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Where Do Firms Issue Debt?

An Empirical Analysis of Issuer Location and Regulatory Competition in the European Corporate Debt Market

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Abstract

In this article, we study the choice of issuer location and regulatory competition in the European corporate debt market. We find that, in absolute terms, Germany has by far the highest outflow of debt issues, while the Netherlands, the UK, Luxemburg and Ireland see the most inflows (in that order). We use a panel gravity model to investigate country specific factors attracting foreign subsidiaries as issuer. The data clearly support the prediction that inflows are influenced positively by a low withholding tax rate. With respect to corporate tax rates, we generally find support for the hypothesis that firms use out-of-state issues as a tax shield by issuing more debt securities in high-tax jurisdictions ('tax shield hypothesis'). However, with respect to straight bonds the data back the hypothesis that low-tax jurisdictions are sought that provide profit shifting opportunities for (multinational) firms ('profit shifting hypothesis'). Further, the level of creditor protection in an issuer jurisdiction also appears to positively influence the number of cross-border bond issues attracted by this jurisdiction.

Keywords: debt securities, corporate bonds, external finance, regulatory competition, tax competition, legal arbitrage, multinational corporations, subsidiaries

JEL Classifications: K12, K22, G18, G33

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1. Introduction[1]

If offered a choice, firms will opt for the legal framework that best suits their business needs and the transaction at hand. It has been documented for a broad range of settings that firms choose a law of their liking and thus engage in 'legal arbitrage.' The most famous example is corporate law. In the U.S., firms have always been able to incorporate in any state, thereby effectively choosing the corporate law under which they are organized. Because supplying corporate law to firms may be attractive for states, jurisdictions in the U.S. have engaged in what has come to be known as "charter competition." Much more recently, a number of rulings by the European Court of Justice have set off a similar contest among European jurisdictions (Becht et al. 2008).

Firms' choice of law and regulatory competition between jurisdictions is not confined to corporate law. We consider a somewhat less prominent but highly relevant area of business law: the legal rules governing corporate bonds. To the best of our knowledge, we are the first to study the extent of legal arbitrage in corporate debt issues in Europe. Recent legislation indicates that European jurisdictions actively compete in this area. Germany, for example, has just modernized its Bond Debenture Act (SchVG) to make it more competitive.[2] Our work examines the motives behind firms' choices. Knowing why firms prefer certain jurisdictions and avoid others can provide valuable guidance to lawmakers seeking to improve their own legal framework. Such insights are also important if one wishes to evaluate the effects of regulatory competition both generally and in the corporate bond market. Firms' ability to select from a menu of jurisdictions is not a given but the result of conflict-of-laws rules. These "rules of the game" can be changed if, for instance, the European Union concludes that the quality of corporate bond law deteriorates as a result of regulatory competition.

Debt securities are governed by the terms of the indenture and hence by contract law. In addition, there are various legal rules that attach to the issuer of the securities and that are no less important to investors and the firm. In this contribution, we examine legal arbitrage with respect to the second set of rules. Firms can effectively choose the applicable law by deciding

[1] We thank the LMU-ifo Economic and Business Data Center (EBDC) for providing us with data. We also gratefully acknowledge the withholding tax data provided by the Centre for European Economic Research (Zentrum für Europäische Wirtschaftsforschung, ZEW).

[2] Cf. the statement of the former German justice minister, *Brigitte Zypries,* in an interview with the der Börsen-Zeitung of May 13, 2008, p. 7: „Es ist nicht so, dass deutsche Emittenten deutsches Recht überhaupt nicht mehr wählen. Aber wir haben festgestellt, dass viele von ihnen ausländisches Recht bevorzugen."

where to place the issuer of the debt securities (either by using an existing subsidiary or by establishing a new one in the jurisdiction of choice). To examine this decision, we employ a gravity model, which is nowadays the workhorse in international economics. Although it was mostly applied to topics in international trade, there is a more recent literature adapting this method to financial flows (Eaton and Tamura 1994; Ménil 1999; Portes et al. 2001; Portes and Rey 2005) and M&A activities (Ashcroft et al. 1994; di Giovanni 2005; Delannay and Méon 2006; Hyun and Kim 2009). To our knowledge, this is the first analysis implementing a gravity setting to a law and finance context.

The unit of observation for our dependent variable is the number of debt security issues which a country attracts in a given year and paired setting of a 'country of origin' and a 'host country'. We study issuer choice in the European corporate debt market based on a unique dataset of 870 bilateral country relations for the period 1980 to 2008. We find that, in absolute terms, Germany has by far the highest outflow of debt issues, while the Netherlands, the UK, Luxemburg and Ireland see the most inflows (in that order). The data clearly support the prediction that inflows are influenced positively by a low withholding tax rate in the issuer jurisdiction. Corporate tax rates also play a role, but here the picture is less clear. In general, we find support for the hypothesis that firms use out-of-state issues as a tax shield by issuing more debt locally in high-tax jurisdictions ('tax shield hypothesis'). However, with respect to straight bonds the data suggest that firms use the overall transaction to shift operating profits from high-tax jurisdictions to an issuer which is located in a low-tax jurisdiction ('profit shifting hypothesis'). Finally, we find some indicative evidence that the level of creditor protection as well as the capability to enforce contracts in an issuer jurisdiction also positively influence the number of cross-border bond issues attracted by this jurisdiction.

In section 2 we describe the legal environment for corporate debt security issues and formulate hypothesis on the influence of creditor protection rules and tax law on issuer choice and location. Section 3 presents our data and methodology, section 4 summary statistics and the gravity model results. Section 5 concludes.

2. The legal environment for corporate debt security issues

One can think of a variety of reasons why a firm would have a foreign subsidiary issue debt securities. We are interested whether 'law matters' for this decision, that is, whether by

choosing a foreign venue firms engage in legal arbitrage and, accordingly, whether jurisdictions can attract more bond issues by changing their legal rules. To this end, we consider two main aspects of the legal environment that could plausibly influence a firm's decision to locate its bond issue in a particular jurisdiction. First, jurisdictions may differ in the degree of protection afforded to the holders of debt securities. If there is significant variation in this regard, one could reasonably expect firms to take it into account (subsection 2.1). Second, it stands to reason that tax considerations play a role in choosing where to issue debt securities. Tax law, therefore, is a second dimension in which we try to spot legal arbitrage (subsection 2.2).

Before we go further, we should clarify what we mean by a 'foreign' subsidiary or, correspondingly, by the 'location' of an issuer. There is a huge variety of legal criteria – depending on the legal context – to determine an entity's 'location.' The place of incorporation and the statutory seat are strictly formal criteria. Many others consider the actual business activities, such as the 'headquarters,' 'center of main interests,' the 'real seat,' or the 'center of management.' The latter substantive criteria should be very closely aligned. In our data and hence in our analysis, 'issuer location' refers to the country of incorporation. For our empirical endeavour, however, we can safely assume that the country of incorporation coincides with the other criteria, at least for all but a negligible minority of cases. Before 1999, many European Union (EU) and European Economic Area (EEA) member states followed the 'real seat' doctrine and required a legal entity to incorporate in the jurisdiction in which it had taken its 'real seat,' i.e., its central management or principal place of business. While the European Court of Justice in its ground-breaking Centros (1999), Inspire Art (2002) and Überseering (2003) judgments has effectively dismissed the real seat doctrine and some firms have subsequently incorporated out-of-state (Becht et al. 2008; Eidenmüller 2007), there are still significant barriers (Becht et al. 2009) and 'reincorporations' of existing entities have become workable only recently.[3] Accordingly, an overwhelming majority of European firms are still incorporated in the country of their main business activities. For the timeframe of our investigation ending in 2008, we conclude that the incorporation state is virtually equivalent to the business activities and the other substantive criteria.

[3] A reincorporation is typically effected by means of a cross-border merger. Member states of the EU had to transpose the Directive 2005/56/EC on cross-border mergers of limited liability companies by December 2007.

2.1 Creditor Protection Rules

In the first instance, bondholders look to the contractual terms of their debt security for protection against opportunist behavior by the debtor (particularly to protect themselves against an increase in default risk). The bond indenture will typically stipulate safeguards such as financial covenants or a trustee acting on behalf of bondholders. Contract law determines the validity of these contractual provisions and can impose additional rules. The applicable contract law may thus be a primary concern for bondholders. However, the contract law governing the securities does not depend on the issuer's domicile. Private international law permits a choice of law and debentures usually contain a choice-of-law clause.[4] An issuer in jurisdiction A can easily choose the contract law of jurisdiction B to govern its debt securities. Therefore, we do not expect contract law to matter for the location of issuers.

Apart from contractual safeguards, investors can rely on statutory or judge-made rules against debtor opportunism. Such rules will be found in both corporation law and bankruptcy law.[5] They include capitalization requirements, restrictions on the transfer of assets to shareholders and third parties, fiduciary duties of directors and corporate officers, liability rules and rules on (a change in) corporate control. Corporation law varies with the issuer's 'location' in our data. Much the same is true for bankruptcy law. Under Art. 3(1) of the European Insolvency Regulation (EC) No 1346/2000, the 'center of a debtor's main interests' determines jurisdiction for (main) insolvency proceedings. Without proof to the contrary, the Regulation presumes that a corporate entity has its 'center of main interests' at the place of its 'registered office,' that is, in the state of incorporation. The Regulation entered into force in EU member states on May 31, 2002 but its rule on bankruptcy jurisdiction reflected the prevailing view by European jurisdictions even before its enactment. In sum, creditor protection rules embodied

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4 The majority of jurisdictions in our sample were subject to the Rome Convention on the Law Applicable to Contractual Obligations (which by the end of 2009 has been replaced by the 'Rome I' Regulation (EC) No. 593/2008). Art. 3 of the Convention (and equally of the Regulation) contains the basic rule of free choice of law. Art. 1(2)(c) of the Convention (Art. 1(2)(d) of the Regulation) exempts from its scope only obligations arising from the 'negotiable character' of an instrument.

5 Securities law (capital market law) can also benefit creditors, particularly by imposing disclosure duties on issuers. Such requirements usually apply if debt securities are listed at a stock exchange or offered to the public. Yet as in the case of contract law, applicable securities law mostly does not depend on the location of the issuer. Rather, the stock exchange or the place of the public offering determines which jurisdiction governs disclosure and other duties under securities law.

in corporate law and bankruptcy law are governed by the jurisdiction in which the issuer is located.

Creditor protection law is a potential field for legal arbitrage when firms use foreign subsidiaries as issuers. However, there is one important caveat. The scope of the applicable corporation and bankruptcy law extends only to the respective entity. Only the assets held by the foreign subsidiary are subject to the creditor protection laws of the preferred jurisdiction. No difficulties arise if only the existing assets of the subsidiary are liable for the debt security. If the debt security is to rely on the assets of the parent corporation or other entities within the group, the firm can still employ a foreign subsidiary as issuer. However, in this case – unless the assets are transferred to the subsidiary in the chosen jurisdiction –, the asset holding entities must extend a guaranty to the issuer. If a default occurs, such guaranty is to be enforced against the guarantor, which is subject to the corporation and bankruptcy laws of its own home jurisdiction. Therefore, using a foreign issuer does not change the applicable creditor protection rules in relation to the assets of a guarantor entity such as the parent or an operative subsidiary. In this regard, legal arbitrage can be very costly. In addition to setting up a foreign subsidiary, it requires a transfer of the assets underlying the debt security, which will often be infeasible or too expensive (not least because of the tax consequences). These considerations lead to interesting and testable predictions: With regard to creditor protection rules, legal arbitrage is more costly if it involves a transfer of assets to another entity. One implication is that we should observe more legal arbitrage (or any legal arbitrage at all) if assets anyway have to be moved, so that the question is only between a domestic or a foreign entity at the receiving end. This is essentially the case in securitization where the debt securities are to be paid from the cash flows of an asset pool that has been transferred to a special purpose vehicle. Moreover, moving receivables is comparatively cheap. Hence, if creditor protection rules matter for issuer location choice this should show most prominently in securitization transactions.

In addition, the firm does not incur any asset shifting costs insofar as the issuer subsidiary already holds the assets, as is the case with operating subsidiaries.[6] Yet it is less clear whether one can speak of legal arbitrage when a subsidiary issues debt securities based on cash flows from its own business activities. The subsidiary's assets will always be governed by the local

[6] For the U.S., Kolasinski (2009) reports that issues of debt securities by subsidiaries amounted to 13 % of all public debt issued by non-financial firms.

corporation and bankruptcy laws. There seems to be no alternative set of creditor protection rules that the firm could choose. However, there is a substitute to issuing direct claims against the subsidiary: If creditors hold claims against the parent they also have indirect recourse against the subsidiary through the parent's shareholdings. Of course, there is a crucial difference: Regarding the subsidiary's assets, creditors of the subsidiary have priority over the parent and its creditors.[7] Nonetheless, debt issues by the parent can serve as substitutes, albeit imperfect ones, for debt issues by the subsidiary. All else equal, one would expect differences in creditor protection rules to have an impact on the proportion of debt securities issued by a parent and its subsidiary, respectively. In a recent contribution, Banerjee and Noe (2010) analyze the corresponding tradeoff in terms of minimizing the agency costs of debt. They predict that jurisdictions with 'stronger' creditor rights (i.e., a stronger bargaining position for creditors in debt renegotiations) capture a larger share in the total debt being issued by a multinational firm. Consistent with this prediction, Desai, Foley and Hines (2004) find that foreign subsidiaries of U.S.-based multinational firms incur higher leverage and pay less interest in countries with stronger creditor rights (as measured by the index of La Porta et al. 1998). In addition, the greater indebtedness is driven by more external borrowing while there is less credit extended by the parent. Likewise, Huizinga, Laeven and Nicodeme (2008) also find creditor rights (taken from Djankov, McLiesh and Shleifer 2007 hereafter DMS) to be a good predictor for subsidiary leverage with respect to a very large panel of European multinational firms ranging from 1994 to 2003.

2.2 Tax Law

The location of the issuer has important tax implications. Again, we need not consider the different 'residence' criteria under applicable tax laws and conventions. The issuer's main business operations as well as its central management will typically be situated in the incorporation state.[8] Thus, for our empirical purposes, an issuer's incorporation state determines its tax residence. The issuer is subject to corporate income tax in its country of residence. Differences in corporate tax burdens across countries can offer another legal arbitrage opportunity. There are at least two scenarios one could think of. Employing a foreign subsidiary to raise debt might be an arrangement to shift profits abroad: If the firm

[7] Conversely, the subsidiary's creditors cannot enforce their claims against the parent's assets (provided that no specific guarantees or security interests have been granted).

[8] Cf. Art. 4(1) of the OECD Model Convention with Respect to Taxes on Income and on Capital.

intends to finance operations in other jurisdictions, the issuer will extend a loan to the parent or to another (operating) subsidiary. The terms of the loan can be such that the issuer pockets a spread between the interest paid to investors and the interest payments received from its intra-group debtors. The resulting profits are taxed at the subsidiary's more favorable tax rate rather than the higher tax rate of the parent or other operating subsidiary. Under this profit-shifting hypothesis, one would expect parents from high-tax jurisdictions to issue debt securities through subsidiaries in low-tax jurisdictions.

A second theory leads to the opposite prediction. It assumes that the issuer is an operating subsidiary. At the corporate level, there is a large tax advantage of debt over equity financing in that interest expenses are deductible whereas dividend payments are not. Theoretically, the tax advantage could be balanced at the level of the shareholder by compensating the shareholder for the corporate income tax. However, in cross-border taxation there is generally no such (full) compensation.[9] In most cases, shareholders receive a tax credit – if at all – only for withholding tax levied on the dividend (as opposed to the corporate income) in the subsidiary's jurisdiction. Based on this line of reasoning, firms have a foreign subsidiary issue debt securities to create a tax shield for the subsidiary if it is subject to a higher corporate tax rate than the parent. The tax-shield effect thus runs in the opposite direction of the profit-shifting hypothesis stated above. At the same time, it presupposes that the subsidiary has cash flows which would otherwise be subject to corporate income tax. Therefore, the tax-shield hypothesis assumes an operating subsidiary. Using micro-data on foreign subsidiaries of U.S. firms, Desai, Foley and Hines (2004) show that leverage increases with corporate tax rates. Huizinga, Laeven and Nicodeme (2008) calculate explicit measures of the marginal tax rate on equity and the tax incentive to shift debt to a subsidiary. They find both variables to have a significant positive effect on the leverage of foreign subsidiaries in a large panel of European firms. The available evidence thus confirms the tax-shield hypothesis. Whether the profit-shifting effect exists and whether it may neutralize or even dominate the tax-shield effect for debt securities is a matter we seek to determine empirically.

[9] To accomplish full compensation, the parent state would have to grant a tax credit in the amount of the corporate income tax paid by the subsidiary. This would complicate taxation considerably as the subsidiary's income tax would have to be reported to the parent state. Also, the tax credit will be limited to the parent state's tax on the dividends received. Therefore, even if a tax credit were in place, it would not fully compensate for a higher tax rate in the subsidiary state.

There is yet another potential type of tax law arbitrage involved in issuer location choice. It relates to the taxation of interest paid to bondholders. Interest is part of the taxable income in the investor's home country. From the point of view of the debtor, interest payments are costs that reduce profits and hence the corporate tax burden of the debtor. Many states, however, levy an additional tax on interest payments at the source, i.e. from the debtor. Issuer location therefore also determines whether and at what rate the debt security is subject to withholding tax. While the bondholder's home country will typically grant a tax credit, claiming it creates an additional burden and can involve delays. More importantly, a tax credit does not eliminate the withholding tax for tax-exempt investors. We thus hypothesize that jurisdictions with low withholding taxes (or no withholding tax at all) attract more issuer subsidiaries.

3. Data and Methodology

3.1 Data

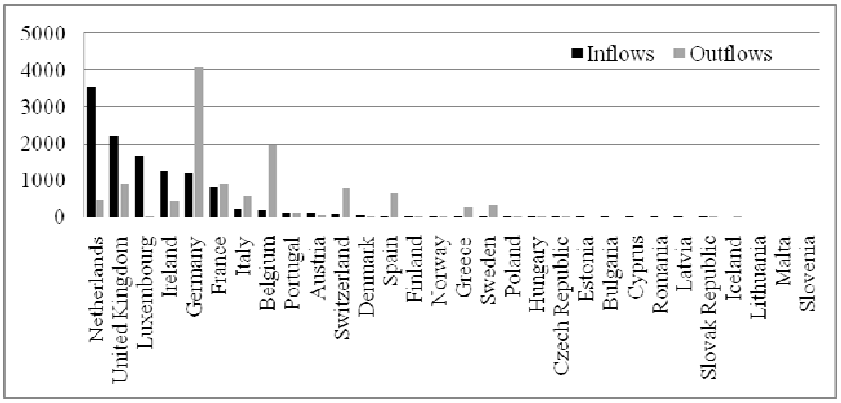
Our analysis is based upon a sample of corporate debt securities issued by subsidiaries of multinational corporate groups. The data on debt issues was extracted from the Thomson Financial 'SDC Platinum' database.[10] As we strive to identify country-specific regulations that motivate legal arbitrage, we restrict our analysis to debt issues where the corporate parent and the debt issuer are located in different jurisdiction (cross-border debt issues). To qualify for inclusion in our study, both the ultimate parent and the subsidiary issuing the securities have to be located in countries that by 2009 were member states of the EU or the EFTA. Our unit observation is the issue of a debt security in a paired setting of a parent ('country of origin') and a subsidiary ('host country'). As we do not observe a single issuer or corporate parent from Malta, we are left with 870 bilateral relations for the period 1980 to 2008 and hence 25,230 observations for our dependent variables (30 countries of origin × 29 host countries × 29 years). What we thus seek to explain is the number (and volume) of debt issues a host jurisdiction attracts in a given year and country pair-relation.

In our baseline specification we consider a broad array of debt securities, which consist mostly of straight bonds, floating rate notes, medium term notes, and asset-backed securities

[10] As 'SDC Platinium' is supposed to be exhaustive, the absence of cross-border bond issues must be interpreted as an absence of activities rather than a lack of data. Hence, we coded the absence of transnational bond issues by replacing missing values with zeros.

(including collateralized debt obligations). As a robustness check and to study some of our hypotheses in more depth, we construct a second sample with only straight bonds. While investors in asset-backed securities typically do not have recourse to other assets of the firm, parents and other entities of the group often provide guaranties for straight bonds issued by subsidiaries. Straight bonds are thus more likely to be backed by assets situated in another jurisdiction, which should allow us to examine the effect of legal rules that depend on the location of assets. In total, we observe 11,718 cross-border issues of debt securities (4,719 straight bonds). This implies that in many of our original 25,230 pair-year combinations we observe zero cross-border issues. Interestingly, cross-border issue flows are often rather one-sided. 6,842 of the cross-border debt issues in our sample (2,918 straight bonds) in a given country pair and year (say, from country A to country B in 1995) are not matched by a corresponding debt issue in the opposite direction (from country B to country A). They can be said to be net inflows (to country B). This is a first hint that cross-border issues concentrate in certain host jurisdictions. 98 percent of the net inflows (95 percent of straight bonds net inflows) are attracted by the Netherlands, Luxembourg, the United Kingdom and Ireland (listed from the most to the least important host jurisdiction).

Chart 1: Inflows and outflows of transnational debt issues 1980 - 2008



The data on transnational debt issues was merged with several macroeconomic, financial and legal variables. In the international trade literature, geographic distances are interpreted as a proxy for transaction costs. Despite the intangible nature of financial transactions and modern communication technologies, transaction costs associated with geographic distance may still play a role. Financial deals are not conducted in an anonymous environment. For busy

investment bankers, legal advisors and financial managers, flying from Warsaw to Lisbon takes nearly twice as long as flying to London. We therefore include the distance between capitals and a dummy variable indicating whether the country pair is geographically contiguous. Furthermore, we include another dummy variable which indicates whether the two countries share an official language. Although for rather small local deals a common language might play a role, we believe that nowadays the financial industry generally speaks English. The data on geography and language was taken from the *Centre d'Etudes Prospectives et d'Informations Internationales* (CEPII) database.[11] We further use the average export of each individual country pair obtained from the International Monetary Fund (IMF) Direction of Trade Statistics (DOTS) as a measure of countries' economic connectedness.[12]

Additional macroeconomic variables come from the Bank for International Settlements (BIS) as well as the IMF World Economic Outlook (WEO) database. The former source provides information on the size of the bond market in the respective economy. Total bond market size is a measure for potential scale effects and can also be seen as a gravity mass variable. Moreover, it indicates the development of the local financial markets and the expertise of the financial industry. The WEO database offers information on classic macroeconomic variables like inflation and the respective benchmark government bond yield. Both variables are measures for country specific risk.

As suggested by the tax law considerations in section 2.2, the first variable of interest is the withholding tax which prospective investors would have to pay. We predict that a higher withholding tax makes a jurisdiction less attractive as a host for cross-border debt issues. The data come from the Centre for European Economic Research. The second variable of interest is corporate income tax rates. To test the profit-shifting and tax-shield hypotheses, we use panel data from the OECD tax database measuring the basic central government statutory (flat or top marginal) corporate income tax rate (including surtax if applicable).[13] The panel was supplemented in part by information from the KPMG Corporate and Indirect Tax Rate

[11] Available at http://www.cepii.fr/anglaisgraph/bdd/distances.htm.

[12] There is an old tradition in the estimation of gravity models of using import data only (as nations spend more time on measuring imports than exports to avoid tariff fraud). Since 1993, trade data is generated from the VAT statistics, so that exports provide a more accurate measure than imports.

[13] The data is available under: http://www.oecd.org/document/60/0,3343,en_2649_34533_1942460_1_1_1_37427,00.html#cci.

Surveys.[14] Although theory makes us believe that corporate income tax rates matter, we cannot predict the sign of the effect.

The third set of interest variables comes from the law and finance literature and is specified to test the hypothesis that creditor protection rules matter for issuer location choice (see section 2.1 above). La Porta et al. (1998) have created a *creditor rights index* (CRs) which has been used in dozens of previous studies. DMS (2007) provide panel data ranging from 1978 to 2003.[15] The index is designed to measure the rights of lenders in a particular jurisdiction on a scale from 0 to 4 (with 4 indicating the highest degree of creditor protection). The index is incremented by 1 for each of the following bankruptcy law provisions: (i) There are restrictions for debtors to file for reorganization, such as creditor consent; (ii) secured creditors can seize the collateral if the reorganization petition is approved, i.e. there is no automatic stay; (iii) secured creditors enjoy priority over other creditors, such as workers or the government; (iv) the debtor does not retain administration of its assets during reorganization. While we are somewhat skeptical of how well the creditor rights index actually measures creditor protection in bankruptcy law, we are ready to accept it as the best available proxy. We further use information on the number of days it takes to resolve a payment dispute through courts. The data are based on the methodology in Djankov et al. (2003) and provide a measure for the efficiency of the judicial system. Finally, we include the legal origin of each country from Zweigert and Kötz (1998).

3.2 Econometric Issues

Using country-pair relations has the obvious advantage of revealing more information than a standard country panel because we observe the origin and target of cross-border issues at the same time. One difficulty with this approach is how to deal with the many pair-year observations with zero cross-border issues. Discarding them would be a poor solution as the absence of cross-border issues is most likely not randomly distributed. We would thus induce a selection bias, as the large number of zero observations may be generated by a different underlying process (Baltagi 2008). For instance, certain states might have chosen to abstain from offering even a minimum legal infrastructure for debt securities and hence do not attract

[14] We extended the initial OECD panel for Bulgaria, Cyprus, Estonia, Iceland, Latvia, Lithuania, Romania and Slovenia.

[15] As the data is only available until the year 2002 but does not exhibit much variance over time, we extend the latest observation in all cases until the year 2008.

any foreign debt issues. An econometric solution to this problem would be to apply a two-step estimation technique as suggested by Helpman et al. (2005). However, in the context at hand we cannot think of a plausible exclusion restriction for the identification of the second stage equation. We therefore rely on the alternative approach suggested by Westerlund and Wilhelmsson (2006): We abolish the traditional log-linearized model and use the data in its original non-linear form instead. Using the Poisson maximum likelihood (ML) estimator, we can handle the zero observations. As Westerlund and Wilhelmsson (2006) have shown based on Monte Carlo simulations, the ML estimates not only elegantly considers the large number of zeros but also suffer from considerable less bias than the traditional log-linear OLS estimates. We thus use the Poisson panel regression model as initially suggested by Hausman et al. (1984) for our baseline specification with the *number of issues* as the dependent variable. As a robustness check, we also consider the *volume of the issues (in Mio. US-$)*. The non-negative continuous nature of this dependent variable implies that a Tobit panel model should be estimated.

A second econometric concern is endogeneity. Panel data has the advantage that it permits general types of country specific heterogeneity. To limit the likelihood of omitted variable bias, we have estimated several models postulating host country, year and country-pair effects. In particular the latter specification solves the problem of omitted variable bias more adequately than including a handful of control variables that may influence cross-border debt issues. The cost, of course, is that the variables of interest must exhibit sufficient time variation to allow identification because the pair dummies wipe out the cross-sectional variation (Baldwin and Taglioni 2006).

4. Results

4.1 Summary Statistics

Table 1 provides summary statistics on the total number of debt securities issued in a jurisdiction, the number of issues it attracts from abroad (inflows) and the number of issues it lost to foreign jurisdictions (outflows). Reported as a share of total issues, inflows can per definition never exceed 100 percent but outflows can and do in some cases. For instance, the number of debt securities by Belgian firms through foreign subsidiaries is more than twice as

large as the total number of issues in the domestic market. In Luxembourg, by contrast, outflows are less than 1 percent although inflows from current member states of the EU/EFTA represent 38 percent of the domestic market. Except for Sweden, the Scandinavian debt markets are relatively closed with a small share of in- and outflows relative to the domestic market. In absolute terms, Germany has by far the highest outflow of debt issues, while the Netherlands see the most inflows.

Table 1: Summary Statistics (Debt Securities)

Country	Total Debt Issues	Debt Issue Inflows	Debt Issue Outflows	% Inflows	% Outflows	Corporate Tax Rate	Withholding Tax Rate	CRs Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Austria	1,558	121	56	7.8	3.6	38.0	0	3.1
Belgium	784	188	1,984	24.0	253.1	40.3	11.0	2.0
Bulgaria	20	2	0	10.0	0.0	12.5	12.5	1.2
Cyprus	21	2	0	9.5	0.0	15.8	11.4	-
Czech Republic	30	8	14	26.7	46.7	32.7	10.9	3.0
Denmark	1,493	61	25	4.1	1.7	36.3	0	2.8
Estonia	17	8	0	47.1	0.0	22.5	14.2	-
Finland	1,715	39	22	2.3	1.3	38.5	0	2.1
France	6,885	817	903	11.9	13.1	40.1	10.9	0.0
Germany	14,342	1,189	4,095	8.3	28.6	51.8	0	3.0
Greece	143	22	263	15.4	183.9	39.4	27.5	1.0
Hungary	38	10	1	26.3	2.6	24.9	9.8	1.0
Iceland	234	0	23	0.0	9.8	25.7	-	-
Ireland	3,508	1,267	444	36.1	12.7	33.7	13.7	1.4
Italy	3,329	227	567	6.8	17.0	42.5	17.5	2.0
Latvia	2	1	0	50.0	0.0	19.1	10.0	3.0
Liechtenstein	16	0	0	0.0	0.0	-	-	-
Lithuania	4	0	0	0.0	0.0	15.0	12.7	1.2
Luxembourg	4,350	1,672	33	38.4	0.8	31.7	0	-
Netherlands	7,104	3,553	477	50.0	6.7	36.7	0	3.0
Norway	1,432	36	27	2.5	1.9	37.0	0	2.0
Poland	29	12	13	41.4	44.8	36.4	0	1.0
Portugal	1,341	131	114	9.8	8.5	39.8	10.9	1.0
Romania	8	2	0	25.0	0.0	20.5	16.4	1.7
Slovak Republic	15	1	1	6.7	6.7	30.5	12.5	2.0
Slovenia	1	0	0	0.0	0.0	24.5	17.2	3.0
Spain	2,626	41	638	1.6	24.3	34.5	0.9	2.0
Sweden	1,734	19	319	1.1	18.4	38.6	14.2	1.7
Switzerland	2,225	84	798	3.8	35.9	27.8	0	1.0
United Kingdom	13,006	2,205	901	17.0	6.9	34.7	6.7	3.8

Table 2 reports the correlations between the number and the volume of debt securities and straight bonds, for all country-pair relations. All of these variables exhibit strong correlation, which is statistically significant at the 1-percent level. Table 3 contains a correlation matrix of the main explanatory and control variables as well as the number of debt issues in an origin/host country pair. As expected, the withholding and corporate tax rates in the host

country are negatively correlated with inflows. Vice versa, the number of cross-border debt issues is positively correlated with the corporate tax rate in the parent's jurisdiction. The latter correlation is not only highly significant but also large in magnitude. Moreover, the number of debt issues is positively correlated with the host country's creditor rights index. The correlation matrix also shows, however, that most explanatory variables are highly correlated with one another (very frequently at the 1-percent level). Therefore, one cannot identify the effect of market size, tax advantages and creditor rights on inflows of debt issues based on a simple cross-sectional analysis, making panel data methods clearly preferable.

Table 2: Correlation Matrix – Straight Bonds and Debt Securities

	(1)	(2)	(3)	(4)
(1) Straight Bond Issues #	1.00			
(2) Straight Bond Issues $	0.83	1.00		
(3) Debt Securities #	0.84	0.69	1.00	
(4) Debt Securities $	0.72	0.88	0.83	1.00

Table 3: Correlation Matrix – Issues of Debt Securities and Explanatory Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Debt Securities # Inflows	1.00														
(2) Distance Capitals	-0.07	1.00													
(3) Contiguous	0.06	-0.49	1.00												
(4) Common Language	0.04	-0.45	0.65	1.00											
(5) Trade Export / Imports	0.23	-0.39	0.48	0.22	1.00										
(6) EMU Membership	0.04	-0.02	0.15	0.13	0.16	1.00									
(7) International Bond Market	0.17	-0.04	-0.02	0.00	0.44	-0.01	1.00								
(8) Government Bond Yield	-0.07	0.06	-0.06	-0.12	-0.20	-0.26	-0.25	1.00							
(9) Inflation Rate	0.03	0.11	-0.11	-0.12	-0.19	0.27	-0.21	0.28	1.00						
(10) Corporate Tax	-0.07	-0.11	0.20	0.10	0.30	0.06	0.27	0.09	-0.37	1.00					
(11) Withholding Tax	-0.15	0.14	-0.03	-0.06	-0.17	-0.13	-0.29	0.32	0.13	-0.10	1.00				
(12) Corporate Tax Origin	0.21	-0.02	0.17	0.00	0.29	0.03	-0.25	0.21	0.09	0.06	0.27	1.00			
(13) Legal Origin	-0.19	-0.12	0.26	0.14	0.10	0.08	-0.02	-0.12	-0.14	0.35	-0.49	-0.16	1.00		
(14) Creditor Rights Index	0.10	0.01	-0.25	-0.11	0.05	-0.42	0.36	0.10	-0.21	0.18	-0.21	-0.14	-0.14	1.00	
(15) Contract Enforcement	-0.10	0.17	-0.01	-0.07	-0.09	-0.22	0.04	0.22	0.05	-0.19	0.49	0.01	-0.11	0.05	1.00

4.2 Gravity Model

4.2.1 Debt Securities

In Table 4 we present the results of the gravity model estimations. The dependent variables are the number and volume of cross-border debt issues for a given country-pair relationship and year. We report incidence rate ratios for the Poisson model and marginal effects for the Tobit model because both provide a meaningful interpretation as compared to the plain coefficients. In what follows, we mostly focus on the country-pair (fixed or random) effects estimates, because they reduce the omitted variable bias much better than simple country or year effects models (Baldwin and Taglioni 2006).

Starting with taxes, we hypothesized that a lower *withholding tax rate* would increase inflows of debt issues to a jurisdiction. We find impressive support for this prediction. Our *withholding tax rate* variable is strongly significant over all Poisson and Tobit estimations and shows the expected sign. With regard to corporate taxes, our results tend to confirm the tax-shield rather than the profit-shifting hypothesis. The *corporate tax rate* variable comes out significant in our preferred country-pair effects specifications except for the volume of inflows, which remains insignificant. Judging from the number of cross-border debt issues, it seems that multinational firms issue more debt securities locally in high-tax jurisdictions. As noted above, this is in line with previous evidence on the use of leverage in multinational firms.

Our third variable of interest is the *creditor rights* index. Unfortunately, *creditor rights* has too little variance over time to allow for an identification in the fixed effects model. In the random effects specification, it comes out highly significant and seems to predict the number of cross-border bond issues attracted by a jurisdiction. While the random effects estimator can identify time invariant effects, it is not *a priori* appropriate. Applying a Hausman test, we reject the null-hypothesis that both models – fixed effects (4) and random effects (5) – produce consistent estimates. We therefore have to interpret the findings for the time invariant factors like *creditor rights* with caution (the same applies to other variables with too little or no variance over time). For the time variant factors, the fixed effects estimator (4) is to be preferred even though the results are mostly identical to the random effects estimates (5).

As additional legal controls, we include *legal origin* and *contract enforcement days* throughout all specifications. Both coefficients are highly significant in our preferred pair effects specifications (but as with creditor rights, *legal origin* is dropped from the fixed-effects model). In unreported estimations using three separate dummy variables, *French*, *German* and *Scandinavian* relative to the *English legal origin* all show an incidence rate ratio below 1 with significance at the 1-percent level. The effect of *contract enforcement days* is as one would expect: The more efficient the court system (as measured by the time to resolve a dispute), the more debt issues a jurisdiction attracts.

As regards the classic gravity variables, we find throughout all specifications a very robust and negative effect for *distance* (between the location of the subsidiary and the parent) on a jurisdiction's capacity to attract debt issues. In our preferred country-pair specification, we find a common geographic border to be a relevant predictor for inflows. As in the trade literature, geographic proximity – as a proxy for transaction cost – seems to be a relevant factor explaining where firms locate issuers. By contrast, a common official language does not stimulate inflows, which suggests that English as the language of finance predominates in all cross-border transactions. In both pair-effect models, we find the *bond market size* and *EMU membership* variables to be highly significant. A large bond market and membership in the EMU evidently play an important role in attracting cross-border debt issues. As regards the two risk measures, we find somewhat mixed results, with lower *government bond yields* and higher *inflation* increasing the attractiveness of the host state.

Table 4: Gravity Model – Debt Securities

Gravity Model - Debt Securities									
	# issues (Poisson)					$ US volume (Tobit)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Distance	0.999 ***	0.999 ***	0.999 ***	-	0.999 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
Contiguous	1.346 ***	0.986	0.938	-	4.895 **	0.001	0.000	0.000	0.042 *
Language	1.201 ***	1.784 ***	1.750 ***	-	1.311	0.009	0.013 **	0.008	0.016
Import / Exports	1.000 ***	1.000 ***	1.000 ***	1.000 ***	1.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
EMU	1.299 ***	1.059	1.432 ***	1.323 ***	1.363 ***	0.026 ***	0.003	0.027 ***	0.016 ***
Bond Market Size	1.000 ***	0.999 ***	1.001 ***	1.000 ***	1.000 ***	0.000 ***	0.000 ***	0.000 *	0.000 ***
Government Yield	0.973	0.798 ***	0.911 *	0.776 ***	0.781 ***	-0.001	-0.002	-0.008 **	-0.005 *
Inflation	1.047 ***	1.273 ***	1.063 ***	1.119 ***	1.107 ***	-0.002	0.001	0.001	-0.001
Corporate Tax Host	1.029 ***	1.041 ***	0.985 ***	1.018 ***	1.020 ***	0.000	0.000	-0.001 ***	0.000
Withholding Tax Host	0.932 ***	0.936 ***	0.882 ***	0.954 ***	0.954 ***	-0.001 ***	0.000	-0.002 ***	-0.001 **
Legal Origin	0.150 ***	0.224 ***	0.131 ***	-	0.205 ***	-0.030 ***	-0.008 **	-0.026 ***	-0.025 ***
Creditor Rights	1.073 ***	1.281 ***	0.856 ***	-	1.488 ***	-0.002	-0.005 *	-0.004 *	-0.002
Contract Enforcement	0.847 ***	0.701 ***	1.062 **	-	0.601 ***	-0.012 ***	0.002	-0.007 **	-0.012 **
Country Dummies	-	Yes	-	-	-	-	Yes	-	-
Year Dummies	-	-	Yes	-	-	-	-	Yes	-
Pair Dummies	-	-	-	FE	RE	-	-	-	RE
Obs.	5652	5652	5652	1115	5652	5652	5652	5652	5652
Groups	-	-	-	120	725	-	-	-	725
Log-likelihood	-10450.63	-9436.52	-9608.54	-2549.04	-3321.11	-4600.43	-4510.05	-4569.38	-4320.04

4.2.2 Straight Bonds

The legal structure of straight bonds is somewhat different from other debt securities. Unlike asset backed securities for instance, they may only provide for legal arbitrage with respect to creditor rights if the issuer is an operational subsidiary, implying that real assets are at stake. Moreover, as regards legal arbitrage with respect to tax law, we would expect the profit shifting hypotheses to be more plausible, because profit shifting requires permanent financial flows between the corporate parent and an (operating) subsidiary. By contrast, such stable flows are not apparent in the case of asset backed securities.

In general, our earlier findings appear to be quite robust, with most explanatory variables showing the same sign and a high statistical significance from the larger debt securities sample.[16] Moreover, the economic impact is stronger for all explanatory variables (except for *contiguous* and *corporate tax*) in both country pair models. Finally, within the straight bonds sample we find that multinational corporate groups locate the bond issues preferably in jurisdictions with low corporate tax rates. It thus appears that for straight bonds the profit-shifting hypothesis dominates. One possible reason is that the straight bond subsample

[16] Applying a Hausman test, we reject the null-hypothesis that the random effects estimator produces consistent estimates.

excludes asset-backed securities. As the special purpose vehicle issuing the securities in an ABS transaction is typically not a subsidiary, it does not make sense for the firm to have profits accrue in the vehicle.

Table 5: Gravity Model – Straight Bonds

Gravity Model - Straight Bonds									
	# issues (Poisson)					$ US volume (Tobit)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Distance	0.999 ***	0.999 ***	0.999 ***	-	0.999 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
Contiguous	1.001	0.817 **	0.769 ***	-	3.990 **	-0.005	-0.001	-0.005	0.011
Language	1.620 ***	2.154 ***	2.105 ***	-	1.537	0.017 *	0.012 **	0.017 *	0.007
Import / Exports	1.000 ***	1.000 ***	1.000 ***	1.000 ***	1.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
EMU	1.378 ***	1.218	1.318 ***	1.488 ***	1.594 ***	0.005	0.003	0.001	0.005
Bond Market Size	1.000 ***	1.000 ***	1.001 ***	1.000 ***	1.000 ***	0.000	0.000 *	0.000	0.000
Government Yield	0.700 ***	0.531 ***	0.909	0.557 ***	0.565 ***	-0.003	-0.005 ***	-0.002	-0.007 ***
Inflation	1.109 ***	1.451 ***	1.049 *	1.278 ***	1.245 ***	-0.003 *	0.002 *	-0.002	0.000
Corporate Tax Host	0.995	1.003	0.972 ***	0.963 ***	0.973 ***	-0.001 **	0.000	-0.001 ***	0.000
Withholding Tax Host	0.940 ***	0.932 ***	0.894 ***	0.951 ***	0.951 ***	-0.001 ***	0.000 **	-0.002 ***	-0.001 ***
Legal Origin	0.176 ***	0.208 ***	0.161 ***	-	0.251 ***	-0.028 ***	-0.009 ***	-0.029 ***	-0.022 ***
Creditor Rights	1.072 ***	1.262 ***	0.879 ***	-	1.654 ***	0.004 **	0.004 **	0.001	0.002
Contract Enforcement	0.816 ***	0.685 ***	0.900 ***	-	0.632 **	-0.008 ***	-0.003 *	-0.005 **	-0.005
Country Dummies	-	Yes	-	-	-	-	Yes	-	-
Year Dummies	-	-	Yes	-	-	-	-	Yes	-
Pair Dummies	-	-	-	FE	RE	-	-	-	RE
Obs.	5652	5652	5652	915	5652	5652	5652	5652	5652
Groups	-	-	-	98	725	-	-	-	725
Log-likelihood	-5237.86	-4879.84	-4946.55	-1471.19	-2090.36	-3807.89	-3757.25	-3787.75	-3600.87

4.3 Robustness

By construction, our sample contains only cross-border debt issues. We observe which jurisdiction firms choose to issue debt securities once they have decided to go abroad. However, this choice as well as the number of cross-border debt issues originating in a particular jurisdiction can also be influenced by the conditions in the respective home country. In this regard, we consider two additional variables of interest. First, we include the bond market size in the country of the ultimate parent, as it represents the counterpart to the gravity mass of the host country. We expect debt issues to be attracted more easily from jurisdictions with small international bond markets. Second, we hypothesized above that corporate taxes can constitute profit shifting opportunities for multinational firms. Such activities should be more profitable if corporate taxes in the parent's jurisdiction are high and low in the host country. If this is true, there should be a positive relation between debt issues in the host

jurisdiction and the corporate tax rate in the firm's home state. Conversely, the tax shield hypothesis holds that firms issue debt where the deduction of interest payments can save them more taxes. Accordingly, higher tax rates in the host country should dampen outflows, all else equal.

Table 6: Gravity Model – Origin Country Effects

	# issues (Poisson)				$ US volume (Tobit)	
	Debt Securities		Straight Bonds		Debt Securities	Straight Bonds
	(1)	(2)	(3)	(4)	(5)	(6)
Distance	-	0.999 ***	-	0.999 ***	0.000 ***	0.000 ***
Contiguous	-	3.724 **	-	3.793 **	0.035 *	0.013
Language	-	1.481	-	1.718	0.010	0.009
Import / Exports	1.000 ***	1.000 ***	1.000 ***	1.000 **	0.000 **	0.000 **
EMU	1.460 ***	1.523 ***	1.397 **	1.565 ***	0.022 ***	0.007
Bond Market Size	1.000 ***	1.000 ***	1.000 ***	1.000 ***	0.000	0.000
Government Yield	0.711 ***	0.712 ***	0.572 ***	0.570 ***	-0.008 ***	-0.008 ***
Inflation	1.155 ***	1.146 ***	1.260 ***	1.241 ***	0.000	0.000
Corporate Tax	1.009 *	1.012 ***	0.963 ***	0.973 ***	0.000	0.000 **
Withholding Tax	0.943 ***	0.943 ***	0.950 ***	0.951 ***	-0.001 ***	-0.001 ***
Legal Origin	-	0.231 ***	-	0.247 ***	-0.022 ***	-0.023
Creditor Rights	-	1.523 ***	-	1.634 ***	-0.001	0.004
Contract Enforcement	-	0.614 ***	-	0.637 **	-0.012 **	-0.007 *
Bond Market Origin	1.000 ***	1.000 ***	1.000	1.000	0.000	0.000 ***
Corporate Tax Origin	1.031 ***	1.036 ***	0.983 **	0.996	0.003 ***	0.001 ***
Panel Estimator	FE	RE	FE	RE	RE	RE
Obs.	1107	4949	909	4949	4949	4949
Groups	120	700	98	700	700	700
Log-likelihood	-2501.42	-3260.50	-1466.85	-2083.29	-4269.17	-3578.18

A Hausman test shows that the fixed effects model (1) is the only consistent estimator for the debt securities sample. As regards all debt securities, we find both origin variables to be highly significant with the expected effect on the number of debt issues in the host country. A smaller domestic debt market and higher corporate taxes push firms to issue debt securities abroad. At the same time, the corporate tax rate in the host country still has a positive effect on flows but becomes only weakly significant. The effect of the host nation withholding tax stays highly significant and negative throughout all specifications.

By contrast, the corporate tax rate and market size in the origin country do not play a strong role for the cross-border issuance of straight bonds, with the size of the origin bond market

being statistically not significant and the tax rate being no reliable predictor. The remaining results for the host country variables stay very robust throughout all specifications.

5. Summary and Conclusion

Regulatory competition between jurisdictions has become a central feature of the European legal landscape. As in the US, such competition occurs, for example, in the area of company law. But it surely is not confined to this field. In this article, we have been looking at issuer location and regulatory competition in the European Corporate Debt Market. To the best of our knowledge, we are the first to study the extent of competition for corporate debt issues in Europe empirically. We find that, in absolute terms, Germany has by far the highest outflow of debt issues, while the Netherlands, the UK, Luxemburg and Ireland see the most inflows (in that order). We use a panel gravity model to investigate the motives for choosing an issuer incorporated in another jurisdiction. The data clearly support the prediction that inflows are influenced positively by a low withholding tax rate. Corporate tax rates also play a role, but here the picture is less clear. In general, we find support for the hypothesis that firms use out-of-state issues as a tax shield by issuing more debt locally in high-tax jurisdictions ('tax shield hypothesis'). However, with respect to straight bonds the data back the hypothesis that low-tax jurisdictions are sought that provide profit shifting opportunities for (multinational) firms ('profit shifting hypothesis'). Further, we find some indicative evidence that the level of creditor protection as well as the capability to enforce contracts in an issuer jurisdiction also positively influence the number of cross-border bond issues attracted by a jurisdiction.

The implications of these findings appear to be straightforward: countries that wish to attract bond issues should lower or even abolish withholding taxes and increase the level of creditor protection afforded by their company and/or bankruptcy laws. If the goal is to attract issues of straight bonds – as opposed to asset backed securities –, low corporate tax rates are advisable to allow for profit shifting between issuer and parent. In terms of the European legal framework for bond issues, these findings are not a cause for grave concern. Enhancing the level of creditor protection is an unsuspicious goal. That tax competition tends to drive down tax rates, particularly for intangible financial transactions, is a well-known fact.

A somewhat sobering result for European jurisdictions might be that even if they radically improve on their legal rules as applicable to bond issues, especially with respect to creditor

protection, they should not anticipate to capture a larger market share in the European corporate bond market as long as their withholding tax rates are (significantly) higher than that of any one of their competitors. Even bringing withholding tax rates down to a competitive level will not necessarily do the trick: the fact that bond market size is an important factor in the intra-jurisdictional competition for issues and that there are currently only 4 significant competitors in the market (the Netherlands, the UK, Luxemburg and Ireland) indicates the potential presence of strong network effects. Whether these two conjectures withstand empirical scrutiny is another story, however.

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