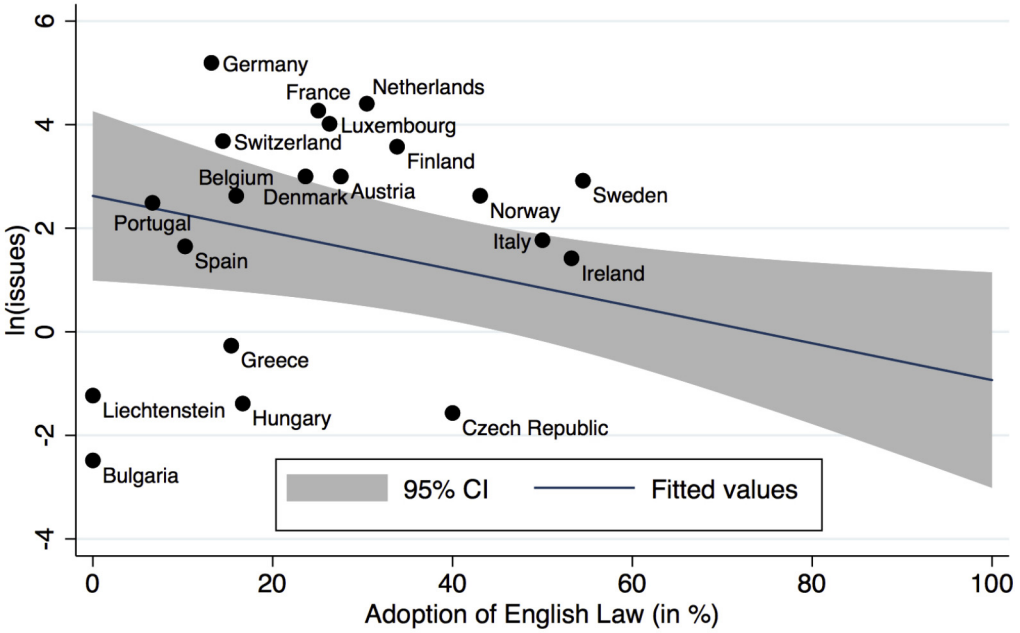


Fig. 1. The horizontal axis is the share of debt securities issues governed by English law, the vertical axis is market size, defined as the average number of debt securities issues per year in a given country. For EMU states, market size is based on the period between 1985 and the year the country introduced the Euro; for non-EMU states, the respective period runs from 1985 to 2008. The location of the issuer determines the country of the issue.

the late 2000s, 79 percent of European debt securities were governed by English law.[1] Such high concentration already suggests a demand for standardization. Historically, the rise of English law to market dominance coincided with the advent of the Euro in 1999. Adopting a similar approach as others before us (Bris et al., 2006, 2009, 2014; Kalemli-Ozcan et al., 2010), we use this event—the final stage of the Economic and Monetary Union (EMU)—as a natural experiment to investigate standardization as a determinant of contract design. It turns out that, with the arrival of the Euro, the share of English law increased significantly more for debt securities from EMU states than for a control group of European countries outside the EMU. Since neither English law nor other contract laws changed around this event, optimal contract design alone cannot explain the breakthrough of English law. The rise of British and American banks in the European underwriting market appears to be one driver. However, controlling for the shift in underwriting activity accounts only for a lesser part of the Euro effect. Another plausible explanation, in our view, is the desire for standardization in an increasingly international market.

Standardization reflects "network effects"—when users of a good derive a benefit from others using the same or a compatible good (see the excellent survey by Farrell and Klemperer, 2007). Network effects occur in many areas, from traditional products such as typewriter keyboards (David, 1985; Liebowitz and Margolis, 1990) to societal goods like languages, social norms or culture (see, e.g., Grewal, 2008; Church and King, 1993). Legal rules can also exhibit network effects (Klausner, 1995). Negotiating a contract is less costly when all parties to a contract are familiar with the same legal framework. Shared use of the same contract law, in this regard, resembles a common language that reduces the cost of transacting (Druzin, 2009).

This should be particularly relevant for the issuing process with its many participants—the issuer, underwriters, law firms, rating agencies, and investors. Fig. 1 gives a first hint at English law as the international standard for debt securities in Europe. It relates the fraction of debt securities governed by English law to the size of national debt securities markets. Smaller markets use English law more frequently.[2] They likely rely more on foreign investors and underwriters who are less familiar with local law; at the same time, domestic investors are more used to investing abroad. This should make small markets more inclined to adopt a contract law that international investors are familiar with, as suggested by Fig. 1.

Fig. 2 underscores the role of English law as a shared legal language. Eurobonds are marketed to a broad, international investor audience (Benzie, 1992, pp. 15–17; Coyle, 2002, pp. 23–25). Fig. 2 contrasts the English-law share in Eurobonds with that of domestic debt securities. We classify a security as "domestic" if the issuer, its ultimate parent and the currency denomination all belong to the same country. The surge of English law after the introduction of the Euro gives a first glimpse at our main result. But the key point here is that before the Euro international Eurobonds adopted English law far more frequently than debt securities aimed at the local market.

[1] For a sample of US corporate debentures in 2002, Eisenberg and Miller (2009, p. 1491) report a market share of 89 percent for New York law.
[2] The relationship is robust to excluding outliers such as Estonia, Iceland, Latvia, Lithuania, Poland, and Slovakia, as well as the UK.

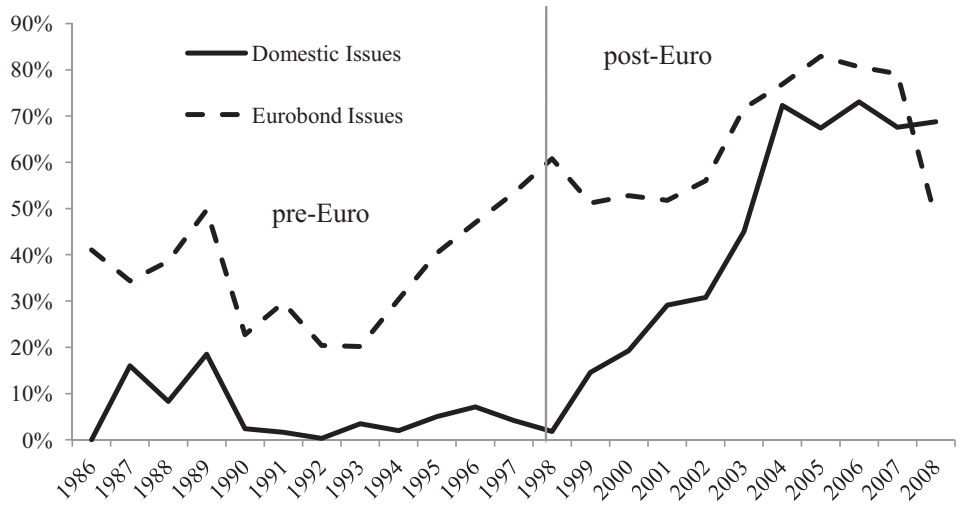


Fig. 2. The figure displays the English law share in domestic debt securities issues and Eurobond issues. A debt security issue is "domestic" if the issuer, its ultimate parent and the currency denomination are all from the same country. "Eurobond issues" are classified by the SDC Platinum database. 1985 is omitted because there are very few observations. The vertical line marks the introduction of the Euro in the first eleven EMU countries.

A growing empirical literature considers the standardization of contract terms and legal rules in financial markets. At a very general level, Coeurdacier and Martin (2009) analyze the effect of regulatory harmonization in the EU on cross-border investment by banks. Based on their model, they estimate legal differences—lack of standardization—to account for a 2.5% transaction cost. Kalemli-Ozcan et al. (2010) provide further evidence that not only the Euro but also the harmonization of financial regulation in the EU boosted cross-border holdings of banks. More specific to contract law, a strand of research from the US analyzes the development of "boilerplate" contract terms to establish that markets demand standardization despite divergent preferences. Like our study, much of this literature focuses on debt securities: Kahan and Klausner (1997, pp. 740–760) track the evolution of "event risk covenants" in 101 corporate bond indentures issued in the years 1988 to 1993. They argue that the drafting quality of these contractual provisions both converged and improved over time, which they read as evidence of collective learning and network effects. Choi and Gulati (2004) carefully examine the move towards collective action clauses in sovereign bond contracts governed by New York law based on a sample of 155 offerings. They document an abrupt shift in 2003 and conclude that the dominance of unanimous action clauses did not reflect uniform issuer preferences. More recently, Choi et al. (2012, 2013) generalize and extend these earlier findings for a larger sample of 1385 sovereign bonds from 1960 to 2011 and for various contractual provisions. On this broader basis, they show that contract terms in sovereign bonds often remain stable over extended periods of time before suddenly shifting towards new market standards in reaction to external shocks. This finding of "clustered change" is consistent with network effects in contracting. Interestingly, the boilerplate literature also contemplates the role of lawyers and underwriters as change agents for contracting standards (particularly Kahan and Klausner, 1997; Choi et al., 2013).

We enrich this picture with a European episode that arguably also reflects standardization, focusing on choice of law as an important contract term. Our main contribution consists of a causal analysis. We are careful, however, to limit our claim: Our difference-in-difference analysis provides evidence that the introduction of the Euro made issuers of debt securities in EMU countries more likely to choose English law. While we have no direct proof that the boost in cross-border investment and the demand for a common legal standard is behind the Euro effect on choice of law, we consider it the most plausible reason.

The remainder of the paper proceeds as follows: Section 2 gives an overview of the legal background, expounding the relevance of contract law for debt securities. Section 3 presents the data and descriptive statistics. Section 4 contains the difference-in-difference analysis to establish the effect of the Euro on choice of law in corporate debt securities. In Section 5, we dissect possible explanations of the Euro effect, including the growing importance of UK and US underwriters. Section 6 probes the robustness of the findings. In Section 7 we offer some concluding policy considerations.

2. Legal background

At its core, a debt security is a loan contract that can be traded. The present paper is concerned with the contract law governing the loan, where contract law refers to the contract-related legal rules of a sovereign state or a territorial unit of it (such as the states in the U.S. or England as a separate jurisdiction within the UK). Before considering the applicable contract law more closely, one should note that it is only one of many legal and regulatory aspects of debt securities (Eidenmüller et al., 2015): The issuer is subject to corporate law and, especially in financial distress or insolvency, to bankruptcy law; corporate and bankruptcy law can attach to different jurisdictions. For instance, a Danish issuer is organized under Danish corporate law, while its insolvency proceedings could be governed by Dutch law because it conducts its

business primarily in the Netherlands. Bankruptcy law is particularly relevant for debt securities as it determines how creditors can enforce their claims against an insolvent debtor and which priority they enjoy, including priority based on collateral. Even if the issuer had chosen German contract law, Dutch bankruptcy law would take precedence regarding these issues. Disclosure duties and listing requirements are yet another area. To pursue the example further, the Danish issuer could have the securities listed at the Luxembourg exchange, thereby becoming subject to Luxembourg securities regulation and, potentially, the jurisdiction of the Luxembourg financial markets regulator. The tax treatment of the debt securities—such as a withholding tax on interest payments—is still another matter that turns on the issuer's tax residence so that, in the example, Danish or Dutch tax law could apply (Eidenmüller et al., 2015).

The applicable contract law governs the loan contract underlying the debt security, often referred to as the "indenture." There is a set of meta-rules to determine the applicable law. Usually, these conflict-of-laws rules afford contract parties the freedom to choose a law of their liking.[3] Indentures routinely contain a choice-of-law clause; it is this stipulation that we consider.

The applicable contract law affects the design of the debt contract and therefore agency and other transaction costs. The main tenet of most contract laws is freedom of contract—the ability of the parties to shape their rights and obligations by agreement. Many differences between contract laws center on construing and enforcing the will of the parties in the event of a dispute. In this regard, English law pursues a "plain meaning" approach. It requires the courts to focus on the language of the contract and its literal meaning; this is believed to make adjudication more predictable (Herbots, 2012, pp. 426–428). Civil law jurisdictions, by contrast, are more inclined to scrutinize the parties' "actual intent" and to substitute their own reading of the contract for the—potentially imperfect—language drafted by the parties. Besides these conceptual differences, implementation of the contract also depends on the experience and acumen of the judges. Choice of forum regularly mirrors the choice of contract law. Unsurprisingly, lawyers from different jurisdictions tend to disagree over the comparative benefits of interpretive rules and courts (see, e.g., Law Society, 2007; Kötz, 2010). The relevant factors are hard to quantify because they reflect mostly unwritten law and practice and are rarely subject to legislative change.

Besides implementing the agreement of the parties, contract law sometimes also curtails freedom of contract. For instance, German courts can strike down terms of a standard contract if they deem them unfair to a party or insufficiently comprehensible.[4] There are more specific examples of interference with party autonomy. English law allows the indenture to provide for majority decisions on reducing the principal amount or the interest to be paid under a bond. Such "collective action clauses" have been in use since 1879 (Buchheit and Gulati, 2002). By contrast, the US Trust Indenture Act 1939 prevents majority decision-making with regard to payment terms, thereby restricting bondholders' ability to renegotiate a debt security.[5] During the sample period, German law likewise prevented bondholders from assenting a change of financial entitlements.[6] In addition, German law until 2009 used to restrict "no-action clauses," which delegate the enforcement of bondholder rights to a trustee (Häseler, 2010; Allen, 2012, pp. 72–73). This is again in contrast to English law, which allows the parties to give a trustee broad powers in enforcing and renegotiating bondholder rights in relation to the issuer.

English law also provides a comprehensive body of fiduciary duties for trustees that apply to bondholder trustees. Continental European jurisdictions typically lack the general concept of a trust, making it arguably more difficult to establish a bondholder representative (Allen, 2012, pp. 75–80; Hill and Beech, 2010; Rawlings, 2007). Thus, the main substantive differences in national contract laws governing indentures concern the possibility and scope of collective action clauses and of bondholder representation in relation to the issuer (Esho et al., 2006, pp. 74–75; for sovereign bonds, see Bradley and Gulati, 2014; Häseler, 2010). English law appears more conducive to coordinated action of bondholders, both in responding to debtor conduct or distress and in acceding to a restructuring involving debt relief. The importance of these matters is reflected in a 2009 comprehensive reform bill in Germany, which responded to perceived shortcomings—and the loss of market share against English law—by extending the feasibility of collective action clauses and bondholder trustees (Allen, 2012).

3. Data

Our main data source is the Thomson Reuters SDC Platinum Global New Issues database (SDC Platinum). We select debt securities issues from the member states of the European Union (EU) and of the European Free Trade Association (EFTA) except the UK. To qualify for inclusion, both the issuer of the debt security and its ultimate parent had to be located in one of the sample countries.[7] As sovereign debtors can have different considerations in choosing an applicable law, we restrict the sample to corporate issuers. This leaves us with 14,426 observations. Data for all explanatory variables were available for 10,637 debt issues. The final sample covers 22 countries and the period from 1985 to 2008. Appendix A provides a list of the countries in the sample.

[3] For the EU, see art. 3 Rome Convention on the law applicable to contractual obligations of 1980 and, since 2009, art. 3 Regulation (EC) No 593/2008 on the law applicable to contractual obligations (Rome I).

[4] Section 307(1) of the German Civil Code reads as follows: "Provisions in standard business terms are ineffective if, contrary to the requirement of good faith, they unreasonably disadvantage the other party to the contract with the user. An unreasonable disadvantage may also arise from the provision not being clear and comprehensible."

[5] The Trust Indenture Act applies to public offerings of corporate bonds in the US, even when a foreign law governs the indenture.

[6] To be more precise, the rule applied to majority decision-making on payment terms for issuers located in Germany. Whether it extended to indentures of foreign issuers governed by German law remained an unsettled issue.

[7] The location of issuer and ultimate parent coincide in 85 percent of our observations.

Our difference-in-difference approach builds on the introduction of the Euro as exogenous variation. On January 1, 1999 eleven sample countries entered stage III of the EMU: The conversion rates of national currencies were irrevocably fixed. Two years later, Greece joined the EMU. Euro banknotes and coins became legal tender on January 1, 2002. Our treatment group consists of debt securities from the twelve sample countries that had become members of the Euro zone by the end of our observation period; debt securities from the other countries in Appendix A constitute the control group. Our baseline definition of treatment and control groups is based on the location of the issuer: A debt security belongs to the treatment group if the issuer is situated in one of the twelve countries that joined the EMU during the observation period.

The dependent variable is *English law*, which equals 1 if English contract law governs the debt security and 0 otherwise. Appendix B provides detail on data sources and variable definitions. For the analysis of English and non-European underwriters in Section 5.3, we use the names of the "lead managers" of an issue to code the location of underwriters based on Internet research. If a branch office was named as lead manager, we coded the location of the branch, not the headquarter; for example, the London branch of Deutsche Bank AG, a German corporation, is counted as a UK underwriter. Because the origin of the bank group can affect the behavior of subsidiaries and branches, we also hand-collected the location of the lead manager's ultimate parent or headquarter. We then constructed the variables *lead manager* and *lead manager parent* for each observation; it contains the shares of underwriters and their ultimate parents from, respectively, the UK and other non-European countries, including the US ("RoW").

Table 1 reports descriptive statistics for the main variables, namely the mean and median of the adoption of English law, the share of UK and non-European *lead managers* and *lead manager parents*, the number of *lead managers* in issues, the *maturity*, *offering amount*, *S&P rating*, and *offering yield* of the issue. The table reveals that the use of English law, the share of UK and non-European lead managers and lead manager parents increases in both the treatment and the control groups. The offering amount, rating and yield of issues in the treatment group is not much different from the control group, while the average maturity is somewhat shorter.

Fig. 3 shows the sizes of local debt markets and the corresponding market shares of domestic, English and other foreign laws in the sample. The largest European debt markets are Germany, the United Kingdom, the Netherlands, France, Switzerland and Luxembourg. For EMU member states, Panels A and B distinguish the period before and after the introduction of the Euro. In the pre-Euro era, 55 percent of the debt securities in EMU member states were governed by domestic law; English law covered 25 percent. With the Euro, the market share of English law expanded visibly. A mere 35% of indentures continued to choose domestic law. A similar pattern emerges from Panels C and D for the non-EMU countries before and after 1999. Domestic law played a major role only in Switzerland and the three non-EMU Scandinavian countries (Sweden, Denmark, and Norway).

4. The Euro and the shift to English law

First and foremost, we are interested in whether the Euro led issuers to choose English law more often. To establish this, we build on the expectation that the Euro's effect should differ across issuers; debt securities from Euro zone countries should be more affected than securities from outside the EMU. We employ a difference-in-difference approach—similar to the firm-level analyses of Bris et al. (2006, 2009, 2014)—to tease out the varying impact of the Euro on EMU and non-EMU debt securities. Our baseline analysis compares debt securities from issuers located in an EMU state (treatment group) with issuers in other European countries (control group). The treatment is the introduction of the Euro. It impacts debt securities that were issued after the issuer country had introduced the Euro (i.e., after 1999 for the first eleven countries and after 2001 for Greece). The following Probit model serves to estimate the determinants of the choice of English contract law:

$$\Pr(\textit{English law} = 1) = \Phi(\beta_1\ \textit{EMUcountry} + \beta_2\ \textit{After}1998 + \beta_3\ \textit{Euro} + \gamma\text{CONTROLS})$$

EMUcountry indicates whether the issuer belongs to the treatment group. It captures general differences between issues in EMU states and in other countries. *After1998* is the time dummy for debt securities issued after 1998; it reflects general changes in choice of law preferences. *Euro* is the treatment variable. It takes the value 1 if the debt security was issued in an EMU country after the Euro was introduced and 0 otherwise. It is the variable of interest—the effect of the Euro for issuers in the EMU. In addition, the model contains a vector of issue-specific control variables: the *maturity*, *offering amount*, *S&P rating* and *offering yield* of the debt security as well as issuer dummies to control for firm-specific effects. Appendix B describes the definition and sources of the variables. In a second specification, we included year fixed effects, which made *After1998* obsolete. All model specifications are complemented by a linear probability model (LPM) as a robustness check.

Columns (1)–(4) of Table 2 contain the results. The coefficient for the treatment group dummy *EMUcountry* indicates that EMU country issuers generally relied less on English law over the sample period. *After1998* points to an increase in the use of English law across all countries. As to the actual treatment variable *Euro*, only the second specification in columns (3) and (4) with the more fine-grained year controls shows a significant effect. The interpretation of the *Euro* coefficient is the increase in probability of English law governing a security from the introduction of the Euro in the country of issuance, controlling for differences between treatment and control group as well as general changes over time.

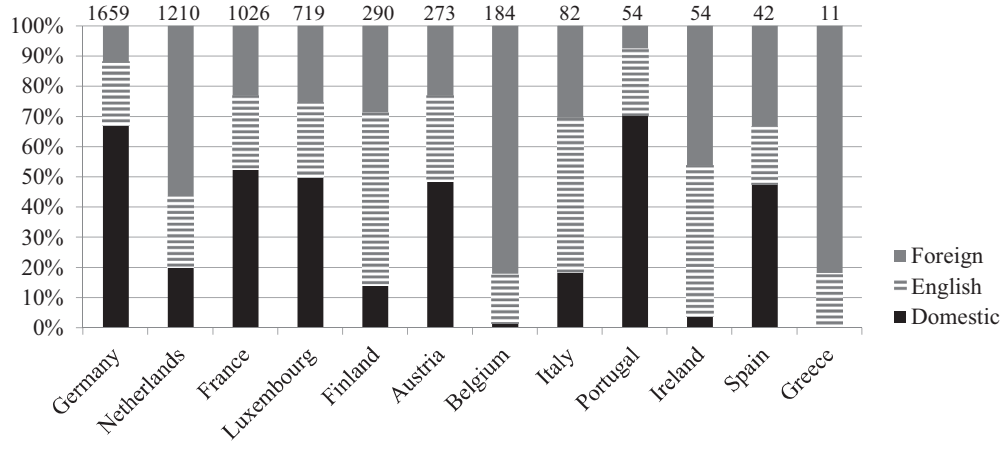
According to column (3) of Table 2, the Euro raises the average probability of an issuer choosing English law by 5.2 percentage points. Fig. 2 suggested that offerings to a more international investor audience relied more on English law even before the Euro. Against this backdrop, one suspects that the Euro's push towards international standardization is more

Table 1
The table reports summary statistics of the dependent and explanatory variables for the total sample, the control group and treatment group before and after the introduction of the Euro. The means of the control group also indicate differences in means between control group and treatment group based on a *t*-test separately for the pre- and post-treatment period. Significance levels: * <5%, ** <1%.

	Total Sample			Pre-Treatment Treatment Group			Post-Treatment Treatment Group			Pre-Treatment Control Group			Post-Treatment Control Group		
Variables	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
English Contract Law	0.339	0	0.473	0.256	0	0.436	0.516	1	0.500	0.239	0	0.427	0.514	1	0.500
Lead Manager (UK)	0.247	0	0.412	0.226	0	0.402	0.303	0	0.426	0.180**	0	0.383	0.343	0	0.456
Lead Manager Parent (UK)	0.059	0	0.223	0.030	0	0.163	0.125	0	0.310	0.018*	0	0.136	0.102	0	0.296
Lead Manager (RoW)	0.230	0	0.415	0.129	0	0.328	0.256	0	0.426	0.463**	0	0.498	0.493**	0.333	0.503
Lead Manager Parent (RoW)	0.377	0	0.511	0.269	0	0.445	0.386	0	0.525	0.601**	1	0.508	0.832**	1	0.622
# Lead Manager	1.314	1	0.727	1.295	1	0.692	1.502	1	0.908	1.035**	1	0.222	1.240**	1	0.566
Maturity	7.194	5.160	7.123	6.412	5.080	3.746	7.749	5.070	10.819	8.927**	7.100	6.906	7.227	7.080	7.182
Offering Amount	148.124	85.360	172.212	132.123	81.505	148.402	204.414	120.540	216.889	90.881**	56.425	114.114	163.027**	111.340	169.976
S&P Rating	4.194	4	3.192	4.442	4	3.260	3.776	3	3.079	4.229*	4	3.091	3.833	3	3.109
Offering Yield	6.190	5.715	3.258	6.772	6.569	2.964	5.249	4.891	3.252	6.523**	6.417	3.495	4.338**	3.947	3.687
n (# Unique Issuers)	1305			635			428			348			151		
N (# Issues)	10,637			5580			3021			1540			496		

Panel A: EMU countries before the Euro

The value above each bar is the number of corporate debt securities issued in that country between 1985 and the year the country introduced the Euro as an official currency.



Panel B: EMU countries after the Euro

The value above each bar is the number of debt corporate securities issued in that country between the year the country introduced the Euro as official currency and the year 2008.

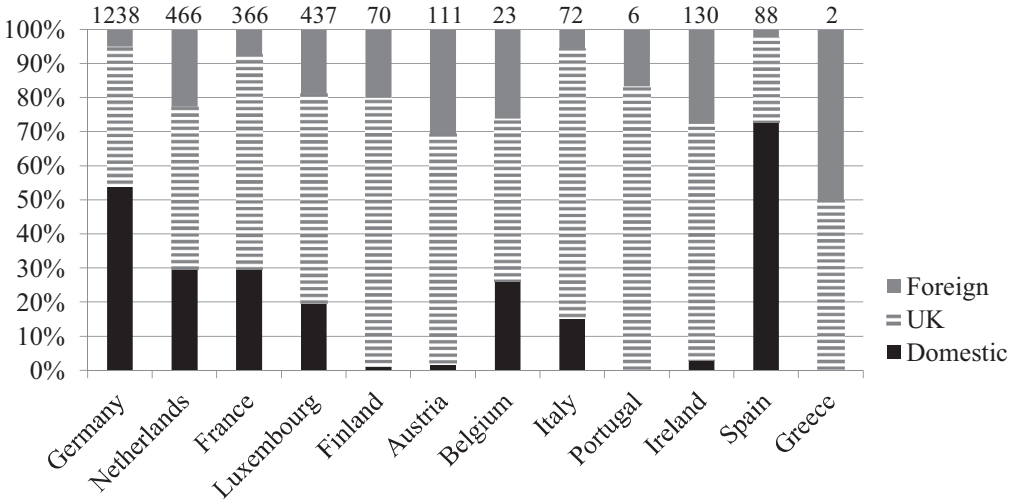


Fig. 3. Percentage share of domestic, English, and foreign law in corporate debt securities from EMU and non-EMU countries.

pronounced for debt securities that, before the Euro, had targeted a purely local market. To pursue this idea, we create a subsample of domestic issues. A "domestic" debt security is one where the locations of both the issuer and the issuer's ultimate parent are in one country and the security's currency pertains to the same country.[8] Columns (5)–(8) of Table 2 show the estimation results for the domestic subsample. As expected, the treatment effect is much stronger in both specifications. In the year fixed-effects specification (7), it amounts to an average probability increase of 17.1 percentage points.

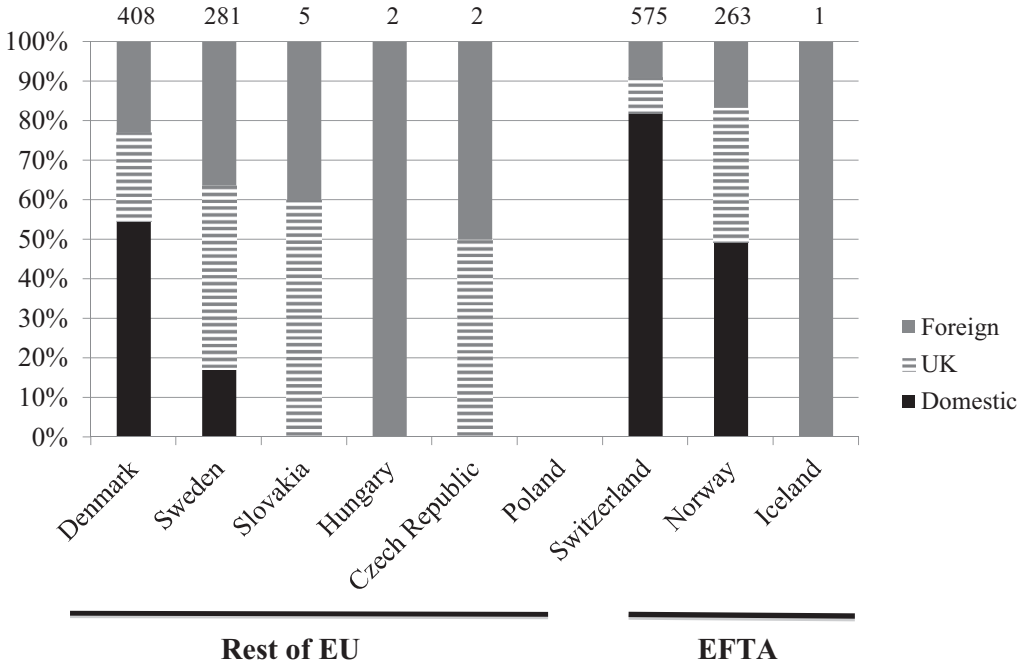
Fig. 4 depicts the treatment effect for domestic issues. Like the treatment group, the control group saw an upsurge in English law—though somewhat later and less pronounced. This more general trend towards English law could already be seen from the *After1998* coefficients in column (3). A potential reason—which will be examined below—is growing economies of scale created by the Euro in the underwriting industry. As the control group could experience its own weaker Euro effect, the difference-in-difference framework may well underestimate the effect on the treatment group.

Going back to the full sample, redefining treatment and control groups in terms of currency provides another view of the Euro effect. Instead of issuer location, we now consider the currency denomination as the relevant group characteristic. The new treatment group consists of debt securities denominated in the currency of an EMU country—either the respective

[8] A potential concern is that the "domestic" category might have expanded for EMU countries as their national currency in 1999 turned into the common Euro currency. We address this concern in section 6.

Panel C: Non-EMU countries, 1985–1998

The value above each bar is the number of corporate debt securities issued in that country between 1985 and 1998.



Panel D: Non-EMU countries, 1999–2008

The value above each bar is the number of corporate debt securities issued in that country between 1999 and 2008.

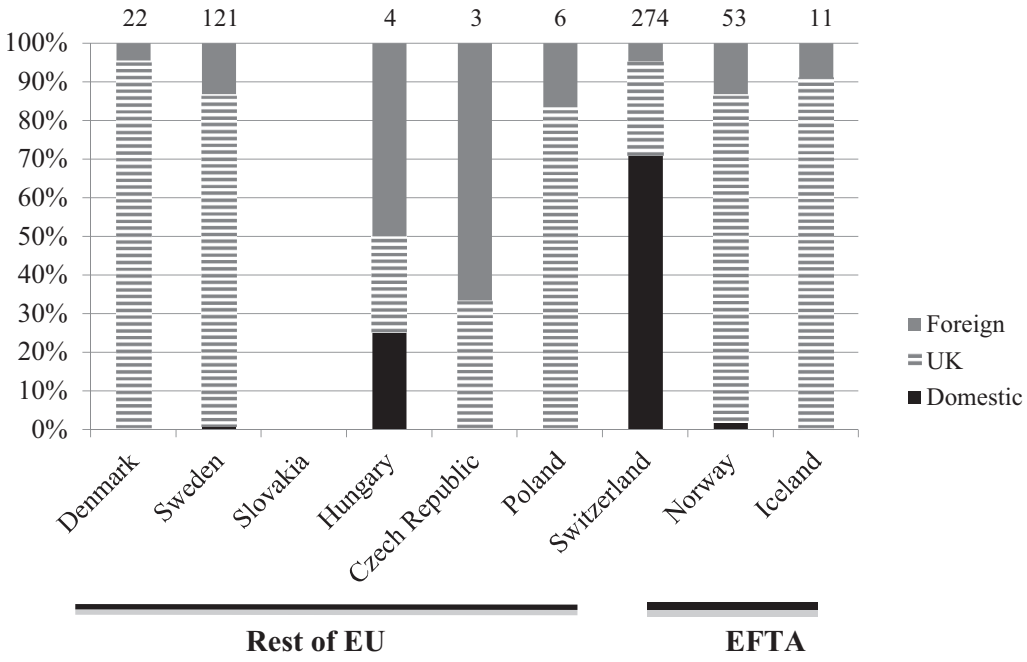


Fig. 3 (*continued*)

national currency or the Euro after the EMU took effect. For instance, a debt security denominated in French Francs before 1999 or in Euro thereafter falls in the treatment group. The treatment again is the introduction of the Euro. The control group consists of debt securities denominated in the currency of a non-EMU state. The corresponding Probit model reads as follows:

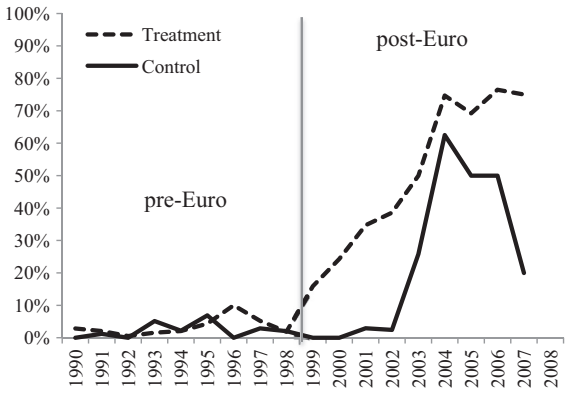


Fig. 4. Percentage of English law in domestic debt security issues in the treatment group and the control group. A debt security issue is "domestic" if the issuer, its ultimate parent and the currency denomination are all from the same country. The vertical line marks the introduction of the Euro in the first eleven EMU countries.

$$\Pr(\textit{English law} = 1) = \Phi(\beta_1\ \textit{EMUcurrency} + \beta_2\ \textit{After}1998 + \beta_3\ \textit{Euro} + \gamma\text{CONTROLS})$$

The new *EMUcurrency* variable indicates membership in the treatment group (a debt security issued in the currency of an EMU country, i.e., either the Euro or one of its legacy currencies). *After1998* is again the time dummy. The treatment variable *Euro* switches to one if the debt security is denominated in Euro. The results in column (9) and (10) of Table 2 resemble the location-based findings for the domestic subsample in columns (5) and (6). Columns (11) and (12) replace *After1998* with year fixed effects. The treatment variable *Euro* continues to show a large and highly significant coefficient.

5. What explains the Euro effect?

The preceding section has offered evidence that the introduction of the Euro was associated with a rise of English contract law in European corporate indentures. By breaking up fragmented national debt markets, the new common currency may have increased the demand for international standardization of debt securities. Yet there can be other, competing or complementing explanations. This section inspects possible causal links between the Euro and choice of English contract law.

5.1. Issuers and the quality of contract laws

The introduction of the Euro did not affect substantive differences between contract laws. It is noteworthy that English law did not undergo any relevant changes with regard to debt securities in the years around 1999.[9] Nonetheless, the quality of English contract law may have improved over time, or other laws may have deteriorated. The difference-in-difference approach and specifically the year fixed effects should effectively control for such changes: The characteristics of the available contract laws are the same for issuers within and outside the Euro zone (and for debt securities denominated in currencies of EMU and non-EMU states). A change in the comparative qualities of contract laws should affect the treatment and control groups equally. Thus, it cannot explain the observed difference in difference between the two groups.

However, the Euro could have attracted different issuers and debt securities. Hale and Spiegel (2012) show that non-financial firms from countries outside the EU and the US became by around 17 percentage points more likely to issue bonds denominated in Euro than in any of its predecessor currencies before the EMU. It has also been suggested that more corporations of lesser credit standing began issuing debt securities (e.g., Pagano and von Thadden, 2004, p. 537). For lower-rated issuers, the optimal debt contract could look different. It might include collective action clauses which English law in contrast to other jurisdictions permitted (see Section 2). Similarly, the Euro could have fostered the growth in asset-backed securities (ABS) in EMU countries in the years before the financial crisis (European Central Bank, 2007). ABS may require specific arrangements that English law more easily provided. If this were the case, one could imagine that the introduction of the Euro changed the demand for contract design, rather than increasing the demand for standardization.

We cannot entirely rule out such an explanation. However, the security-level control variables capture a lot of the heterogeneity of debt securities. The descriptive statistics in Table 1 indicate that *maturity*, *offering amount*, *S&P rating* and *offering yield* changed after the Euro but did so in similar ways in the treatment and control groups. More importantly, all regressions in Table 2 control for these variables and hence for much variation in issuer and securities composition. If an increase in

[9] At first blush, the Trustee Act 2000 might have strengthened the liability of trustees. Yet the trust deed can and invariably does limit the trustee's duties and exempts her from liability (Rawlings, 2007). Therefore, the statute did not change the status quo for debt securities under English law.

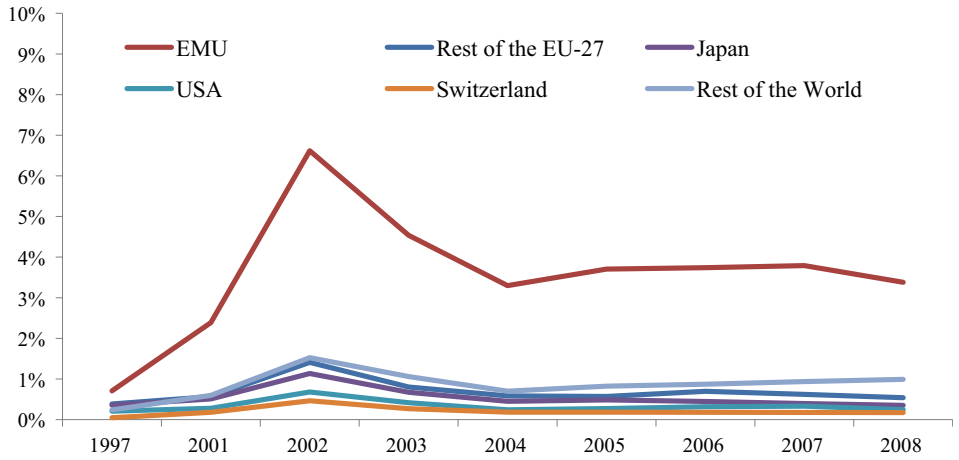


Fig. 5. The figure shows foreign portfolio investment holdings in debt securities as a percentage of the total amounts of outstanding debt securities in the initial EMU countries (Austria, Belgium, Finland, France, Germany Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain). The data source is the IMF Coordinated Portfolio Investment Survey (CPIS) and the BIS debt securities statistics. As no CPIS data was available for Germany and Switzerland in 1997, we imputed the values from the share of Germany and Switzerland in EMU holdings in 2001.

lower rated issuers were behind the move to English law, it would be reflected in the *S&P rating* coefficient. The same is true for *maturity* and *offering amount* to the extent they reflect systematic differences across security types, e.g., for ABS. Finally, the fact that the Euro treatment effect is particularly strong in the subsample of domestic issues with both the issuer and its ultimate parent in the same EMU country (columns (5)–(8) in Table 2) dismisses the possibility that a rise in debt securities from foreign issuers explains the upsurge in English law use. The available evidence lends little support to the notion that different issuers and debt securities needed a different contract law.

5.2. Investors

The Euro has profoundly transformed the European debt securities markets (Pagano and von Thadden, 2004; Galati and Tsatsaronis, 2003; Hartmann et al., 2003). Specifically, it eliminated the exchange rate risk for cross-border investment in debt securities as between issuers and investors from the EMU. Investors started viewing the Euro area as a single debt market. One tangible reason is that regulation restricts foreign currency holdings by certain institutional investors such as insurance companies and pension funds. The EMU allowed them to diversify their holdings internationally (Lannoo, 1998, p. 327; Santos and Tsatsaronis, 2003, p. 3). Using panel data from 1978 to 2007, Kalemli-Ozcan et al. (2010) provide evidence that the elimination of exchange rate risk contributed the most to the increase in bank-to-bank debt holdings in the Euro area. The introduction of a common currency led investors from the EU and—to a lesser degree—from outside Europe to invest a greater share of their debt securities portfolios in the Euro area (Balli et al., 2010; Haselmann and Herwartz, 2010; De Santis and Gérard, 2009; Coeurdacier and Martin, 2009; Lane, 2006; see also Baele et al., 2004, pp. 521–522; Pagano and von Thadden, 2004, pp. 538–540).

Fig. 5 documents the growth of cross-border investment in debt securities issued in the Eurozone. It shows the composition of foreign investor holdings in debt securities issued in the initial EMU member states over time. The portfolio holdings of foreign debt securities come from the IMF Coordinated Portfolio Investment Survey (CPIS). To arrive at the share of foreign EMU holdings, we divide them by the total amount of debt securities outstanding in the respective target countries from the BIS debt securities statistics. Adding the graphs in Fig. 5 indicates a large and sustained expansion of relative foreign holdings from 2 percent in 1997 to almost 12 percent in 2002 and then around 6 percents in subsequent years. As Fig. 5 makes apparent, the bulk of the increase comes from investors in other EMU countries who benefit from the elimination of currency risk.

The rise in cross-border investment in EMU country debt securities aligns well with a standardization account: When issuers face a more diverse investor base, it becomes pressing to establish a common standard. In fact, Coeurdacier and Martin (2009, pp. 101–102) argue that because the Euro made EMU debt securities closer substitutes, legal differences weighed more heavily and dampened cross-border investment. Unfortunately, data on investor composition are not available at the level of individual debt securities. While prior research gives evidence of the Euro's effect on diversifying the investor clientele, we cannot directly test whether this is behind the success of English law.

5.3. Underwriting

The broadened investor audience was mirrored by profound changes in the marketing of debt securities. For underwriting services in particular, the EMU has opened up the European market to competition from large US banks. Before the Euro, issuers used to retain an underwriter from one of the smaller national currency areas. After the EMU took effect, firms more

Table 2
The dependent variable is *English law*. It indicates whether the debt security is governed by English contract law. *EMUcountry* indicates if the country where the issuer is located had introduced the Euro by 2008; *EMUcurrency* indicates whether the debt security is denominated in Euro or in a Euro-legacy currency. *After1998* indicates if the debt security was issued after 1998. *Euro* indicates if the Euro had been introduced in the country of the issuer or the debt security's currency denomination. We report average marginal effects of the explanatory variables for the probit models and p-values based on robust standard errors. Significance levels: * <5%, ** <1%.

	Location (All Issues)				Location (Domestic Issues)				Currency			
	Probit	LPM	Probit	LPM	Probit	LPM	Probit	LPM	Probit	LPM	Probit	LPM
Treatment Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
EMUcountry	−0.005	−0.004	−0.021	−0.026*	−0.026	0.005	−0.039*	−0.024*				
	0.721	0.780	0.123	0.043	0.186	0.576	0.032	0.027				
EMUcurrency									−0.332**	−0.339**	−0.319**	−0.335**
									0.000	0.000	0.000	0.000
After1998	0.251**	0.278**			0.143**	0.127**			0.124**	0.147**		
	0.000	0.000			0.000	0.000			0.000	0.000		
Euro	0.024	0.022	0.052*	0.063*	0.152**	0.256**	0.171**	0.283**	0.283**	0.267**	0.274**	0.275**
	0.305	0.406	0.023	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Debt Security Controls												
Maturity	−0.004**	−0.004**	−0.005**	−0.005**	0.000	0.000	−0.001*	−0.002	−0.003**	−0.004**	−0.004**	−0.004**
	0.000	0.000	0.000	0.000	0.447	0.945	0.018	0.059	0.000	0.000	0.000	0.000
Ln (Offering Amount)	0.008*	0.009**	0.007	0.007	0.006	0.006	0.004	0.004	0.007*	0.009**	0.004	0.005
	0.019	0.007	0.053	0.051	0.106	0.094	0.289	0.197	0.033	0.006	0.242	0.126
S&P Rating	−0.004**	−0.004**	−0.001	−0.001	−0.003	−0.003	0.000	0.000	−0.003*	−0.003*	−0.001	−0.001
	0.004	0.003	0.356	0.316	0.084	0.060	0.805	0.818	0.018	0.012	0.665	0.633
Offering Yield	0.006**	0.006**	0.009**	0.010**	0.002	0.001	0.004*	0.006*	0.012**	0.012**	0.015**	0.017**
	0.000	0.000	0.000	0.000	0.063	0.447	0.018	0.039	0.000	0.000	0.000	0.000
Fixed Effects												
Issuer Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies			Yes	Yes			Yes	Yes			Yes	Yes
Log Pseudolikelihood	−5753.98		−5412.76		−1107.29		−953.23		−5186.44		−4858.41	
Wald Chi^2	1750.85		2255.65		790.92		923.88		2462.93		2786.61	
Pseudo R^2	15.5	18.8	20.6	24.3	33.0	28.4	42.2	40.0	23.9	26.8	28.7	39.2
Observations	10,637	10,637	10,637	10,637	3921	3921	3911	3911	10,637	10,637	10,637	10,637

Table 3
The dependent variable is *English law*. It indicates whether the debt security is governed by English contract law. *EMUcountry* indicates if the country where the issuer is located had introduced the Euro by 2008; *EMUcurrency* indicates whether the debt security is denominated in Euro or in a Euro-legacy currency. *After1998* indicates if the debt security was issued after 1998. *Euro* indicates if the Euro had been introduced in the country of the issuer or the debt security's currency denomination. *Lead Manager* and *Lead Manager Parent* are the shares of lead managers or their ultimate parents located in the UK or outside Europe (RoW), respectively. We report average marginal effects of the explanatory variables for the probit models and p-values based on robust standard errors. Significance levels: * <5%, ** <1%.

	Location (All Issues)				Location (Domestic Issues)				Currency			
	Probit	LPM	Probit	LPM	Probit	LPM	Probit	LPM	Probit	LPM	Probit	LPM
Treatment Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
EMUcountry	0.040**	0.049**	0.014	0.021	0.003	0.055**	−0.029	−0.002				
	0.002	0.000	0.264	0.089	0.913	0.003	0.172	0.922				
EMUcurrency									−0.237**	−0.246**	−0.221**	−0.246**
									0.000	0.000	0.000	0.000
After1998	0.181**	0.210**			0.117**	0.085**			0.115**	0.145**		
	0.000	0.000			0.000	0.007			0.000	0.000		
Euro	0.040	0.039	0.076**	0.087**	0.155**	0.266**	0.189**	0.316**	0.236**	0.224**	0.230**	0.239**
	0.078	0.170	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Debt Security Controls												
Lead Manager (UK)	0.337**	0.410**	0.318**	0.405**	0.102**	0.171**	0.115**	0.212**	0.235**	0.292**	0.226**	0.293**
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lead Manager Parent (UK)	0.080**	0.099**	0.105**	0.116**	−0.026	−0.017	−0.065*	−0.098	0.070**	0.096**	0.093**	0.112**
	0.000	0.000	0.000	0.000	0.425	0.781	0.034	0.077	0.000	0.000	0.000	0.000
Lead Manager (RoW)	0.087**	0.090**	0.064**	0.065**	0.057**	0.097**	0.019	0.052	−0.017	−0.044*	−0.027	−0.061**
	0.000	0.000	0.000	0.000	0.006	0.002	0.305	0.076	0.287	0.028	0.066	0.001
Lead Manager Parent (RoW)	0.038**	0.052**	0.045**	0.063**	−0.009	−0.010	−0.003	−0.011	0.006	0.019	0.016	0.030*
	0.005	0.001	0.000	0.000	0.620	0.730	0.823	0.683	0.618	0.228	0.173	0.045
Maturity	−0.003**	−0.003**	−0.004**	−0.004**	−0.000	0.000	−0.001*	−0.001	−0.003**	−0.003**	−0.004**	−0.004**
	0.000	0.000	0.000	0.000	0.550	0.650	0.026	0.108	0.000	0.000	0.000	0.000
Ln (Offering Amount)	−0.002	−0.002	−0.006	−0.006	0.005	0.002	0.002	0.001	−0.003	−0.002	−0.008**	−0.007*
	0.540	0.506	0.057	0.070	0.201	0.465	0.534	0.647	0.284	0.441	0.006	0.016
S&P Rating	−0.004**	−0.004**	−0.001	−0.001	−0.003	−0.003*	0.000	0.000	−0.004**	−0.004**	−0.001	−0.001
	0.002	0.001	0.440	0.422	0.086	0.049	0.785	0.888	0.003	0.001	0.591	0.534
Offering Yield	0.008**	0.009**	0.011**	0.014**	0.002	0.002	0.004*	0.006*	0.010**	0.011**	0.013**	0.016**
	0.000	0.000	0.000	0.000	0.056	0.191	0.017	0.037	0.000	0.000	0.000	0.000
Fixed Effects												
Issuer Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies			Yes	Yes			Yes	Yes			Yes	Yes
Log Pseudolikelihood	−4984.77		−4618.87		−1087.26		−923.23		−4789.49		−4426.93	
Wald Chi^2	2654.46		3189.28		833.17		977.82		2915.26		3311.22	
Pseudo R^2	26.8	31.5	32.2	36.9	34.2	29.7	44.1	41.7	29.7	33.7	35.0	39.1
Observations	10,637	10,637	10,637	10,637	3921	3921	3921	3921	10,637	10,637	10,637	10,637

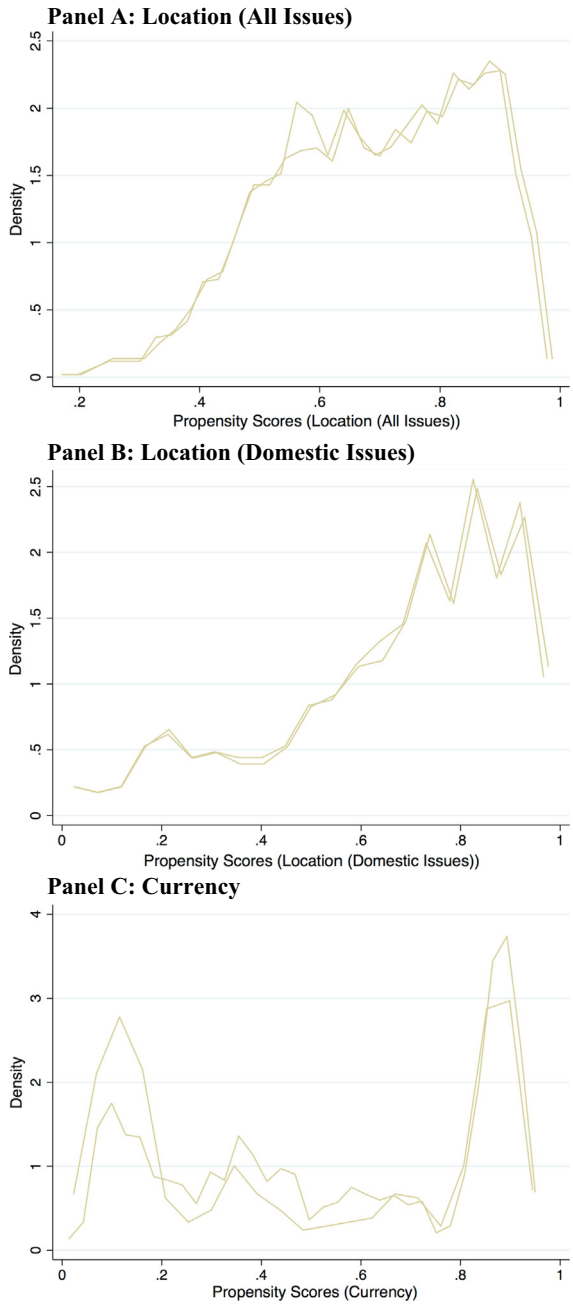


Fig. 6. The figure shows the distribution densities of propensity scores in the matched treatment and control groups for the three specifications.

often relied on foreign banks (Galati and Tsatsaronis, 2003, pp. 183–186; Santos and Tsatsaronis, 2003, pp. 13–15; Kollo, 2005). Economies of scale and enhanced competition significantly cut issuer costs, leading to a convergence with the US market (Santos and Tsatsaronis, 2003; Melnik and Nissim, 2006; Peristiani and Santos, 2010). For instance, Melnik and Nissim (2006, pp. 169–170) estimate that total issue cost compared to dollar denominated debt securities declined by 0.168 percentage points.

In concert with introducing the common currency, the EU in 1999 adopted a comprehensive Financial Services Action Plan to promote a fully integrated financial market (Commission of the European Communities, 1999; Kalemli-Ozcan et al., 2010; Bris et al., 2014). As part of the plan, the Prospectus Directive of 2003 enabled issuers to market securities throughout the EU based on the same prospectus approved by a single national regulator (the "European passport"). While most member states implemented the directive only by 2005, the legislative process started as early as 2001. The impending directive could have kindled mass production in the underwriting industry based on a uniform model documentation for

Table 4
Treatment effect of the Euro on English law based on propensity score matching. The dependent variable is *English law*. It indicates whether the debt security is governed by English contract law. *EMUcountry* indicates if the country where the issuer is located had introduced the Euro by 2008; *EMUcurrency* indicates whether the debt security is denominated in Euro or in a Euro-legacy currency. *After1998* indicates if the debt security was issued after 1998. *Euro* indicates if the Euro had been introduced in the country of the issuer or the debt security's currency denomination. Treatment and control groups are matched on the following variables: *Lead Manager (UK)*, *Lead Manager Parent (UK)*, *Lead Manager (RoW)*, *Lead Manager Parent (RoW)*, *Maturity*, *Offering Amount*, *S&P Rating*, *Offering Yield* and *Issue Year*. We report average marginal effects of the explanatory variables for the probit models and p-values based on robust standard errors. The sample size is reduced because matching was not possible for all observations. Significance levels: * < 5%, and ** <1%.

	Location (All Issues)		Location (Domestic Issues)		Currency	
	Probit	LPM	Probit	LPM	Probit	LPM
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment Variables						
EMUcountry	0.082**	0.078**	−0.084**	−0.048**		
	0.000	0.000	0.006	0.004		
EMUcurrency					−0.287**	−0.288**
					0.000	0.000
After1998	0.233**	0.243**	0.130**	0.167**	0.059**	0.062*
	0.000	0.000	0.000	0.000	0.008	0.011
Euro	−0.020	−0.010	0.239**	0.378**	0.343**	0.349**
	0.535	0.786	0.000	0.000	0.000	0.000
Log Pseudolikelihood	−2422.46		−307.39		−1896.10	
Wald Chi^2	211.487		195.883		313.117	
Pseudo R^2	4.2	5.6	26.8	27.4	8.0	10.5
Observations	3898	3898	963	963	2989	2989

EU-wide use. Note that the European passport is available for issuers outside the Euro zone and even outside the EU. For instance, a Swiss corporation can choose—within limits—a national regulator in the EU (say, that of Luxembourg) to have its prospectus approved and then offer its debt securities to investors in all member states. This could explain why English law proliferated with some delay also in domestic debt securities of the control group (Fig. 4).

Many large players in the underwriting industry are banks from the US or the UK. Their European operations are often located in London. In fact, Table 1 shows that lead managers from the UK and the rest of the world—notably the US—enlarged their footprint in European debt securities markets around the introduction of the Euro. This suggests a cause for the upsurge in English law use that is independent of market standardization: London-based underwriters likely prefer English law. If they attracted more underwriting business as a result of the Euro and if underwriters dominate the drafting of indentures, this could explain the increase in English law use without network effects and demand for a common market standard.

To investigate the role of underwriting activity in London, we rerun the regressions from Table 2 with the *lead manager* and *lead manager parent* variables. As expected, the coefficients of these variables are positive and highly significant—English and non-European underwriters are strongly associated with the choice of English contract law. Given the location and background of these banks, it is unsurprising that they prefer English contract law, and it may be their inclination and documentation practices that determined the choice of contract law. At the same time, the strong influence of underwriters is hard to square with an optimal contracting story under which English law is chosen for its superior quality. More important for the present study is that controlling for underwriters subtracts rather little from the original Euro effect. Comparing Tables 2 and 3, the new covariates affect the *EMUcountry* and *EMUcurrency* coefficients considerably, flipping the sign of the former and cutting the magnitude of the latter by a third. The *After1998* time coefficient is also diminished throughout. The choice of underwriters explains part of the difference between EMU countries and the control group and also much of the general trend towards English law. The Euro effect, by contrast, stands relatively firm with coefficients declining only marginally in the domestic and currency specifications. The Euro effect on choice of law is more than a sideshow of Financial London.

As far as formal standard setters are concerned, we are not aware of a recommendation or activity to the effect that debt securities should be governed by English law. The influential Primary Market Handbook of the International Capital Market Association does not provide a standard form for corporate bonds. For another contract type, the Handbook contains standard terms for use under English law and then describes modifications if the contract is governed by French, German, or New York law (International Capital Market Association, 2005).

6. Robustness of findings

To scrutinize the robustness of our results, we rerun our analysis based on treatment and control groups derived from a propensity score matching procedure with no replacement and caliper. Each observation from the treatment group is matched with one control group observation that has the closest propensity score (Rosenbaum and Rubin, 1983). We require the propensity scores of two matched issues to be below a predefined caliper of 0.01, which corresponds to the standard deviation of the logit of the propensity score. The density distributions of propensity scores in the matched treatment and control groups show close alignment (see Fig. 6). *t*-tests of mean comparisons of the variables used for calculating the propensity scores likewise indicate that the matching procedure has worked well.

Table 4 presents the results reproducing Table 3. The control variables from Table 3 have been used in forming the new treatment and control groups and thus no longer appear in the regressions. The Euro effect on the use of English law again shows strongly in the domestic and currency specifications.

As a robustness check, we consider the possibility that a firm uses various subsidiaries to issue debt securities. Table O-A1 in the Online Appendix provides regressions with fixed effects of the issuer's ultimate parent instead of the issuer. It is based on the more extensive specifications in Table 3 (Section 5.3 above). Including these fixed effects does not affect the results.

A possible concern with the definition of the "domestic" subsample is that it includes a currency criterion, which changes with the introduction of the Euro. Remember that we require the issuer, its ultimate parent, and the currency to belong to the same country for an issue to qualify as "domestic." A debt security from an issuer and ultimate parent in France but denominated in Dutch Guilders (before 1999) would not count as "domestic" while the same security would become "domestic" if it were denominated in Euro (after 1998). To ensure that this oddity does not drive the results, we adopt an alternative definition of domestic securities under which we treat the EMU countries as a single currency area before the introduction of the Euro. In the example, the debt security would now qualify as "domestic" even when the liability was in Dutch currency before 1999. Results based on the new definition are contained in the Online Appendix Table O-A2. The Euro effect remains highly significant and substantially stronger in the domestic subsample as compared to the total sample. In another test, we tweak the "domestic" definition by adding the requirement that at least one lead manager must be from the issuer's country. This reduces the domestic sample by several hundred observations without changing the substance of our findings (Table O-A3).

As a final robustness check, we have repeated our analyses with restricted samples, eliminating observations from the Netherlands and Luxembourg, from the Czech Republic, Greece, Hungary, Iceland, and Poland, as well as from Ireland and Switzerland. The results continue to hold in each of these restricted samples and are available upon request.

7. Conclusion

The Euro has transformed European debt securities markets. Simultaneously, English law has become the contract law of choice for issuers throughout Europe. The foregoing provides evidence of a Euro effect on the adoption of English law in European debt securities: The introduction of the common currency led corporate issuers in the Euro zone to choose English law significantly more often. The effect is particularly pronounced in local markets for debt securities. Neither the suitability of English law relative to other laws nor—as far as we can control for it—a shift in the composition of issuers or debt securities nor the clout of English and American banks fully explain the Euro effect. For lack of other convincing reasons, we argue that a unified debt securities market with increased cross-border investment in the Euro zone sought and ultimately created a common legal standard.

For the standardization or network effects hypothesis, it does not matter which contract law succeeded in becoming the Euro zone standard. But it is of course interesting to ask why it was English law that won the contest. For one thing, English law may be more efficient substantively than other contract laws in regulating debt securities. Such an argument is hard to evaluate and is certainly disputed by legal experts, especially those from continental European jurisdictions. Be this as it may, network effects provide a competing explanation. English has become the dominant secondary language in Europe (Van Parijs, 2011, pp. 6–9). That large international underwriters and financial standard setters tend to locate in London has been mentioned. In addition, most large international law firms are headquartered in common law jurisdictions, either the UK or the US. This makes legal advice on English law broadly available. Even before the Euro, English law was widely used in international finance, as witnessed by the example of Eurobonds (Fig. 2) and its reach in in national markets (Figs. 1 and 3). As an aside, we note the irony of the story: The United Kingdom steadfastly opposed the EMU and is now about to leave the EU, and yet the common currency led English contract law to dominate Euro debt securities.

Our results speak to the long-standing debate on "jurisdictional competition." Rather than offering superior contracting efficiency, the dominance of a particular law can result from the demand for a common, cross-border standard. Understandably, in expert interviews conducted in preparation of our empirical study, lawyers from continental Europe expressed discontent with the shift to English law. They argued that their own national laws were at least as efficient as English law in governing indentures. Yet if standardization benefits are sufficiently large, they can trump even higher agency costs. At first blush, such tradeoffs are consistent with social welfare. But standardization can involve a collective action problem: All users together may fail to coordinate on the most efficient contract law. Due to accidental circumstances such as a widerspread language, an inferior law could become the international standard. In any event, the presence of network effects implies that contract design is influenced by factors other than efficient contracting.

Legal standardization raises efficiency concerns beyond the substantive quality of competing laws. Whether a common standard is desirable turns on the degree of market integration as well as on potential one-time switching costs. Given the world's multitude of jurisdictions, it seems not unlikely that the number of contract laws in use is inefficiently high and hence the degree of standardization is too low. Social welfare would dictate selecting the standard that is most accessible to a majority of users. At the same time, the choice of standard has distributional implications for contract parties and legal advisers. There could be a role for institutional arrangements that help the market to avoid costly mistakes.

Appendix A. List of countries in the dataset

European Union: Year Euro was introduced		
Austria	1999	Czech Republic
Belgium	1999	Denmark
Finland	1999	Hungary
France	1999	Poland
Germany	1999	Romania
Greece	2001	Sweden
Ireland	1999	
Italy	1999	**European Free Trade Association**
Luxembourg	1999	Iceland
Netherlands	1999	Norway
Portugal	1999	Switzerland
Spain	1999	
Slovakia	2009[a]	

[a] Country introduced the Euro after the observation period.

Appendix B. Variable definitions

Data definitions and sources		
Variable Name	Definition	Source
English Contract Law	Equals 1 if English law governs the contract; 0 otherwise.	SDC Platinum.
Euro	Equals 1 if the relevant country of the treatment group has introduced the Euro, 0 otherwise.	
EMUcountry	Equals 1 if the issuer belongs to the treatment group, i.e. a member country of the EMU; 0 otherwise.	
EMUcurrency	Equals 1 if the issue belongs to the treatment group, i.e. the debt security is issued in the currency of an EMU country, that is either the Euro or one of its legacy currencies; 0 otherwise.	
Lead Manager (UK)	The share of lead managers in an issue that are based in the UK. A lead manager arranges the offering for the issuer. It negotiates with the issuer, assesses market conditions and puts together the syndicate of underwriters. The lead manager is also called syndicate manager, managing underwriter or lead underwriter. See http://glossary.reuters.com/index.php?title=Lead_Manager.	SDC Platinum. The location of the lead manager was hand collected by the authors.
Lead Manager Parent (UK)	The share of ultimate parents of the lead managers in an issue that are based in the UK.	SDC Platinum. The location of the lead manager was hand collected by the authors.
Lead Manager (RoW)	The share of lead managers in an issue that are based outside Europe.	SDC Platinum. The location of the lead manager was hand collected by the authors.
Lead Manager Parent (RoW)	The share of ultimate parents of the lead managers in an issue that are based outside Europe.	SDC Platinum. The location of the lead manager was hand collected by the authors.

Appendix B (*continued*)

Data definitions and sources		
Maturity	The years to final maturity of the debt security.	SDC Platinum.
Offering Amount	Total offering amount as stated in the prospectus in 100 millions of US-dollars. For a simultaneous offering identified in one prospectus this item represents the sum of all tranches in the offering.	SDC Platinum.
S&P Rating	Standard & Poor's rating of the debt security at time of offer. The ratings assign values from 1 to 21, with the best notional rating AAA being assigned a value 1 and the worst CC being assigned the value 21.	SDC Platinum.
Offering Yield	The offer yield to maturity or to the put in percent. It corresponds to the internal rate of return, i.e. the cash flows from the debt security considering the coupons, the purchase price and the principal at maturity. For convertible and non-convertible debt, this is the rate of return an investor will receive if the security is held to the earliest maturity date.	SDC Platinum.

Appendix C. Supplementary material

Supplementary data associated with this article like Tables O-A1 and O-A2 can be found, in the online version, at https://doi.org/10.1016/j.jimonfin.2018.03.017.

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