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Does Charter Competition Foster Entrepreneurship? A Difference-in-Difference Approach to European Company Law Reforms

Finance Working Paper N°. 308/2011

May 2011

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Abstract

We study how company law reforms, particularly the reduction or abolition of minimum capital requirements, in various European jurisdictions affect the decision of entrepreneurs to incorporate by means of a private limited liability company (LLC). Since the landmark rulings of the European Court of Justice (ECJ) in the years 1999, 2002 and 2003, entrepreneurs in the European Union (EU) have been able to choose the country of incorporation independently of their real seat. As a result, the proliferation of the UK private company limited by shares has posed a competitive threat to many European legislators. We analyze whether the reforms adopted in Spain, France, Hungary, Germany and Poland have promoted the popularity of domestic legal forms and encouraged entrepreneurship more generally. Using a difference-in-difference approach, we record a strong impact in both respects, especially if the minimum capital requirement was reduced or abolished.

Keywords: entrepreneurship, regulatory competition, charter competition, corporate mobility

JEL Classifications: G38, K22

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1. Introduction

Entrepreneurial activity is a key driver of economic growth and development. Workable policies to encourage business ventures are, therefore, in strong demand. In this regard, the entrepreneurship literature has recently taken a vivid interest in regulation as a potential constraint on start-up activity. The new line of inquiry originates from the more general research on the impact of law and regulation on economic development. The law and finance literature holds that ‘law matters’ for the financing of economic activities and hence for the comparative success of economies (La Porta et al. 1997, 1998). To make their case, law and finance scholars try to identify a link between legal rules and institutions in the various jurisdictions and economic performance. While their research has covered many fields of law and regulation, one major strand has been the ‘regulation of entry’ (Djankov et al. 2002). The World Bank has been foremost in promoting a strategy of legal reform to foster economic development. Since 2002, it has been monitoring the legal and regulatory conditions for ‘doing business’ in various economies (World Bank/International Finance Corporation 2010). The general claim of this research is that stricter regulation tends to stifle start-up activity. Yet its empirical underpinning is rather weak as it rests mostly on cross-sectional data (see the survey in Djankov 2009, pp. 190-193).² Accordingly, it is hard to tell if less onerous regulation leads to more entrepreneurship or if countries with more start-up firms, for whatever reasons, tend to be less restrictive. Recently, Levie and Autio (2010) employ a panel of 54 countries from 2004 to 2008 to show that a very general measure of ‘regulatory burden’ (including aspects of labor and bankruptcy law) exerts a negative influence on entrepreneurial activity.

Major changes in European company law during the last decade provide the opportunity for a fresh look at the interaction of legal restrictions and entrepreneurial activity. With a number of groundbreaking decisions starting in 1999, the European Court of Justice (ECJ) enabled firms to opt out of the national company law of their home country and instead to avail themselves

² For instance, in a cross-section of 95 countries, Klapper and Love (2010) report a negative relationship between the cost of incorporation (i.e., number of procedures, time and expenses) in 2004 and the average number of LLC incorporations relative to the working population during 2005-2009. Similarly, in their survey on more than 3 million companies in 21 European countries, Klapper et al. (2006) find that high costs of incorporation reduce the number of new firms. By contrast, using data from 39 countries, van Stel et al. (2007) find only the minimum capital requirement to bear a statistically significant relation with entrepreneurial activity while the number of procedures, the time and expenses needed for incorporation appeared to be irrelevant.

of the company law of another European Union (EU) member state.³ Legal constraints on company formation have ceased to be binding insofar as other company laws offer less restrictive rules. Conversely, states may find it in their interest to market their company law to foreign firms or, at the very least, to avoid losing their own firms to foreign jurisdictions. As a consequence, states can now compete for the company law most attractive to entrepreneurs and firms generally. Whether such regulatory competition leads to desirable results overall is an important policy question for European company law and the EU legislator. Evidently, if one were able to show that regulatory competition increases entrepreneurial activity, this would count as a substantial benefit. At the same time, it would validate the claim that ‘law matters’: If the opportunity to opt out of a restrictive legal regime causes more new firms to be set up then, apparently, cutting regulation is a way to foster entrepreneurship.

State competition in company law (‘charter competition’) has been around in the United States (US) for more than a century. Accordingly, there is a large amount of empirical work on state competition for large public companies’ charters in the US (for an extensive survey see Bhagat and Romano 2007, pp. 970-987). Surprisingly little effort has been devoted on incorporation choices of small firms. Notable exceptions in the recent US literature are Dammann and Schündeln (2008, 2009) and Kobayashi and Ribstein (2010). These studies do not, however, relate charter competition to the regulatory barriers faced by start-up firms. By contrast, Becht et al. (2008) provide a careful and highly influential analysis of the incorporation choices of entrepreneurial firms in the EU following the ECJ’s landmark cases.⁴ Using a difference-in-difference method, they show that the United Kingdom (UK) attracted a large number of incorporations from other EU member states (but not from jurisdictions outside the EU unaffected by the ECJ’s rulings). They also find that incorporations in the UK are driven mainly by the minimum capital required to establish a limited liability company (LLC) in other jurisdictions; the UK does not impose any such requirement. Evidently, start-up firms have taken advantage of the new opportunities created by the ECJ.

In this article, we revisit the matter and extend the analysis of Becht et al. (2008) in two important directions: After the ECJ unleashed charter competition, at least five European

³ See ECJ, Case C-212/97 *Centros Ltd. v. Erhvervs- og Selskabsstyrelsen* [1999] ECR I-1459; Case C-208/00 *Überseering BV v. Nordic Construction Company Baumanagement GmbH* [2002] ECR I-9919; Case C-167/01 *Kamer van Koophandel en Fabrieken voor Amsterdam v. Inspire Art Ltd.* [2003] ECR I-10155.

⁴ In his survey, Djankov (2009, p. 193) highlights Becht et al. (2008) as the ‘most creative study linking business registration and entry regulation’.

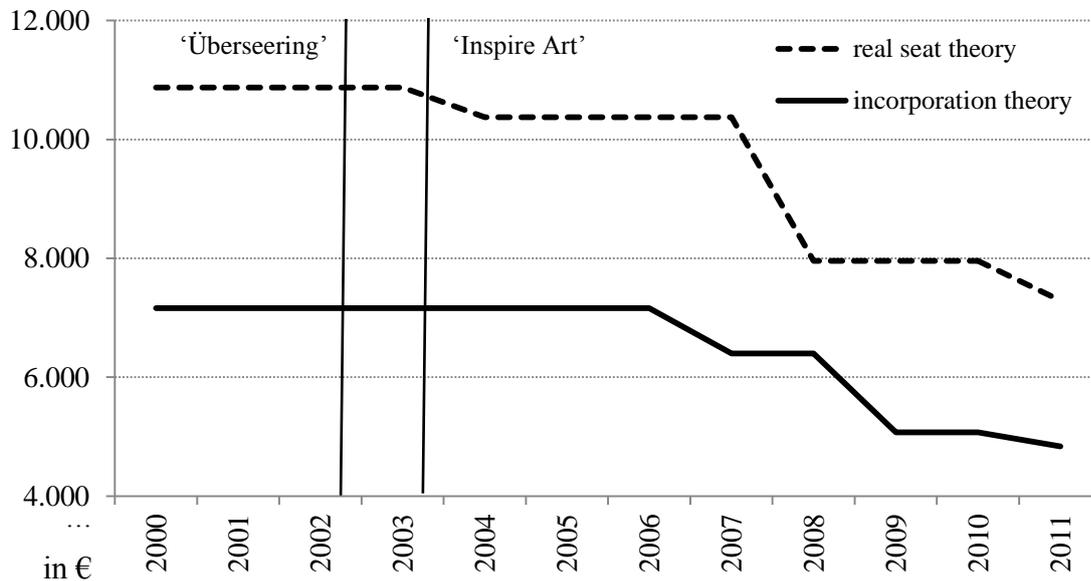
jurisdictions have enacted company law reforms to facilitate LLC incorporations. All reforms aim at reducing formalities or accelerating the process of establishing an LLC. Four out of five states decreased or abolished the statutory minimum capital, i.e. the requirement that shareholders must provide their LLC with a minimum amount of equity funding. The reforms seem to respond to the new competitive pressure exercised by less restrictive company law jurisdictions, notably the UK. Figure 1 depicts the average minimum capital over all national company laws in the EU, divided in two subsets: Jurisdictions adhering to the ‘incorporation theory’ permitted start-up firms – in principle at least – to incorporate abroad even before the ECJ’s landmark decisions. Conversely, many European jurisdictions follow the ‘real seat theory’ and refuse domestic firms the right to incorporate out of state. The new ECJ case law effectively ruled out the ‘real seat theory’ in relation to other EU member states. It is suggestive that the ‘real seat’ jurisdictions maintained a markedly higher level of minimum capital before the ECJ exposed them to competitive pressure from other jurisdictions. After the rules of the game had changed, the average minimum capital declined in both groups of jurisdictions. (The ECJ struck down not only the ‘real seat theory’ but also impediments to out-of-state incorporations in certain countries following the ‘incorporation theory.’) We evaluate whether, by enacting company law reforms, the five jurisdictions succeeded in defending their home market against competition from the main contender, the UK private LLC.⁵ Our study for the first time considers the supply-side of charter competition in the EU and its interaction with the demand side. We thus provide both more detail and support to the original findings of Becht et al. (2008).

Using a difference-in-difference approach, we show that EU member states can in fact promote their domestic LLC form by facilitating incorporations, particularly by cutting the statutory minimum capital. To this end, we collect time-series data on incorporations before and after the legal reforms in Spain, France, Hungary, Germany and Poland. Studying the effect of statutory amendments enables us to define a very clearcut event, namely the specific day when the new law entered into force. Looking at five independent events in different countries during the decade from 2000 to 2010 should increase the external validity of our results.

⁵ Becht et al. (2008) show that one important reason for the UK’s leading position is the absence of a minimum capital requirement for private LLCs.

Figure 1

Average minimum capital requirement for private LLCs in the EU-27 by jurisdictions following the ‘real seat theory’ and the ‘incorporation theory’



In addition, we confront the critical issue whether facilitating LLC incorporations actually increases the number of start-up firms. Becht et al. (2008) have shown that entrepreneurs from other EU member states have chosen to incorporate in the UK once the opportunity presented itself. Yet the rise in UK incorporations may have come at the expense of the domestic LLC forms in the entrepreneurs’ home states. Also, entrepreneurs do not have to incorporate to start a business. They can establish a firm in the form of a partnership or in their own name, i.e. as a sole proprietor. To demonstrate that lower incorporation costs spur new firm creation, we consider the possible substitution effects. We do so for the five reform countries by looking at the effect not only on domestic LLC incorporations but also on partnerships and UK private LLCs. When we include these substitutes, the impact of the reforms tends to slightly weaken but generally does not vanish. Apparently, the reforms succeeded in stimulating start-up activity rather than just luring firms away from other legal forms. It follows that facilitating LLC incorporations may be a policy tool to foster entrepreneurship.

The paper comes in 5 more sections. In section 2 we specify the hypotheses using a simple theoretical model on entrepreneurship and the costs of regulation. Section 3 describes the

legal background, section 4 outlines our methodology. The main results and their robustness are analyzed in Section 5. Section 6 summarizes and concludes.

2. Entrepreneurship and the costs of registration

Our analysis starts from the fundamental choice whether to work as an employee or to start a new venture. This decision has often been modeled in the literature (see Lucas 1978 and Kihlstrom and Laffont 1979 for two early contributions), mostly to inform policy makers how to promote economic growth by encouraging entrepreneurship. The underlying assumption is that individuals choose the action that subjectively promises them the greatest utility (Eisenhauer 1995; Douglas and Shepherd 2000). Although individuals may derive their utility from multiple monetary and non-monetary factors, such as economic, personal, social, cultural and institutional determinants (Dreher and Gassebner 2007), we restrict ourselves to a very parsimonious setup. The main components of the individual utility functions are the existing assets of an individual denoted by A_0 , the expected net present value of future income resulting from the new firm $E(Y)$ or from her salary Y_0 in an employment, and a set of additional determinants C (e.g., the personal working conditions under each option). A simple decision rule is to choose self-employment if the utility exceeds the utility of employment in the wage sector:

$$U(A_0 + E(Y), C) > U(A_0 + Y_0, C) \quad (2.1)$$

The expected net present value from setting up a new business is derived from the stream of profits V_t in periods $t = 1, \dots, T$, discounted at some rate R :

$$E(Y) = \sum [(E(V_t) / (1 + R)^t)] - K_0 \quad (2.2)$$

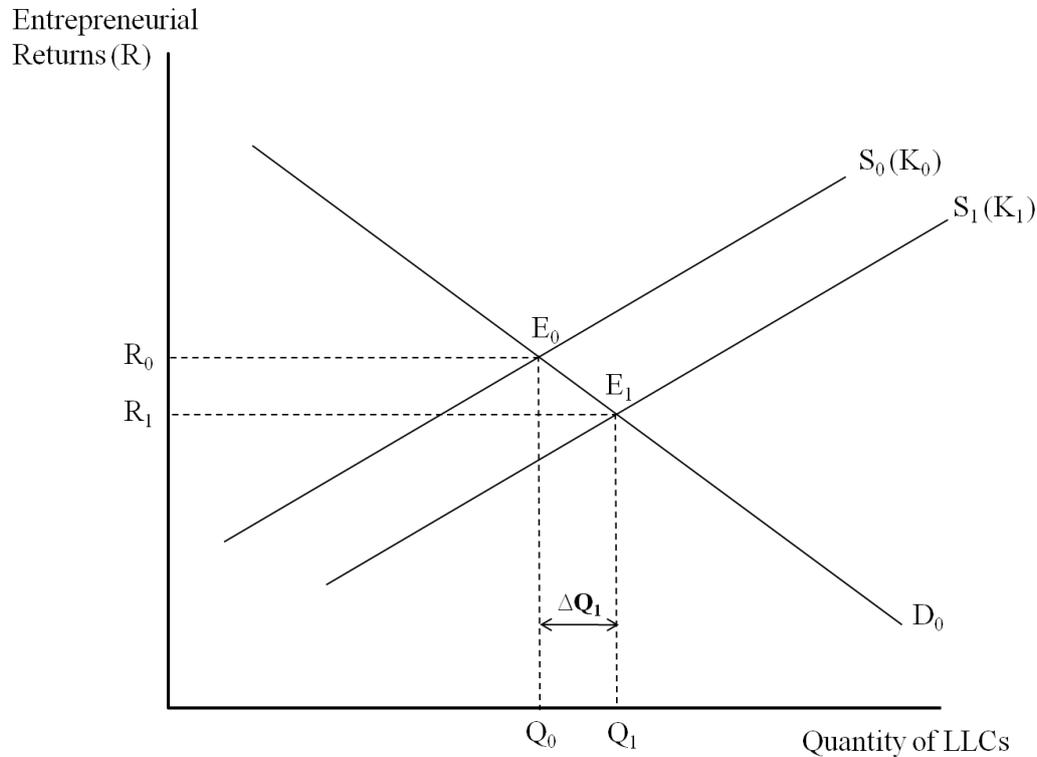
The expected value of starting a business declines with regulatory costs K_0 imposed by the government. Typically, there are direct regulatory costs of registering a new firm and operating it; examples include the notarization of certain documents, the time needed for registration, financial reporting requirements etc. In addition, entrepreneurs may have to incur indirect costs such as a minimum capital requirement, i.e. an amount of equity funding that owners must pay or promise to pay when they establish the firm. While the firm can use the money to build its business, the requirement nonetheless causes opportunity costs or costs of increased financial constraints of the owners (Becht et al. 2008, p. 244).

Of course, on a more optimistic account regulatory costs may be justified by countervailing benefits. The registration process can serve as a screening process for start-up firms to ensure minimum standards of quality, including integrity and financial soundness. Restricting start-up activity can protect uninformed creditors and reduce information asymmetries (Cassar 2004, Storey 1994). More specifically, minimum capital requirements may sort out ‘necessity nascent entrepreneurs’ who start a business only to escape unemployment. Such entrepreneurs are less wealthy (Block and Wagner 2010) and therefore more strongly affected by registration costs (van Stel et al. 2007, p. 172). At the same time, they have been shown to have no beneficial effect on technological development (Acs and Varga 2005). Stricter requirements can thus serve to prevent market failures and lead to socially superior outcomes, as the ‘public interest theory of regulation’ contends (Pigou 1938; Sinn 1997). The opposite view is that entry regulation serves mainly competitors and bureaucrats to extract rents (Djankov 2002). Accordingly, its effect is to stifle entrepreneurial activity without an offsetting gain. This perspective finds some support in the empirical literature referred to in the introduction.

In this paper, we cannot resolve the matter conclusively. What we can do is to provide new and strong evidence that registration costs do indeed have a significant impact on entrepreneurial activity. To this end, we consider entrepreneurial activity as the result of supply and demand for entrepreneurship in the economy (Casson 1995). The demand for entrepreneurship is the number of ‘entrepreneurial positions’ that can be filled in an economy (Choi and Phan 2006, Thornton 1999). Demand results from a variety of factors, e.g. the availability of entrepreneurial opportunities or the availability of appropriate financing such as venture capital (for a more comprehensive overview see Thornton 1999). The supply of entrepreneurship is determined by the pool of individuals which is ready to engage in self-employment (Choi and Phan 2006). The supply curve results from the individual decision rule as outlined in equations 2.1 and 2.2. Each point on the supply curve indicates the number of individuals that perceive a higher utility from entrepreneurship than from dependent employment. As a consequence, the shape of the supply curve reflects regulatory costs K_0 as part of equation 2.2 (Figure 2). This motivates our first hypothesis that reducing the regulatory costs of registering (incorporating) LLCs should, *ceteris paribus*, increase the number of LLC incorporations by ΔQ_1 .

Figure 2

The reduction of incorporation costs (K) increases the quantity of domestic LLC start-up firms to Q_1



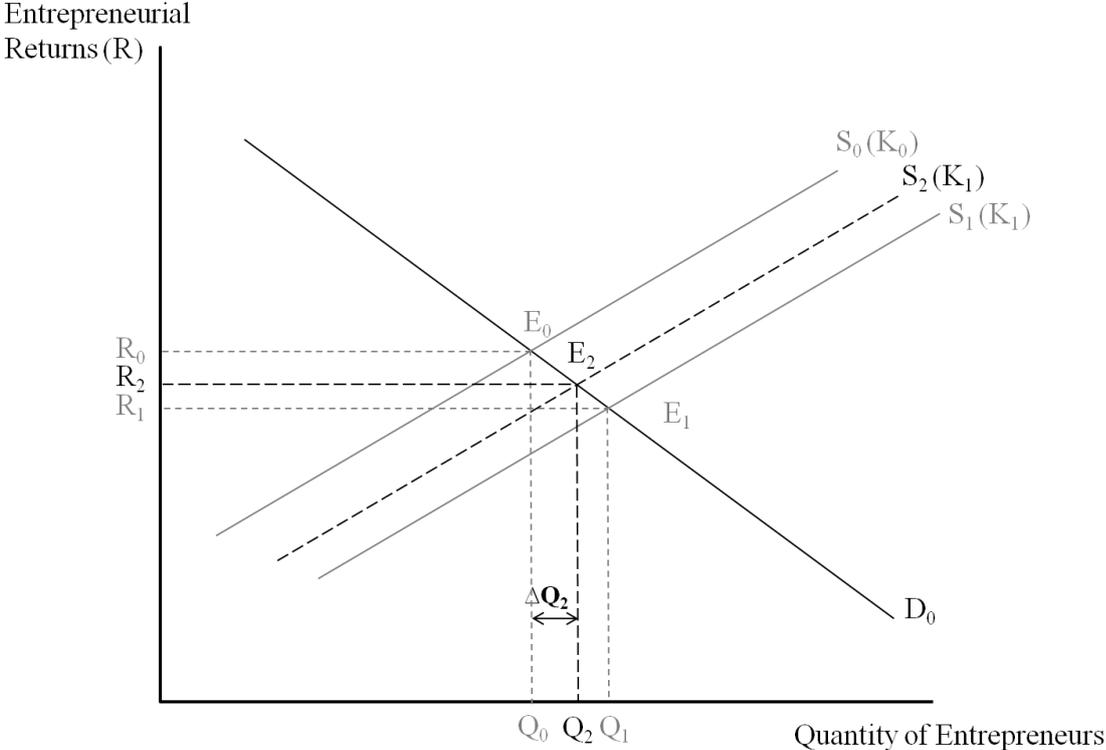
However, the number of LLC incorporations does not equal the number of start-up firms in the economy. Potential entrepreneurs face different options regarding the legal form to start a business. A new firm can take the form of a private LLC, a public LLC, a partnership or a sole proprietorship, to name the most important ones. While legal forms differ in important respects (e.g., personal liability, transferability of ownership, taxation), it is far from obvious that entrepreneurs are deterred merely because their most preferred legal form turns out to be too costly for them. It follows that slashing the regulatory costs of incorporating a private LLC, instead of creating new start-up activity, could simply redirect entrepreneurs from partnerships and sole proprietorships to the private LLC. Therefore, we need to take regulatory costs for alternative legal forms into account. Registration costs K_0 can be thought of as a cost vector containing all relevant legal forms, including those offered by foreign jurisdictions such as the UK private LLC:

$$K_0 \{ K_{\text{private LLC}}; K_{\text{public LLC}}; K_{\text{UK private LLC}}; K_{\text{partnership}}; K_{\text{sole proprietor}}; \dots \} \quad (2.3)$$

Hence, cutting LLC incorporation costs may shift the supply curve for entrepreneurial activity far less than suggested by Figure 2. As some entrepreneurs simply substitute the LLC for the legal form that they would have used before the reform, the effect on new firm creation can be much lower or nonexistent. Figure 3 suggests that the variable of interest to policymakers should be the rise in total entrepreneurial activity rather than just LLC incorporations. Our second and more critical hypothesis therefore is that a reduction in LLC incorporation costs increases the number of all start-up firms, irrespective of legal form, by ΔQ_2 .

Figure 3

The reduction of incorporation costs (K) increases the quantity of all start-up firms to Q_2



3. Charter competition and company law reform in Europe

In the US, firms have always been free to choose in which of the states to incorporate because corporations were generally recognized by all other states (see Tung 2006 and Yablon 2007). Some states soon discovered that they could generate tax revenues by adapting their corporation law to firms' preferences. 'Granting charters' for corporations became a service offered by state governments in a competitive market. By contrast, in much of continental Europe, 'charter competition' arrived only at the turn of the millennium after a series of groundbreaking judgments by the ECJ (subsection 3.1). Start-up firms were the first to take advantage of the newly available free choice of company law. Legislators in various EU member states have reacted by facilitating incorporation. The reforms of European company laws outlined in subsection 3.2 constitute the quasi-experiments that we study.

3.1 Recognizing foreign companies: Real seat vs. incorporation theory

Suppose an entrepreneur intends to operate a coffee shop in Innsbruck, Austria. She would like to establish her firm as a LLC. Her default option would be to incorporate in Austria as a *Gesellschaft mit beschränkter Haftung* (GmbH, Austrian private LLC). However, Austrian company law requires her to invest a minimum capital of € 35,000 in the company as a precondition for incorporating and enjoying limited liability.⁶ The entrepreneur also learns that no such restriction exists under UK company law. Quite naturally, she would prefer to avail herself of this low-cost alternative. Yet Austrian law precluded this opportunity of evading the stricter requirement. Under the long-standing Austrian conflicts-of-law rule, a company is governed by the law of the state in which the 'real seat of its main administration' is located.⁷ Since the coffee shop is to be operated and managed in Innsbruck, the firm would be subject to Austrian company law. Incorporating in Britain would not have helped because Austrian courts refused to apply English law and hence to recognize the firm as an English company. Instead, the entrepreneur herself would have been considered the sole proprietor of the firm, exposing her to full liability for all debts incurred on behalf of the firm.

The traditional Austrian conflicts-of-law rule exemplifies the 'real seat' (*siège réel*) theory, which used to predominate in most jurisdictions throughout continental Europe. Obviously,

⁶ See § 6(1) Austrian Limited Liability Companies Act (*Gesetz über Gesellschaften mit beschränkter Haftung*).

⁷ See § 10 Austrian International Private Law Act (*Gesetz über das internationale Privatrecht*).

the real seat theory is designed to prevent incorporators from choosing a company law of their liking. It protects national company laws against ‘legal arbitrage’ and competitive pressure from other states. By contrast, other jurisdictions follow the ‘incorporation’ theory. Under this alternative conflicts-of-law rule, a company is governed by the law of the state in which it was incorporated. As firms can choose where to seek incorporation, the incorporation theory effectively implies free choice of the applicable company law. Under the incorporation theory, the entrepreneur mentioned above could establish a UK private company limited by shares (‘Ltd.’) even if she operated and managed her business only in Austria.

Yet the ‘real seat’ theory prevented most European firms, including Austrian firms, from incorporating in another state than that in which they were managed. This situation changed profoundly when the ECJ ruled that the ‘real seat’ theory violated the fundamental freedom of establishment laid down in the Treaty on the Functioning of the European Union.⁸ As a consequence, jurisdictions following the ‘real seat’ theory must recognize companies established in another EU member state. The ECJ thus removed the main legal barrier against company law choice within the EU. Becht et al. (2008) show that a substantial number of firms from Germany and other continental European jurisdictions did use the new opportunities and opted to incorporate in the UK after the ECJ’s judgments. An additional study by Becht et al. (2009) provides evidence of remaining impediments to incorporating abroad in some member states. As the cost burden on legal arbitrage diminishes over time, the competitive pressure on national company laws is likely to increase.

3.2 Company law reforms

We are interested in whether regulatory competition fosters entrepreneurial activity by lowering barriers for start-up firms. Given that firms quickly began using their newly gained freedom of choice, one would expect that jurisdictions engage in charter competition and at least try to keep domestic firms from using foreign law.⁹ In fact, we observe that a couple of EU member states have reformed incorporation procedures and requirements after 1999. For some of them, the emerging market for company law has been a driver of change (Ringe

⁸ See ECJ (1999, 2000, 2002). For a recent overview and analysis see Bratton et al. (2009, pp. 366-373) and Ringe (2010). As of December 2009, the relevant provisions are Art. 49, 54 Treaty on the Functioning of the European Union.

⁹ According to Becht et al. (2008), at least 41,499 German start-ups incorporated as UK private LLC in the period from 1997 to 2006, most of them from the year 2003 onwards.

2010, pp. 20-26; Bratton et al. 2009, pp. 381-384; Schmidt 2008). Other legislators seemed less concerned with charter competition. For instance, the French and Spanish reform bills of 2003 did not mention the recent ECJ cases (Wachter 2003; Cohnen 2005, pp. 481-484). As Djankov (2009) documents, many countries all over the world have amended their company laws to facilitate incorporation. The legislative changes often alleviate requirements for incorporation documents and formalities (like the use of notaries) to speed up the process and save on expenses. They also tend to reduce or abolish minimum capital requirements. Reforms in EU member states thus not only respond to charter competition but also reflect a general trend towards deregulation (see European Commission 1997). In our analysis, we focus on the most radical changes since 1999: either a reduction of minimum capital requirements or the creation of a new type of private LLC specifically for start-up firms, or both. As of mid-2010, such far-reaching reforms have become effective in five EU member states: Spain, France, Hungary, Germany and Poland (Table 1). We choose these jurisdictions to study the impact of reforms on firm entry.

Table 1

Company law reforms to facilitate LLC incorporations

Country	Enactment date	Effective date	Reduction of minimum capital?	New start-up company type?	Description of reform
Spain	1 April 2003	2 June 2003	No	Yes	New company type <i>Sociedad Limitada Nueva Empresa</i> (SLNE): electronic filing of incorporation documents; registration within 24 hours after filing; but notary still required; only natural persons can be shareholders of the SLNE
France	1 August 2003	5 August 2003	Yes	No	Minimum capital reduced from € 7,500 to € 1; electronic filing of incorporation documents; incorporators receive a provisional certificate of filing (no notary requirement under French law even before reform)
Hungary	15 June 2007	1 September 2007	Yes	No	Minimum capital reduced from HUF 3,000,000 to HUF 500,000 ^(I) ; electronic filing of incorporation documents; no notary required (but lawyer); registration within 15 days or 2 days if standard articles of incorporations are used
Germany	23 October 2008	1 November 2008	Yes	Yes	New company type <i>Unternehmergeellschaft (haftungsbeschränkt)</i> : minimum capital reduced from € 25,000 to € 1; but notary still required
Poland	23 October 2008	8 January 2009	Yes	No	Minimum capital reduced from PLN 50,000 to PLN 5,000 ^(II)

^(I) At an exchange rate of € 1 = HUF 287 (as of 23 July 2010), this corresponds to a reduction from around € 10,450 to around € 1,750.

^(II) At an exchange rate of € 1 = PLN 4.07 (as of 23 July 2010), this corresponds to a reduction from around € 12,300 to around € 1,250.

4. Methodology

4.1 Company law reforms as quasi-experiments

To identify the effect of the company law reforms on the formation of start-up firms, we conceive of the reforms as quasi-experiments. At first, we are interested in whether the legal changes make the domestic LLC more attractive to entrepreneurs. Therefore, our default treatment group consists of the domestic LLC form, for which we observe the number of incorporations at daily or monthly frequencies. The treatment consists of the reform. As entrepreneurs and their advisers knew of the changes in advance,¹⁰ we consider the entry into force of the reform as the start of the treatment. Our default observation period is one year before and after this date. For this period, we have incorporation data in all of our five reform jurisdictions. This research design offers two technical advantages over the older study by Becht et al. (2008): First, the implementation of a national company law reform can be determined precisely. By contrast, the treatment in Becht et al. (2008) consisted of the ECJ judgments in *Centros* (1999), *Überseering* (2002) and *Inspire Art* (2003). It is hard to predict when the case law had been sufficiently established to encourage firms to use their new freedom of choice. Second, the ECJ rulings are only a single incident whereas we have the opportunity to consider five different events, which underscores the external validity of our findings.

Reforming the domestic private LLC may or may not increase its appeal but leaves another very similar legal form unaffected: the public LLC. We thus consider as the general population all *companies* (corporations), namely the private LLC and the public LLC. We use the public LLC as a control group because its key features closely resemble those of the private LLC: Both the private LLC and the public LLC are legal entities separate of their shareholders. They are managed by directors who need not be shareholders. Either company type shields its shareholders against personal liability for the firm's debt ('limited liability'). Perhaps most importantly, both are subject to corporate income tax. While one can find some of these features in certain partnerships as well, their combination is characteristic of companies (private and public LLC) and distinguishes them from other legal forms. As Meyer

¹⁰ The amendments entered into force at least two months after their enactment in Spain, Hungary and Poland (see Table 1). As it takes several months or even years to pass a reform bill, entrepreneurs and their advisers have plenty of time to prepare for the new rules.

(1995, p. 158) suggests, we confirm that the similarity of our treatment group (private LLCs) and our control group (public LLCs) is also borne out in the data: The daily incorporations of private and public LLCs correlate substantially before the respective reforms took place (Table 2). For all control groups, except for Hungary, we find very strong and positive correlations of 0.5 to 0.8 which are also highly statistically significant.

Table 2

Correlation between treatment and control group before the implementation of the company law reforms

Country	Basic treatment group	Control group	Correlation coefficient
France	SARL	SA	0.69***
Germany	GmbH	AG	0.58***
Hungary	Kft.	Rt.	0.02
Poland ⁽¹⁾	Sp. z o.o.	Sp. Akcyjna	0.81***
Spain	S.R.L.	S.A.	0.51***

⁽¹⁾ Due to the data restrictions, we use monthly frequencies.

*, ** and *** indicate 10 percent, 5 percent, and 1 percent significance level, respectively.

Their similarity notwithstanding, private and public LLCs differ in certain respects. The public company is tailored to firms with a larger number of shareholders; its shares can be traded in securities markets (stock exchanges). As a consequence, the assignment into treatment and control group is not random, as a true experiment would require. However, for a quasi-experiment it is sufficient that legal forms can be thought of *as if* they were randomly assigned into treatment and control groups (Stock and Watson 2007, p. 468). The main concern, therefore, is to ensure that the composition of treatment and control groups do not change as a result of the treatment itself (Angrist and Pischke 2009, p. 241). A classic example of this potential pitfall is the evaluation of labor market programs, where only the most motivated and talented individuals choose to participate. Under such circumstances the *as if* assumption does not hold anymore, with the quasi-experiment overestimating the program's success. In the context of our analysis, the decision of a firm to incorporate as a public LLC or as private LLC must be statistically independent from the treatment, i.e., the private LLC law reform. This condition is generally met: For an entrepreneur determined to

establish a public company, it does not make a difference if she learns that the minimum capital for LLCs has been slashed. Throughout the EU, incorporating a public company requires a higher minimum capital than private LLCs (even before any private LLC reform).¹¹ For the same reason, it is highly unlikely that the reform triggers entrepreneurs to switch from the private to the public LLC. Another difference between the two legal forms lies in the fact that, in many states, transferability of LLC shares is restricted whereas public LLC shares are tradable. Yet again, this aspect remained unchanged by the reforms and should thus not alter how firms are assigned to either the LLC or the public company form.

Using the public company as a control group raises a problem in the two Eastern European reform jurisdictions. Hungary and Poland amended the legal rules not just for the private LLC but at the same time for the public LLC. Specifically, the minimum capital requirement was lowered for public LLCs as well (the *Rt.* and the *Sp. Akcyjna*, respectively). This implies that relying on the public LLC as a control group can lead us to underestimate the reform effect for the private LLC because the public LLC may also have become more attractive. However, the minimum capital requirement was lowered to a different degree for the private LLC and the public LLC. The discrepancy is quite large in Poland with a reduction to 1/10 for the private LLC (*Sp. z o.o.*) and to 1/4 for the public LLC (*Sp. Akcyjna*). In the case of Hungary, the minimum capital requirement was cut to 1/6 for the private LLC (*Kft.*) and to 1/4 for the public LLC (*Rt.*).

4.2 Sample Construction

Our sample contains incorporations of firms over time and according to their legal form. By using this information we investigate how company law reforms and in particular the reduction or abolishment of a minimum capital requirement for private LLCs affect entry rates. For the three jurisdictions implementing company law reforms early on (Spain, France and Hungary), we rely on data from the AMADEUS database, which is processed and distributed by Bureau van Dijk. The AMADEUS data were also used by Becht et al. (2008), back then in the form of the FAME database (which is a sub-sample of AMADEUS

¹¹ Under Art. 6(1) Second Company Law Directive 77/91/EEC, member states must require a minimum capital of at least Euro 25,000 for public LLCs.

containing only UK incorporations)¹². For the more recent reform countries (Germany and Poland), we were able to obtain the data directly from the respective national company register.¹³ This approach ensures comparability with the earlier results of Becht et al. (2008) and allows us to check for the representativeness of the AMADEUS sample. Fortunately, we find that the AMADEUS data represents well the population data from the German company register.¹⁴ As incorporations are reported with a delay, particularly in the AMADEUS database¹⁵, we disregard the two most recent company law reforms in Denmark and Sweden. This leaves us with data on incorporations in Spain, France, Hungary, Germany and Poland (Table 4).

Because we extend our analysis to the English private LLC as an alternative to the domestic private LLC, we need to identify domestic firms that have chosen to incorporate in the UK. To this end, we largely adopt the approach of Becht et al. (2008): We seek to classify an English private LLC as a Spanish, French, Hungarian etc. firm if it carries out its main business activities in Spain, France, Hungary etc. The AMADEUS data contains the country of residence (as well as the full names and addresses) of all directors in English LLCs. Based on this information, we calculate the total number of directors for each firm and the relative share of directors from a given country. We classify an English private LLC as a firm from a particular country, say Spain, if a majority of directors reside in this country.¹⁶ Becht et al. (2008) show that this criterion provides a plausibly proxy for the location of a firm's business activities outside the UK. Only in the case of Germany did we obtain data on English private LLC registrations directly from the commercial registers.¹⁷

¹² We thank the LMU-ifo Economic and Business Data Center (EBDC) for providing us with the AMADEUS data.

¹³ We gratefully acknowledge the data on incorporations provided by the German Bundesanzeiger Verlag and the Polish Ministry of Justice.

¹⁴ The correlation coefficient for the private LLC is 0.44 and statistically significant at the 1-percent level.

¹⁵ The ultimate source of the AMADEUS data is often Creditreform, a provider of credit information. This causes a time lag of around one year in the data provided by Bureau van Dijk.

¹⁶ As a robustness check, we classify English private LLCs as foreign firms if *all* directors reside in the other country. We omit these results because they do not differ in substance from our reported findings.

¹⁷ Foreign LLCs are required to register a 'secondary establishment' in the EU member state in which their management is located.

Table 3

Summary statistics – Average daily incorporations of private and public LLCs in reform countries (standard deviations in parentheses)

Country	Private / public LLC	Private LLC	Public LLC	UK private LLC ⁽ⁱ⁾	Obs. period	Data source
France ⁽ⁱⁱ⁾	SARL / SA	120.1 (246.7)	2.7 (3.2)	0.05 (0.22)	2000 - 2008	AMADEUS sample
Germany ⁽ⁱⁱⁱ⁾	GmbH / AG	265.6 (93.8)	5.7 (3.6)	13.99 (11.11)	2006 - 2010	German Gazette
Hungary	Felelösségu Társaság / Részvénytársaság	36.2 (21.3)	1.3 (0.6)	0.06 (0.26)	2000 - 2008	AMADEUS sample
Poland ^(iv)	Sp. z o.o. / Sp. Akcyjna	53.3 (28.3)	2.6 (3.5)	0.15 (0.43)	2001 - 2009	Polish Ministry of Justice
Spain ^(v)	SRL / SA	173.0 (144.9)	6.8 (4.5)	0.86 (1.20)	2000 - 2007	AMADEUS sample

⁽ⁱ⁾ Germany: Data from commercial register. Other countries: AMADEUS data based on ‘majority of directors’ criterion.

⁽ⁱⁱ⁾ The French private limited liability company incorporations do not include EURL incorporations.

⁽ⁱⁱⁱ⁾ The German private limited liability company incorporations do not include UG incorporations.

^(iv) Since the Polish data is only available at a monthly frequency, we divided monthly incorporations by 30 to arrive at daily incorporations.

^(v) The Spanish private limited liability company incorporations do not include SLNE incorporations.

Table 4

Major legal forms in reform countries and the UK

Company forms and minimum capital requirements before reforms						
	Public LLC		Private LLC		Cooperative	
Germany	AG	€ 50,000	GmbH	€ 25,000 €	eG	€ 0
France	SA	€ 37,000 ^(I)	SARL	€ 7,500	SC	€ 0
			EURL	€ 7,500		
	SAS	€ 37,000 ^(II)				
Spain	S.A.	€ 60,101	S.R.L.	€ 3,006	Sociedad Cooperativa	€ 1,803
Hungary	Rt	~ € 69,690 ^(III)	Kft.	€ ~ 10,450	Szövetkezet	€ 0
					Egyesüles	(0 €)
Poland	sp. a.	~ € 25,000	sp. z o.o.	€ ~12,300	Spółdzielnia	€ 0
UK	Plc	~ € 57,007	Ltd.	€ 0	Cooperative	€ 0

^(I) Different minimum capital for publicly listed SA: € 225,000.^(II) The minimum capital for the SAS has been cut to € 1 in 2008.^(III) Different minimum capital for publicly listed Rt: ~ € 80,000.

Partnership forms and minimum capital requirements before reforms						
	Civil code partnership		General partnership		Limited partnership	
Germany	GbR	€ 0	OHG	€ 0	KG	€ 0 ^(I)
France	SCI	€ 0	SNC	€ 0	SCS	€ 0 ^(II)
Spain	Sociedad Civil	€ 0	Sociedad Colectiva	€ 0	Sociedad en comandita	€ 0
Hungary	Polgári Jogi Társaság	€ 0	Kkt	€ 0	Bt	€ 0
Poland	s.c.	€ 0	sp.j.	€ 0	sp.k.	€ 0 ^(III)
UK			General Partnership	€ 0	Limited Partnership	€ 0
			Joint Venture	€ 0	LLP	€ 0

^(I) For KGaA: € 50,000.^(II) For SCA: € 37,000; for publicly listed SCA: € 225,000.^(III) For sp.k.a.: ~ € 12,500.

5. Empirical findings

5.1 Descriptive statistics

Table 5 contains simple comparisons of daily incorporations before and after the respective reform date. In all reform countries, average daily incorporations increased considerably in the year after the reform came into force, most conspicuously in Hungary by around 85 percent. In Germany, incorporations are driven by the UG, for which the minimum capital requirement has been abolished. All private LLCs in the reform countries show two-digit growth rates with the exception of the German non-UG GmbH, which lost on average 3 percent after the reform went into force. The smallest increase in incorporations occurred in Spain, the only reform jurisdiction which did not cut the statutory minimum capital requirement.

Table 5

Average daily incorporations one year before and after company law reform and percentage change

Country	Legal form	Reform date	Pre reform	Post reform	Percentage change
Spain	SL	02.06.2003	187.7	212.3	+13.1
	SL (incl. SLNE)	02.06.2003	187.7	214.7	+14.4
France	SARL	05.08.2003	117.9	145.8	+23.7
	SARL (incl. EURL)	05.08.2003	138.4	175.3	+26.7
Hungary	Kft.	01.09.2007	20.7	38.3	+85.1
Germany	GmbH	-	268.1	259.7	-3.1
	GmbH (incl. UG)	01.11.2008	268.1	337.9	+26.0
Poland ⁽¹⁾	sp. z o.o.	08.01.2009	35.0	40.1	+14.5

⁽¹⁾ Since the Polish data is only available at a monthly frequency, we divided monthly incorporations by 30.

5.2 Does corporate law reform promote the domestic LLC form?

The simple comparison of daily incorporations (before and after the company law reform came into force) shows that private LLCs gained 14 to 85 percent in the five reform jurisdictions. Because these findings might only reflect a general trend in incorporations, the business cycle or other factors unrelated to the reforms, we apply a difference-in-difference approach. Given that a standard ordinary least squares estimator is hardly suitable for count data such as company incorporations (in particular as there are no negative incorporations), we estimate the following negative binomial model:

$$\Pr(y_{i1}, y_{i2} \dots y_{iT}) = F(\beta_1 \text{Treat1}_i + \beta_2 \text{PostReform}_t + \beta_3 \text{PostReform}_t * \text{Treat1}_i + \gamma_1 \text{IndustryOutput}_t + \sum d + \varepsilon_{it})$$

where the dependent variable y_{it} is the number of incorporations in the legal form i at a given point in time t . $F(\cdot)$ is a negative binomial distribution function as in Baltagi (2008, p. 229). Treat1 is a dummy variable indicating whether the respective legal form was affected by the law reform. For the baseline specification, the treatment group consists only of the domestic private LLC. Therefore, Treat1 takes the following values:

$$\text{Treat1} = \begin{cases} 0 & \text{if } i \text{ is a domestic public LLC} \\ 1 & \text{if } i \text{ is a domestic private LLC} \end{cases}$$

PostReform is a dummy variable, which equals 1 for the period after the new company law entered into force and 0 for the period before. The coefficient of interest is the interaction term $\text{Treat1} * \text{PostReform}$ as it identifies the change in private LLC incorporations that is not reflected in a corresponding change in public LLC incorporations. IndustryOutput is the seasonally adjusted industry output, which serves as a proxy for the business cycle. We also include country dummies to account for time invariant country specific effects.¹⁸ In what follows, we report incidence rate ratios as they can be conveniently interpreted as multiplicative effect

¹⁸ In unreported specifications we have also included time dummies, which did not change our results.

or semi-elasticity. This implies that all estimates below one indicate a negative effect, while estimates greater than one reveal a positive relationship.

Table 6

Results of quasi-experiment – Promotion of domestic LLCs

	Spain	France	Hungary	Germany	Poland	General Sample	Subsample ⁽¹⁾
PostReform	0.89 * (0.08)	0.80 * (0.09)	1.89 *** (0.00)	0.76 *** (0.00)	0.69 *** (0.00)	0.92 (0.29)	0.84 * (0.06)
Treat1	35.00 *** (0.00)	123.17 *** (0.00)	79.75 *** (0.00)	44.12 *** (0.00)	25.13 *** (0.00)	48.82 *** (0.00)	56.11 *** (0.00)
PostReform*Treat1	1.28 *** (0.01)	1.59 ** (0.02)	0.98 (0.89)	1.65 *** (0.00)	1.66 *** (0.00)	1.49 *** (0.00)	1.48 *** (0.00)
IndustryOutput	-	-	-	-	-	1.00 * (0.08)	1.00 (0.36)
Log Pseudolikelihood	-6520.01	-5415.02	-3660.83	-5998.74	-240.39	-1517.15	-999.66
N	1462	1462	1462	1462	48	240	144
Frequency	day	day	day	day	month	month	month
Public LLC Reform	no	no	yes	no	yes	partly	none

Incidence rate ratios, robust standard errors, p-values in parentheses, country fixed effects. *, ** and *** indicate p-values of 10 percent, 5 percent, and 1 percent significance level, respectively.

⁽¹⁾ The subsample consists of Spain, France and Germany.

The estimates confirm a substantial effect of the company law reforms on the popularity of domestic private LLCs in France (+59%), Germany (+65%) and Poland (+66%). The effect for Poland may well have been underestimated given that the public LLC was reformed simultaneously. In the case of Spain, the increase in daily incorporations is again relatively small (+28%), which may be attributed to the fact that the Spanish reform did not affect the minimum capital requirement. We fail to find a significant reform effect for Hungary. As in Poland, Hungary facilitated incorporations of both private and public LLCs at the same time.¹⁹ In addition, the public LLC for some reason is a poor control group for private LLCs as incorporations of the two company types used to be barely correlated before the reform (see Table 2 above). In Spain, France and Germany, the reforms were confined to the private LLC so that the public LLC – the control group – remained entirely unaffected. In these three jurisdictions, the average treatment effect amounts to 48 percent. Including Poland and Hungary, the average treatment effect rises only slightly to 49 percent. Monthly industry output as a proxy for the business cycle has neither an economic nor a statistical impact on LLC incorporations.

5.3 Does corporate law reform promote entrepreneurship?

A rise in private LLC incorporations must not be confused with a growth in entrepreneurship. It may be that domestic private LLCs have only substituted other legal forms, such as partnerships or foreign private LLCs. In this case, the increase in incorporations of domestic private LLCs could partly or fully be offset by a decrease in newly formed partnerships or UK private LLC. To examine whether company law reforms create a positive net effect for entrepreneurship, we need to consider the relevant substitutes. We therefore estimate difference in difference as before, but with the treatment group now consisting of (domestic) private LLCs, general and limited partnerships as well as UK private LLCs:

$$\Pr(y_{i1}, y_{i2} \dots y_{iT}) = F(\beta_1 \text{Treat}2_i + \beta_2 \text{PostReform}_t + \beta_3 \text{PostReform}_t * \text{Treat}2_i + \gamma_1 \text{IndustryOutput}_t + \sum d + \varepsilon_{it})$$

¹⁹ Among other measures, the reform lowered the minimum capital requirement for the public LLC from HUF 20 million to HUF 5 million (i.e., from around € 69,690 to € 17,420).

where

$$\text{Treat2} = \begin{cases} 0 & \text{if } i \text{ is a public LLC} \\ 1 & \text{if } i \text{ is a domestic private LLC, partnership or UK private LLC} \end{cases}$$

Table 7

Results of quasi-experiment – Promotion of entrepreneurship

	Spain	France	Hungary	Germany	Poland	General Sample	Subsample ⁽¹⁾
PostReform	0.89 * (0.08)	0.80 * (0.09)	1.89 *** (0.00)	0.76 *** (0.00)	0.66 *** (0.00)	0.93 (0.50)	0.84 (0.17)
Treat2	8.80 *** (0.00)	31.16 *** (0.00)	27.19 *** (0.00)	12.48 *** (0.00)	7.42 *** (0.00)	13.15 *** (0.00)	13.78 *** (0.00)
PostReform*Treat2	1.28 ** (0.02)	1.59 ** (0.03)	0.78 (0.13)	1.58 *** (0.00)	1.56 (0.15)	1.38 * (0.06)	1.45 (0.11)
IndustryOutput	-	-	-	-	-	1.00 (0.52)	1.00 (0.80)
Log Pseudolikelihood	-10018.41	-9096.94	-7286.93	-13581.31	-695.16	-3665.87	-2329.43
N	3655	3655	3655	3655	120	600	360
Frequency	day	day	day	day	month	month	month
Public LLC Reform	no	no	yes	no	yes	partly	none

Incidence rate ratios, robust standard errors, p-values in parentheses, country fixed effects. *, ** and *** indicate p-values of 10 percent, 5 percent, and 1 percent significance level, respectively.

⁽¹⁾ The subsample consists of Spain, France and Germany.

Including partnerships and UK private LLCs in the treatment group changes the earlier findings for some of the jurisdictions under consideration. The treatment effect for Germany is still highly significant but slightly smaller (+58%) than in the original setting. The results for France and Spain remain significant at the 5%-level and exhibit the same economic magnitude as before (+59% and +28%, respectively). At least for these three countries, our results strongly support the conclusion that facilitating private LLC incorporations leads to a net growth in start-up activity. By contrast, the treatment effect for Poland not only decreases somewhat in magnitude but also loses statistical significance. We attribute the loss in statistical significance to the fact that the data from Poland is only available at a monthly frequency. In the case of Hungary, the result turns out even more negative than before. Again, it may be that – for whatever reason – the public LLC is a bad control group for the creation of small start-up firms in Hungary. In both Poland and Hungary, reforms simultaneously aimed at making public LLCs more attractive, which tends to dilute the effect we measure based on public LLCs as a control group. The average treatment effect for the general sample decreases in magnitude (+38%) and remains only weakly significant, while the effects in the Spanish, French and German subsample declines somewhat less (+45%) but ceases to be significant at conventional levels. Again, the cross-country estimates are based on monthly incorporation data because we do not have daily data for Poland. This may be a technical reason for the loss in significance in the two broader samples.

5.4 Robustness: Germany

In the previous subsection, we have included certain partnership forms and the UK private LLC in our analysis to account for substitution effects with other legal forms. However, our data do not cover all available legal forms of doing business. For instance, a single entrepreneur can start a firm as a sole proprietor.²⁰ It stands to reason that a sole proprietor may have incentives to incorporate her business as a private LLC if incorporation costs are sufficiently low. We therefore investigate the robustness of our findings by including a certain class of sole proprietors, namely ‘registered merchants’ in Germany. A ‘merchant’ under German law is any individual conducting a for-profit business activity that does not consist of a liberal profession, farming and forestry, or the management of the person’s own wealth. As such, a merchant has to be registered in the commercial register (*Handelsregister*). We were thus able to obtain data on

²⁰ Another example are civil law partnerships in some jurisdictions, which are not registered and hence do not show up in our data.

‘registered merchants’ (*eingetragener Kaufmann, e.K.*) from the German commercial register. In addition to considering more legal forms, we extend the timeframe of our German sample to two years (instead of one year) before and after the reform. Based on this broader data, we estimate a similar model as in the previous subsection but with

$$\text{Treat3} = \begin{cases} 0 & \text{if } i \text{ is a domestic public LLC} \\ 1 & \text{if } i \text{ is a domestic private LLC, partnership, sole proprietor or UK private LLC} \end{cases}$$

Depending on the frequency of observations, we find our earlier results strongly confirmed. Taking registered merchants into account, the reform effect on German start-up firms remains almost unchanged (56% to 66 %).

Table 8
Robustness Germany: Two years before and after law reform / treatment group includes sole proprietor

	Germany	Germany
PostReform	0.74 *** (0.00)	0.72 *** (0.00)
Treat3	11.13 *** (0.00)	14.30 *** (0.00)
PostReform*Treat3	1.56 *** (0.00)	1.66 *** (0.00)
IndustryOutput		1.00 (0.96)
Log Pseudolikelihood	-32933.07	-2491.49
N	8668	392
Frequency	day	month

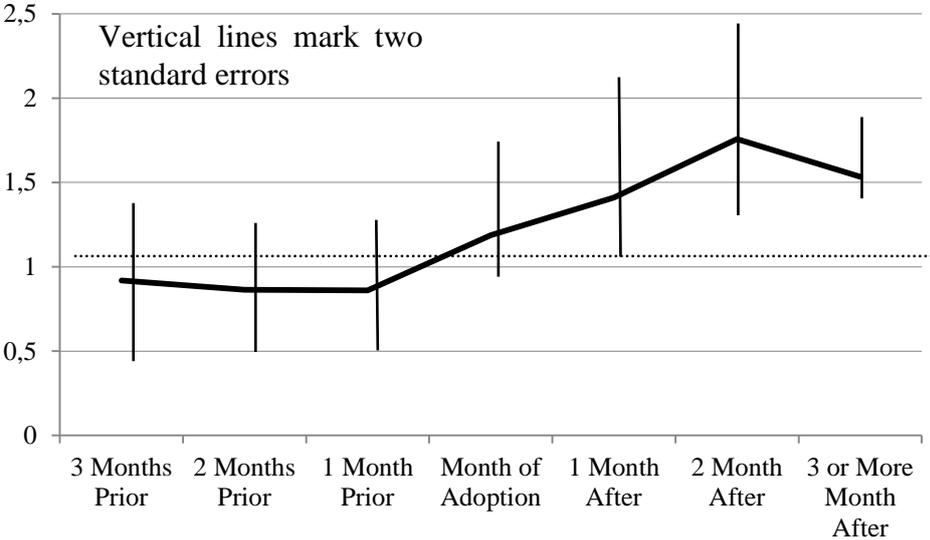
Incidence rate ratios, robust standard errors, p-values in parentheses. *, ** and *** indicate p-values of 10 percent, 5 percent, and 1 percent significance level, respectively.

As another robustness check, Angrist and Pischke (2009, p. 239) and Autor (2003, p. 23) suggest to test for causality in the spirit of Granger (1969). We therefore specify a model including lags and leads of the company law reform. If a decline in incorporations leads to the adoption of the new company law, lagged variables might provide evidence for reverse causality. To examine this, we extend our last specification for Germany by indicator variables for each of the three months before the reform, for the reform month itself and for the first and second month after the reform. A seventh dummy variable takes the value one in all months following the second post-

reform month. Figure 4 shows that the effect of the three dummies for the pre-reform months are negative but not significant, with the third pre-reform month being close to an incidence rate ratio of one, as one would expect in the absence of reverse causality. Rather, the time pattern suggests that entrepreneurs anticipated the reform and waited to take advantage of lower incorporation costs. In contrast, the coefficients of all post-reform months are positive and highly significant. The fact that our dummy for the time from the third post-reform month onwards is positive and highly significant provides some evidence for the persistence of the effect.

Figure 4

Results of quasi-experiment – Robustness Germany: Incidence rate ratios for pre-reform, reform and post-reform months



6. Summary and conclusion

Using a difference-in-difference approach, we study whether the company law reforms in Spain, France, Hungary, Germany and Poland have fostered the popularity of national legal forms. Generally speaking, the reforms appear to encourage both LLC incorporations and entrepreneurial activity. Looking only at incorporations of domestic private LLCs, the legal changes have an effect in four out of five jurisdictions that is of statistical and economic significance, ranging from an increase by 28 percent to 66 percent. Only Hungary fails to produce a significant increase in incorporations. A likely reason is that the public LLC is a poor

control group in this particular case;²¹ based on the mere number of daily private LLC incorporations, Hungary witnessed the highest percentage increase of all reform countries (see Table 5). Of the four jurisdictions where we are able to demonstrate a significant effect, the surge in incorporations is greatest in France, Germany and Poland where the statutory minimum capital requirement was lowered or abolished. As to the effect on entrepreneurial activity more generally, we find that the legal changes not only boosted incorporations of private LLCs but also raised the total number of new firms. This result holds even if one takes possible substitution effects with UK private LLCs, partnerships and (in the case of Germany) ‘registered merchants’ into account.

These empirical results strongly support our theoretical predictions that reducing the costs of registering LLCs fosters incorporations as well as general start-up activity irrespective of legal form. Cutting regulatory costs of incorporating increases the expected value of doing business, shifting the supply curve to the right so that more individuals in the economy are willing to engage in entrepreneurship. There is, of course, an important caveat to our findings: While the reforms have evidently fostered the creation of new firms, we have little to say about their quality. It may be that lowering the regulatory costs of incorporations lures mostly incompetent or unproductive entrepreneurs. To examine whether regulatory restrictions serve a valuable screening role, one would have to track the success of the new post-reform start-up firms over time. However, what our evidence shows is that lower incorporation costs accomplish more than just inducing would-be entrepreneurs to switch to the private LLC in order to enjoy limited liability; they succeed in fostering overall start-up activity.

²¹ Apart from the puzzling fact that private and public LLC incorporations are virtually uncorrelated in Hungary (cf. Table 2), the public LLC has been subject to a reform treatment at the same time as the private LLC.

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